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April 27, 2015

Pennsylvania Public Utility Commission  
Rosemary Chiavetta, Secretary  
P O Box 3265  
Harrisburg, PA 17105-3265

M-2015-2464293

Dear Secretary Chiavetta:

Pursuant to the Commission's Order, at Docket No. ~~M-2008-2062697~~, initiating the IWA/AWWA water audit pilot study, Pennsylvania American Water Company is filing herewith the annual water audit summaries for the year ended December 31, 2014. Attached is a disk containing the audits in electronic format.

Sincerely,

Robert Harpster  
Project Manger

Enclosure

RECEIVED  
2015 APR 27 PM 1:11  
PA PUC  
SECRETARY'S BUREAU



**PENNSYLVANIA  
AMERICAN WATER**

The following contents of this report are the printable version accompanied by the CD version which includes all individual PAW District Water Audits for the operating year 2014. The format is the AWWA Water Audit Software v5.0. Below is an index for District operations:

<b>Dist.</b>	<b>Location</b>
110	Pittsburgh Division
210	McMurray District
220	Mon Valley District
230	Uniontown/Connellsville Dist.
250	Brownsville District
310	New Castle& Ellwood Dist.
330	Butler District
410	Indiana District
420	Punxsutawney District
430	Clarion District
440	Kittanning District
450	Warren District
460	Kane
510	Norristown District
520	Yardley District
530	Abington District
540	Susquehanna District
550	Bangor District
560	Blue Mountain/Nazareth Dist.
570	Pocono District
610	Mechanicsburg Dist.
620	Hershey/Palmyra Dst
630	Wyomissing/Penn Dst
633	Glen Alsace District
640	Royersford District
650	Coatesville District
660	Lake Heritage District
680	Lehman Pike District
710	Milton District
720	Philipsburg
730	Berwick District
740	Frackville District
780	Centre Cnty (Nittany-Boggs) Dist.
910	Wilkes-Barre/Scranton Dist.

**Pennsylvania**

**American Water**

**2014**

**Pennsylvania American Water**

**AWWA / IWA ver. 5.0**

**Water Audits by District**

**For**

**Pa-PUC**



# AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0

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?	Click to access definition
+	Click to add a comment

Water Audit Report for: **Pennsylvania American Water Consolidated Water Audit (Combined PAW Corporat**  
 Reporting Year: **2014**    1/2014 - 12/2014

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: MILLION GALLONS (US) 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' ----->				Master Meter and Supply Error Adjustments		
				Pcmt:		Value:		
Volume from own sources:	<input type="button" value="+"/> <input type="button" value="?"/> 9		70,523.819	MG/Yr	<input type="button" value="+"/> <input type="button" value="?"/> 9	-0.34%	<input type="radio"/> <input type="radio"/>	MG/Yr
Water imported:	<input type="button" value="+"/> <input type="button" value="?"/> 9		904.528	MG/Yr	<input type="button" value="+"/> <input type="button" value="?"/> 9	1.33%	<input type="radio"/> <input type="radio"/>	MG/Yr
Water exported:	<input type="button" value="+"/> <input type="button" value="?"/> 9		821.977	MG/Yr	<input type="button" value="+"/> <input type="button" value="?"/> 9	0.00%	<input type="radio"/> <input type="radio"/>	MG/Yr

**WATER SUPPLIED:** 70,835.097 MG/Yr

### AUTHORIZED CONSUMPTION

Billed metered:	<input type="button" value="+"/> <input type="button" value="?"/> 10		46,983.008	MG/Yr
Billed unmetered:	<input type="button" value="+"/> <input type="button" value="?"/> n/a		0.000	MG/Yr
Unbilled metered:	<input type="button" value="+"/> <input type="button" value="?"/> 10		395.047	MG/Yr
Unbilled unmetered:	<input type="button" value="+"/> <input type="button" value="?"/> 5		885.439	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:** 48,263.494 MG/Yr

### Master Meter and Supply Error Adjustments

Pcmt:	<input type="button" value="+"/> <input type="button" value="?"/> 9		-0.34%	<input type="radio"/> <input type="radio"/>	MG/Yr
	<input type="button" value="+"/> <input type="button" value="?"/> 9		1.33%	<input type="radio"/> <input type="radio"/>	MG/Yr
	<input type="button" value="+"/> <input type="button" value="?"/> 9		0.00%	<input type="radio"/> <input type="radio"/>	MG/Yr

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

Click here:  for help using option buttons below

Pcmt:	<input type="button" value="+"/> <input type="button" value="?"/> 9		1.25%	<input type="radio"/> <input type="radio"/>	MG/Yr
-------	---	--	-------	---	-------

Use buttons to select percentage of water supplied OR value

Pcmt:	<input type="button" value="+"/> <input type="button" value="?"/> 9		0.25%	<input type="radio"/> <input type="radio"/>	MG/Yr
-------	---	--	-------	---	-------

Pcmt:	<input type="button" value="+"/> <input type="button" value="?"/> 9		2.00%	<input type="radio"/> <input type="radio"/>	MG/Yr
	<input type="button" value="+"/> <input type="button" value="?"/> 9		0.75%	<input type="radio"/> <input type="radio"/>	704.745 MG/Yr

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

22,571.603 MG/Yr

#### Apparent Losses

Unauthorized consumption:   7 177.088 MG/Yr

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

Customer metering inaccuracies:	<input type="button" value="+"/> <input type="button" value="?"/> 7		966.899	MG/Yr
Systematic data handling errors:	<input type="button" value="+"/> <input type="button" value="?"/> 7		704.745	MG/Yr

**Apparent Losses:** 1,848.732 MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  20,722.871 MG/Yr

**WATER LOSSES:** 22,571.603 MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:**  23,852.089 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	<input type="button" value="+"/> <input type="button" value="?"/> 9		10,122.8	miles
Number of <u>active AND inactive</u> service connections:	<input type="button" value="+"/> <input type="button" value="?"/> 9		728,805	
Service connection density:	<input type="button" value="?"/> 7		72	conn./mile main

Are customer meters typically located at the curbside or property line?  No (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line:   7 45.0 ft

Average operating pressure:   8 74.9 psi

### COST DATA

Total annual cost of operating water system:	<input type="button" value="+"/> <input type="button" value="?"/> 9		\$194,285,807	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+"/> <input type="button" value="?"/> 9		\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+"/> <input type="button" value="?"/> 9		\$363.38	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: **Pennsylvania American Water Consolidated Water Audit (Commbined PAW Corporate)**

Reporting Year: **2014** | **1/2014 - 12/2014**

**\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\***

### System Attributes:

	Apparent Losses:	1,848.732	MG/Yr
	+ Real Losses:	20,722.871	MG/Yr
	= <b>Water Losses:</b>	<b>22,571.603</b>	MG/Yr

? Unavoidable Annual Real Losses (UARL): 5,757.88 MG/Yr

Annual cost of Apparent Losses: \$18,882,948

Annual cost of Real Losses: \$211,663,405 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:	<span style="border: 1px solid black; padding: 2px;">33.7%</span>	
		Non-revenue water as percent by cost of operating system:	<span style="border: 1px solid black; padding: 2px;">125.4%</span>	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">6.95</span>	gallons/connection/day
		Real Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">77.90</span>	gallons/connection/day
		Real Losses per length of main per day*:	<span style="border: 1px solid black; padding: 2px;">N/A</span>	
		Real Losses per service connection per day per psi pressure:	<span style="border: 1px solid black; padding: 2px;">1.04</span>	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 20,722.87 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 3.60

\* 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: Reporting Worksheet

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[?](#) Click to access definition  
[+](#) Click to add a comment

Water Audit Report for: **PAW-Pittsburgh Division (Districts 110;210;220) (5020039;5020039-MC;5020039)**  
Reporting Year: **2014**    **1/2014 - 12/2014**

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: **MILLION GALLONS (US) 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' ----->				Master Meter and Supply Error Adjustments	
Volume from own sources:	<a href="#">+</a> <a href="#">?</a> 9	23,635,242	MG/Yr	<a href="#">+</a> <a href="#">?</a> 9	0.20%	<input checked="" type="radio"/> <input type="radio"/>	MG/Yr
Water imported:	<a href="#">+</a> <a href="#">?</a> 9	21,315	MG/Yr	<a href="#">+</a> <a href="#">?</a> n/a	0.00%	<input checked="" type="radio"/> <input type="radio"/>	MG/Yr
Water exported:	<a href="#">+</a> <a href="#">?</a> 9	570,580	MG/Yr	<a href="#">+</a> <a href="#">?</a> n/a	0.00%	<input checked="" type="radio"/> <input type="radio"/>	MG/Yr

**WATER SUPPLIED:**    **23,038.801** MG/Yr

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

### AUTHORIZED CONSUMPTION

Billed metered:	<a href="#">+</a> <a href="#">?</a> 10	13,925,755	MG/Yr
Billed unmetered:	<a href="#">+</a> <a href="#">?</a> n/a	0.000	MG/Yr
Unbilled metered:	<a href="#">+</a> <a href="#">?</a> 10	134,076	MG/Yr
Unbilled unmetered:	<a href="#">+</a> <a href="#">?</a>	287,985	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:**    **14,347.816** MG/Yr

Click here: [?](#)  
for help using option buttons below

Pcnt: **1.25%**    Value:  MG/Yr

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

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

**8,690.985** MG/Yr

#### Apparent Losses

Unauthorized consumption: [+](#) [?](#)    **57,597** MG/Yr

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

Customer metering inaccuracies:	<a href="#">+</a> <a href="#">?</a> 7	286,935	MG/Yr
Systematic data handling errors:	<a href="#">+</a> <a href="#">?</a> 7	208,886	MG/Yr

**Apparent Losses:**    **553,419** MG/Yr

Pcnt: **0.25%**    Value:  MG/Yr

**2.00%**         **208,886** MG/Yr

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

Real Losses = Water Losses - Apparent Losses:    **8,137.566** MG/Yr

**WATER LOSSES:**    **8,690.985** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:**    **9,113.046** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	<a href="#">+</a> <a href="#">?</a> 9	3,024.9	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	<a href="#">+</a> <a href="#">?</a> 9	235,130	
Service connection density:	<a href="#">?</a>	78	conn./mile main

Are customer meters typically located at the curbside or property line?     No (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line: [+](#) [?](#) 7     50.0 ft

Average operating pressure: [+](#) [?](#) 8     110.0 psi

### COST DATA

Total annual cost of operating water system:	<a href="#">+</a> <a href="#">?</a> 9	\$62,760,115	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<a href="#">+</a> <a href="#">?</a> 9	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<a href="#">+</a> <a href="#">?</a> 9	\$338.05	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: **PAW-Pittsburgh Division (Districts 110;210;220) (5020039;5020039-MC;5020039)**

Reporting Year: **2014**      **1/2014 - 12/2014**

**\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\***

### System Attributes:

	Apparent Losses:	553.419	MG/Yr
	+ Real Losses:	8,137.566	MG/Yr
	= <b>Water Losses:</b>	<b>8,690.985</b>	MG/Yr

? Unavoidable Annual Real Losses (UARL): 2,743.59 MG/Yr

Annual cost of Apparent Losses: \$5,652,618

Annual cost of Real Losses: \$83,117,101

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:	<span style="border: 1px solid black; padding: 2px;">39.6%</span>	
		Non-revenue water as percent by cost of operating system:	<span style="border: 1px solid black; padding: 2px;">148.3%</span>	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">6.45</span>	gallons/connection/day
		Real Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">94.82</span>	gallons/connection/day
		Real Losses per length of main per day*:	<span style="border: 1px solid black; padding: 2px;">N/A</span>	
		Real Losses per service connection per day per psi pressure:	<span style="border: 1px solid black; padding: 2px;">0.86</span>	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 8,137.57 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 2.97

\* 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: Reporting Worksheet

WAS v5.0

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?	Click to access definition
+	Click to add a comment

Water Audit Report for: **PAW- Uniontown/Connellsville District 230 (5260022;5260020)**  
 Reporting Year: **2014**    1/2014 - 12/2014

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: MILLION GALLONS (US) 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' ----->								
								Master Meter and Supply Error Adjustments				
								Pcmt:	Value:			
Volume from own sources:	+	?	9	603.676	MG/Yr	+	?	9	-0.90%	<input type="radio"/>	<input type="radio"/>	MG/Yr
Water imported:	+	?	9	614.958	MG/Yr	+	?	n/a	0.00%	<input type="radio"/>	<input type="radio"/>	MG/Yr
Water exported:	+	?	n/a	0.000	MG/Yr	+	?			<input type="radio"/>	<input type="radio"/>	MG/Yr

**WATER SUPPLIED:**    **1,224.116** MG/Yr

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

### AUTHORIZED CONSUMPTION

Billed metered:	+	?	10	963.858	MG/Yr
Billed unmetered:	+	?	n/a	0.000	MG/Yr
Unbilled metered:	+	?	10	1.786	MG/Yr
Unbilled unmetered:	+	?		15.301	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:**    **980.945** MG/Yr

Click here: ?  
 for help using option buttons below

Pcmt:	Value:		
1.25%	<input type="radio"/>	<input type="radio"/>	MG/Yr

Use buttons to select percentage of water supplied  
 OR  
 value

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

**243.171** MG/Yr

#### Apparent Losses

Unauthorized consumption:    **3.060** MG/Yr

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

Customer metering inaccuracies:	+	?	7	19.707	MG/Yr
Systematic data handling errors:	+	?	7	14.458	MG/Yr

**Apparent Losses:**    **37.225** MG/Yr

Pcmt:	Value:		
0.25%	<input type="radio"/>	<input type="radio"/>	MG/Yr

2.00%	<input type="radio"/>	<input type="radio"/>	MG/Yr
14.458	<input type="radio"/>	<input checked="" type="radio"/>	MG/Yr

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

Real Losses = Water Losses - Apparent Losses:    **205.946** MG/Yr

**WATER LOSSES:**    **243.171** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:**    **260.258** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	+	?	9	249.1	miles
Number of active AND inactive service connections:	+	?	9	16,717	
Service connection density:	?			67	conn./mile main

Are customer meters typically located at the curbside or property line?    No (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line:    **30.0** ft

Average operating pressure:    **90.0** psi

### COST DATA

Total annual cost of operating water system:	+	?	9	\$4,087,821	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+	?	9	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+	?	9	\$3,096.39	\$/Million gallons

Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

\*\*\* YOUR SCORE IS: 86 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: Unauthorized consumption
- 2: Customer metering inaccuracies
- 3: Water imported

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

WAS v5.0

American Water Works Association.  
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Water Audit Report for: PAW- Uniontown/Connellsville District 230 (5260022;5260020)  
 Reporting Year: 2014 1/2014 - 12/2014

**\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\***

**System Attributes:**

	Apparent Losses:	37.225	MG/Yr
+	Real Losses:	205.946	MG/Yr
=	<b>Water Losses:</b>	<b>243.171</b>	<b>MG/Yr</b>

? Unavoidable Annual Real Losses (UARL): 150.05 MG/Yr

Annual cost of Apparent Losses: \$380,218

Annual cost of Real Losses: \$2,103,530 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: 21.3%  
 Non-revenue water as percent by cost of operating system: 65.0% Real Losses valued at Customer Retail Unit Cost

Operational Efficiency: { Apparent Losses per service connection per day: 6.10 gallons/connection/day  
 Real Losses per service connection per day: 33.75 gallons/connection/day  
 Real Losses per length of main per day\*: N/A  
 Real Losses per service connection per day per psi pressure: 0.38 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 205.95 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 1.37

\* 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: Reporting Worksheet

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American Water Works Association  
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Water Audit Report for: **PAW- Brownsville District 250 (5260005)**  
Reporting Year: **2014**    1/2014 - 12/2014

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: MILLION GALLONS (US) 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' ----->				Master Meter and Supply Error Adjustments				
				Pcmt:	Value:			
Volume from own sources:	+ ?	9	336.526	MG/Yr	+ ?	9	0.70%	MG/Yr
Water imported:	+ ?	9	0.350	MG/Yr	+ ?			MG/Yr
Water exported:	+ ?	n/a	0.000	MG/Yr	+ ?			MG/Yr

**WATER SUPPLIED:** 334.537 MG/Yr

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

### AUTHORIZED CONSUMPTION

Billed metered:	+ ?	10	280.444	MG/Yr
Billed unmetered:	+ ?	n/a	0.000	MG/Yr
Unbilled metered:	+ ?	10	3.878	MG/Yr
Unbilled unmetered:	+ ?		4.182	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:** 288.504 MG/Yr

Click here:  for help using option buttons below

Pcmt: 1.25% Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

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

46.033 MG/Yr

#### Apparent Losses

Unauthorized consumption: 0.836 MG/Yr

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

Customer metering inaccuracies:	+ ?	7	5.802	MG/Yr
Systematic data handling errors:	+ ?	7	4.207	MG/Yr

**Apparent Losses:** 10.845 MG/Yr

Pcmt: 0.25% Value:  MG/Yr

2.00% Value: 4.207 MG/Yr

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

Real Losses = Water Losses - Apparent Losses: 35.187 MG/Yr

**WATER LOSSES:** 46.033 MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:** 54.093 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	+ ?	9	116.4	miles
Number of <u>active AND inactive</u> service connections:	+ ?	9	6,055	
Service connection density:	?		52	conn./mile main

Are customer meters typically located at the curbside or property line?  (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line: 50.0 ft

Average operating pressure: 90.0 psi

### COST DATA

Total annual cost of operating water system:	+ ?	9	\$1,426,937	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?	9	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ?	9	\$713.40	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: PAW- Brownsville District 250 (5260005)  
 Reporting Year: 2014 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\*

System Attributes:

	Apparent Losses:	<span style="border: 1px solid black; padding: 2px;">10.845</span>	MG/Yr
	+ Real Losses:	<span style="border: 1px solid black; padding: 2px;">35.187</span>	MG/Yr
	= <b>Water Losses:</b>	<span style="border: 1px solid black; padding: 2px;">46.033</span>	MG/Yr

? Unavoidable Annual Real Losses (UARL): 64.66 MG/Yr

Annual cost of Apparent Losses: \$110,776

Annual cost of Real Losses: \$359,405 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: 16.2%  
 Non-revenue water as percent by cost of operating system: 38.7% Real Losses valued at Customer Retail Unit Cost

Operational Efficiency: { Apparent Losses per service connection per day: 4.91 gallons/connection/day  
 Real Losses per service connection per day: 15.92 gallons/connection/day  
 Real Losses per length of main per day\*: N/A  
 Real Losses per service connection per day per psi pressure: 0.18 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 35.19 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 0.54

\* 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: Reporting Worksheet

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Water Audit Report for: **PAW- New Castle / Ellwood Ditrict 310 (6370034;6370011)**  
Reporting Year: **2014**      1/2014 - 12/2014

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: MILLION GALLONS (US) 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' ----->				Master Meter and Supply Error Adjustments	
				Pcnt:	Value:		
Volume from own sources:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="2,921.468"/>	MG/Yr	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="-2.30%"/>	<input type="text" value=""/>	MG/Yr
Water imported:	<input type="button" value="+"/> <input type="button" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr	<input type="button" value="+"/> <input type="button" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	MG/Yr
Water exported:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="77.646"/>	MG/Yr	<input type="button" value="+"/> <input type="button" value="n/a"/>	<input type="text" value="0.00%"/>	<input type="text" value=""/>	MG/Yr

**WATER SUPPLIED:**  MG/Yr

### AUTHORIZED CONSUMPTION

Billed metered:	<input type="button" value="+"/> <input type="button" value="10"/>	<input type="text" value="1,798.593"/>	MG/Yr
Billed unmetered:	<input type="button" value="+"/> <input type="button" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr
Unbilled metered:	<input type="button" value="+"/> <input type="button" value="10"/>	<input type="text" value="11.370"/>	MG/Yr
Unbilled unmetered:	<input type="button" value="+"/> <input type="button" value=""/>	<input type="text" value="36.407"/>	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:**  MG/Yr

### Master Meter and Supply Error Adjustments

Pcnt:	<input type="text" value="1.25%"/>	Value:	<input type="text" value=""/>	MG/Yr
	<input type="radio"/>		<input type="radio"/>	
	<input type="radio"/>		<input type="radio"/>	
	<input type="radio"/>		<input type="radio"/>	

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

Click here:   
for help using option buttons below

Pcnt:	<input type="text" value="1.25%"/>	Value:	<input type="text" value=""/>	MG/Yr
	<input type="radio"/>		<input type="radio"/>	

Use buttons to select percentage of water supplied OR value

Pcnt:	<input type="text" value="0.25%"/>	Value:	<input type="text" value=""/>	MG/Yr
	<input type="radio"/>		<input type="radio"/>	

Pcnt:	<input type="text" value="2.00%"/>	Value:	<input type="text" value="26.979"/>	MG/Yr
	<input type="radio"/>		<input type="radio"/>	

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

**1,066.227** MG/Yr

#### Apparent Losses

Unauthorized consumption:    MG/Yr

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

Customer metering inaccuracies:	<input type="button" value="+"/> <input type="button" value="7"/>	<input type="text" value="36.938"/>	MG/Yr
Systematic data handling errors:	<input type="button" value="+"/> <input type="button" value="7"/>	<input type="text" value="26.979"/>	MG/Yr

**Apparent Losses:**  MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  MG/Yr

**WATER LOSSES:**  MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:**  MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="877.2"/>	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="30,737"/>	
Service connection density:	<input type="button" value=""/>	<input type="text" value="35"/>	conn./mile main

Are customer meters typically located at the curbside or property line?  (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line:    ft

Average operating pressure:    psi

### COST DATA

Total annual cost of operating water system:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="\$7,468,008"/>	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="\$10.21"/>	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="\$347.32"/>	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: **PAW- New Castle / Ellwood Ditrit 310 (6370034;6370011)**  
 Reporting Year: **2014**      **1/2014 - 12/2014**

**\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\***

System Attributes:

	Apparent Losses:	71.198	MG/Yr
	+	Real Losses:	995.029 MG/Yr
	=	<b>Water Losses:</b>	<b>1,066.227 MG/Yr</b>

? Unavoidable Annual Real Losses (UARL): 403.91 MG/Yr

Annual cost of Apparent Losses: \$727,221

Annual cost of Real Losses: \$10,163,223      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:	38.2%	
		Non-revenue water as percent by cost of operating system:	152.4%	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	6.35	gallons/connection/day
		Real Losses per service connection per day:	88.69	gallons/connection/day
		Real Losses per length of main per day*:	N/A	
		Real Losses per service connection per day per psi pressure:	0.93	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 995.03 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 2.46

\* 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: System Attributes and Performance Indicators

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Water Audit Report for: **PAW- Butler District 330 (5100012)**

Reporting Year: **2014**      **1/2014 - 12/2014**

**\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\***

**System Attributes:**

	Apparent Losses:	76.552	MG/Yr
	+	Real Losses:	557.745 MG/Yr
	=	<b>Water Losses:</b>	<b>634.298 MG/Yr</b>

? Unavoidable Annual Real Losses (UARL): 201.42 MG/Yr

Annual cost of Apparent Losses: \$781,904

Annual cost of Real Losses: \$5,696,811      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:	25.3%	
	Non-revenue water as percent by cost of operating system:	122.8%	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:

{	Apparent Losses per service connection per day:	9.91	gallons/connection/day
	Real Losses per service connection per day:	72.19	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.91	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 557.75 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 2.77

\* 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: Reporting Worksheet

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+ Click to add a comment

Water Audit Report for: **PAW- Indiana District 410 (5320025)**  
Reporting Year: **2014**      1/2014 - 12/2014

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: **MILLION GALLONS (US) 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:	+ ?	9	786.209	MG/Yr
Water imported:	+ ?	n/a	0.000	MG/Yr
Water exported:	+ ?	9	1.978	MG/Yr

### Master Meter and Supply Error Adjustments

Pcnt:	Value:	MG/Yr
+ ?	9	-2.20%
+ ?		0.00%

**WATER SUPPLIED:** **801.917** MG/Yr

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

### AUTHORIZED CONSUMPTION

Billed metered:	+ ?	10	640.497	MG/Yr
Billed unmetered:	+ ?	n/a	0.000	MG/Yr
Unbilled metered:	+ ?	10	0.172	MG/Yr
Unbilled unmetered:	+ ?		10.024	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:** **650.693** MG/Yr

Click here: ?  
for help using option buttons below

Pcnt: 1.25% Value: MG/Yr

Use buttons to select percentage of water supplied OR value

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

**151.224** MG/Yr

#### Apparent Losses

Unauthorized consumption: + ? **2.005** MG/Yr

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

Customer metering inaccuracies:	+ ?	7	13.075	MG/Yr
Systematic data handling errors:	+ ?	7	9.607	MG/Yr

**Apparent Losses:** **24.687** MG/Yr

Pcnt: 0.25% Value: MG/Yr

2.00% 9.607 MG/Yr

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

Real Losses = Water Losses - Apparent Losses: ? **126.537** MG/Yr

**WATER LOSSES:** **151.224** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:** **161.420** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	+ ?	9	120.4	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	+ ?	9	8,347	
Service connection density:	?		69	conn./mile main

Are customer meters typically located at the curbside or property line?  No (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line: + ? 7 35.0 ft

Average operating pressure: + ? 8 98.0 psi

### COST DATA

Total annual cost of operating water system:	+ ?	9	\$2,243,484	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?	9	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ?	9	\$438.94	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: PAW- Indiana District 410 (5320025)  
 Reporting Year: 2014 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\*

System Attributes:

Apparent Losses:	<span style="border: 1px solid black; padding: 2px;">24.687</span>	MG/Yr
+	Real Losses:	<span style="border: 1px solid black; padding: 2px;">126.537</span> MG/Yr
=	<b>Water Losses:</b>	<span style="border: 1px solid black; padding: 2px;">151.224</span> MG/Yr
<span style="background-color: #e0e0ff; padding: 2px;">?</span> Unavoidable Annual Real Losses (UARL):	<span style="border: 1px solid black; padding: 2px;">82.92</span>	MG/Yr
Annual cost of Apparent Losses:	<span style="border: 1px solid black; padding: 2px;">\$252,154</span>	
Annual cost of Real Losses:	<span style="border: 1px solid black; padding: 2px;">\$1,292,445</span>	Valued at <b>Customer Retail Unit Cost</b>

Return to Reporting Worksheet to change this assumption

Performance Indicators:

Financial:	{	Non-revenue water as percent by volume of Water Supplied:	<span style="border: 1px solid black; padding: 2px;">20.1%</span>	
		Non-revenue water as percent by cost of operating system:	<span style="border: 1px solid black; padding: 2px;">73.5%</span>	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">8.10</span>	gallons/connection/day
		Real Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">41.53</span>	gallons/connection/day
		Real Losses per length of main per day*:	<span style="border: 1px solid black; padding: 2px;">N/A</span>	
		Real Losses per service connection per day per psi pressure:	<span style="border: 1px solid black; padding: 2px;">0.42</span>	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 126.54 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 1.53

\* 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: Reporting Worksheet

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American Water Works Association  
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[?](#) Click to access definition  
[+](#) Click to add a comment

Water Audit Report for: **PAW- Punxsutawney District 420 (6330010)**  
Reporting Year: **2014** 1/2014 - 12/2014

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: MILLION GALLONS (US) 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' ----->				Master Meter and Supply Error Adjustments	
				Pcnt:	Value:		
Volume from own sources:	<a href="#">+</a> <a href="#">?</a> 9		357.447	MG/Yr	<a href="#">+</a> <a href="#">?</a> 9	4.90%	<input type="radio"/> <input type="radio"/> MG/Yr
Water imported:	<a href="#">+</a> <a href="#">?</a> n/a		0.000	MG/Yr	<a href="#">+</a> <a href="#">?</a>		<input type="radio"/> <input type="radio"/> MG/Yr
Water exported:	<a href="#">+</a> <a href="#">?</a> n/a		0.000	MG/Yr	<a href="#">+</a> <a href="#">?</a>		<input type="radio"/> <input type="radio"/> MG/Yr

**WATER SUPPLIED:** **340.750** MG/Yr

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

### AUTHORIZED CONSUMPTION

Billed metered:	<a href="#">+</a> <a href="#">?</a> 10		216.176	MG/Yr
Billed unmetered:	<a href="#">+</a> <a href="#">?</a> n/a		0.000	MG/Yr
Unbilled metered:	<a href="#">+</a> <a href="#">?</a> 10		0.116	MG/Yr
Unbilled unmetered:	<a href="#">+</a> <a href="#">?</a>		4.259	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:** **220.551** MG/Yr

Click here: [?](#)  
for help using option buttons below

Pcnt: 1.25% Value:   MG/Yr

Use buttons to select percentage of water supplied OR value

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

**120.199** MG/Yr

#### Apparent Losses

Unauthorized consumption: [+](#) [?](#) **0.852** MG/Yr

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

Customer metering inaccuracies:	<a href="#">+</a> <a href="#">?</a> 7		4.414	MG/Yr
Systematic data handling errors:	<a href="#">+</a> <a href="#">?</a> 7		3.243	MG/Yr

**Apparent Losses:** **8.509** MG/Yr

Pcnt: 0.25% Value:   MG/Yr

2.00%   3.243 MG/Yr

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

Real Losses = Water Losses - Apparent Losses: **111.690** MG/Yr

**WATER LOSSES:** **120.199** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:** **124.574** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	<a href="#">+</a> <a href="#">?</a> 9		87.5	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	<a href="#">+</a> <a href="#">?</a> 9		4,212	
Service connection density:	<a href="#">?</a>		48	conn./mile main

Are customer meters typically located at the curbstops or property line?  No (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line: [+](#) [?](#) 7 30.0 ft

Average operating pressure: [+](#) [?](#) 8 94.0 psi

### COST DATA

Total annual cost of operating water system:	<a href="#">+</a> <a href="#">?</a> 9		\$1,082,546	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<a href="#">+</a> <a href="#">?</a> 9		\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<a href="#">+</a> <a href="#">?</a> 9		\$330.94	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: PAW- Punxsutawney District 420 (6330010)  
 Reporting Year: 2014 | 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\*

System Attributes:

	Apparent Losses:	8.509	MG/Yr
+	Real Losses:	111.690	MG/Yr
=	<b>Water Losses:</b>	<b>120.199</b>	<b>MG/Yr</b>

? Unavoidable Annual Real Losses (UARL): 44.07 MG/Yr

Annual cost of Apparent Losses: \$86,907

Annual cost of Real Losses: \$1,140,804 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: 36.6%  
 Non-revenue water as percent by cost of operating system: 117.5% Real Losses valued at Customer Retail Unit Cost

Operational Efficiency: { Apparent Losses per service connection per day: 5.53 gallons/connection/day  
 Real Losses per service connection per day: 72.65 gallons/connection/day  
 Real Losses per length of main per day\*: N/A  
 Real Losses per service connection per day per psi pressure: 0.77 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 111.69 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 2.53

\* 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: Reporting Worksheet

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Water Audit Report for: **PAW- Clarion District 430 (6160001)**  
Reporting Year: **2014**      1/2014 - 12/2014

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: **MILLION GALLONS (US) 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' ----->				Master Meter and Supply Error Adjustments	
Volume from own sources:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="509.936"/>	MG/Yr	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="-4.40%"/>	<input type="radio"/>	<input type="text" value=""/>
Water imported:	<input type="button" value="+"/> <input type="button" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr	<input type="button" value="+"/> <input type="button" value="n/a"/>	<input type="text" value=""/>	<input type="radio"/>	<input type="text" value=""/>
Water exported:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="28.228"/>	MG/Yr	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="0.00%"/>	<input type="radio"/>	<input type="text" value=""/>

**WATER SUPPLIED:**  MG/Yr

### AUTHORIZED CONSUMPTION

Billed metered:	<input type="button" value="+"/> <input type="button" value="10"/>	<input type="text" value="300.243"/>	MG/Yr
Billed unmetered:	<input type="button" value="+"/> <input type="button" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr
Unbilled metered:	<input type="button" value="+"/> <input type="button" value="10"/>	<input type="text" value="0.038"/>	MG/Yr
Unbilled unmetered:	<input type="button" value="+"/> <input type="button" value="5"/>	<input type="text" value="6.315"/>	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:**  MG/Yr

### Master Meter and Supply Error Adjustments

Pcnt:	<input type="text" value=""/>	Value:	<input type="text" value=""/>
	<input type="radio"/>		<input type="radio"/>
	<input type="radio"/>		<input type="radio"/>
	<input type="radio"/>		<input type="radio"/>

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

Click here:  for help using option buttons below

Pcnt:    Value:

Use buttons to select percentage of water supplied OR value

Pcnt:    Value:

MG/Yr

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

**198.582** MG/Yr

#### Apparent Losses

Unauthorized consumption:    MG/Yr

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

Customer metering inaccuracies:    MG/Yr  
Systematic data handling errors:    MG/Yr

**Apparent Losses:**  MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  MG/Yr

**WATER LOSSES:**  MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:**  MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:    miles  
Number of active AND inactive service connections:     
Service connection density:  conn./mile main

Are customer meters typically located at the curbside or property line?  (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line:    ft

Average operating pressure:    psi

### COST DATA

Total annual cost of operating water system:    \$/Year  
Customer retail unit cost (applied to Apparent Losses):    \$/1000 gallons (US)  
Variable production cost (applied to Real Losses):    \$/Million gallons  Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: **PAW- Clarion District 430 (6160001)**  
 Reporting Year: **2014**      **1/2014 - 12/2014**

**\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\***

**System Attributes:**

	Apparent Losses:	11.895	MG/Yr
	+ Real Losses:	186.687	MG/Yr
	= <b>Water Losses:</b>	<b>198.582</b>	MG/Yr

? Unavoidable Annual Real Losses (UARL): 51.41 MG/Yr

Annual cost of Apparent Losses: \$121,493

Annual cost of Real Losses: \$1,906,825 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:	<span style="border: 1px solid black; padding: 2px;">40.6%</span>	
		Non-revenue water as percent by cost of operating system:	<span style="border: 1px solid black; padding: 2px;">166.7%</span>	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">6.68</span>	gallons/connection/day
		Real Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">104.79</span>	gallons/connection/day
		Real Losses per length of main per day*:	<span style="border: 1px solid black; padding: 2px;">N/A</span>	
		Real Losses per service connection per day per psi pressure:	<span style="border: 1px solid black; padding: 2px;">1.22</span>	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 186.69 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 3.63

\* 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: Reporting Worksheet

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Water Audit Report for: **PAW- Kittanning District 440 (5030008)**  
Reporting Year: **2014**    **1/2014 - 12/2014**

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: MILLION GALLONS (US) 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' ----->				Master Meter and Supply Error Adjustments	
Volume from own sources:	<input type="button" value="+"/> <input type="button" value="?"/> 9	136.283	MG/Yr	<input type="button" value="+"/> <input type="button" value="?"/> 9	-2.50%	<input type="button" value="•"/> <input type="button" value="○"/>	MG/Yr
Water imported:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	0.000	MG/Yr	<input type="button" value="+"/> <input type="button" value="?"/>		<input type="button" value="•"/> <input type="button" value="○"/>	MG/Yr
Water exported:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	0.000	MG/Yr	<input type="button" value="+"/> <input type="button" value="?"/>		<input type="button" value="•"/> <input type="button" value="○"/>	MG/Yr

**WATER SUPPLIED:** **139.777** MG/Yr

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

### AUTHORIZED CONSUMPTION

Billed metered:	<input type="button" value="+"/> <input type="button" value="?"/> 10	112.057	MG/Yr
Billed unmetered:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+"/> <input type="button" value="?"/> 10	0.020	MG/Yr
Unbilled unmetered:	<input type="button" value="+"/> <input type="button" value="?"/>	1.747	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:** **113.824** MG/Yr

Click here:   
for help using option buttons below

Pcnt: **1.25%**    Value:   
  MG/Yr

Use buttons to select percentage of water supplied  
OR  
value

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

**25.953** MG/Yr

#### Apparent Losses

Unauthorized consumption:   **0.349** MG/Yr

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

Customer metering inaccuracies:   7 **2.287** MG/Yr  
Systematic data handling errors:   7 **1.681** MG/Yr

**Apparent Losses:** **4.318** MG/Yr

Pcnt: **0.25%**    Value:   
  MG/Yr

**2.00%**   **1.681** MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  **21.636** MG/Yr

**WATER LOSSES:** **25.953** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:**  **27.720** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:   9 **24.1** miles  
Number of active AND inactive service connections:   9 **2,482**  
Service connection density:  **103** conn./mile main

Are customer meters typically located at the curbside or property line?  (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line:   7 **30.0** ft

Average operating pressure:   8 **75.0** psi

### COST DATA

Total annual cost of operating water system:   9 **\$599,320** \$/Year  
Customer retail unit cost (applied to Apparent Losses):   9 **\$10.21** \$/1000 gallons (US)  
Variable production cost (applied to Real Losses):   9 **\$754.10** \$/Million gallons     Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: PAW- Kittanning District 440 (5030008)  
 Reporting Year: 2014 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\*

System Attributes:

Apparent Losses:	<span style="border: 1px solid black; padding: 2px;">4.318</span>	MG/Yr
+	Real Losses:	<span style="border: 1px solid black; padding: 2px;">21.636</span> MG/Yr
=	<b>Water Losses:</b>	<span style="border: 1px solid black; padding: 2px;">25.953</span> MG/Yr
<span style="border: 1px solid black; padding: 2px; color: blue; font-weight: bold;">?</span> Unavoidable Annual Real Losses (UARL): <span style="border: 1px solid black; padding: 2px;">16.66</span> MG/Yr		
Annual cost of Apparent Losses:		<span style="border: 1px solid black; padding: 2px;">\$44,100</span>
Annual cost of Real Losses:		<span style="border: 1px solid black; padding: 2px;">\$220,986</span> Valued at <b>Customer Retail Unit Cost</b>

Return to Reporting Worksheet to change this assumption

Performance Indicators:

Financial:	{	Non-revenue water as percent by volume of Water Supplied:	<span style="border: 1px solid black; padding: 2px;">19.8%</span>	
		Non-revenue water as percent by cost of operating system:	<span style="border: 1px solid black; padding: 2px;">47.2%</span>	Real Losses valued at Customer Retail Unit Cost
Operational Efficiency:	{	Apparent Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">4.77</span>	gallons/connection/day
		Real Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">23.88</span>	gallons/connection/day
		Real Losses per length of main per day*:	<span style="border: 1px solid black; padding: 2px;">N/A</span>	
		Real Losses per service connection per day per psi pressure:	<span style="border: 1px solid black; padding: 2px;">0.32</span>	gallons/connection/day/psi
		From Above, Real Losses = Current Annual Real Losses (CARL):	<span style="border: 1px solid black; padding: 2px;">21.64</span>	million gallons/year
		<span style="border: 1px solid black; padding: 2px; color: blue; font-weight: bold;">?</span> Infrastructure Leakage Index (ILI) [CARL/UARL]:	<span style="border: 1px solid black; padding: 2px;">1.30</span>	

\* 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: Reporting Worksheet

WAS v5.0

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Water Audit Report for: **PAW- Warren District 450 (6620020)**  
 Reporting Year: **2014** / 1/2014 - 12/2014

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: MILLION GALLONS (US) 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' ----->

	Grading	Value	Unit
Volume from own sources:	9	649.550	MG/Yr
Water imported:	n/a	0.000	MG/Yr
Water exported:	n/a	0.000	MG/Yr

### Master Meter and Supply Error Adjustments

Pcmt	Value	Unit
-5.80%		MG/Yr
		MG/Yr
		MG/Yr

**WATER SUPPLIED:** **689.544** MG/Yr

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

### AUTHORIZED CONSUMPTION

Billed metered:	10	423.296	MG/Yr
Billed unmetered:	n/a	0.000	MG/Yr
Unbilled metered:	10	0.000	MG/Yr
Unbilled unmetered:		8.619	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:** **431.915** MG/Yr

Click here: ?  
 for help using option buttons below

Pcmt: 1.25% Value: MG/Yr

Use buttons to select percentage of water supplied OR value

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

**257.628** MG/Yr

#### Apparent Losses

Unauthorized consumption: **1.724** MG/Yr

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

Customer metering inaccuracies: **8.639** MG/Yr  
 Systematic data handling errors: **1.058** MG/Yr

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

**Apparent Losses:** **11.421** MG/Yr

Pcmt: 0.25% Value: MG/Yr

2.00% Value: MG/Yr  
 0.25% Value: MG/Yr

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

Real Losses = Water Losses - Apparent Losses: **246.207** MG/Yr

**WATER LOSSES:** **257.628** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:** **266.248** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains: **91.7** miles  
 Number of active AND inactive service connections: **6,303**  
 Service connection density: **69** conn./mile main

Are customer meters typically located at the curbside or property line? **No**  
 Average length of customer service line: **30.0** ft (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average operating pressure: **85.0** psi

### COST DATA

Total annual cost of operating water system: **\$1,628,306** /Year  
 Customer retail unit cost (applied to Apparent Losses): **\$10.21** /\$1000 gallons (US)  
 Variable production cost (applied to Real Losses): **\$128.54** /\$Million gallons  Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

\*\*\* YOUR SCORE IS: 84 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

WAS v5.0

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Water Audit Report for: **PAW- Warren District 450 (6620020)**

Reporting Year: **2014**      **1/2014 - 12/2014**

**\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 84 out of 100 \*\*\***

**System Attributes:**

	Apparent Losses:	11.421	MG/Yr
+	Real Losses:	246.207	MG/Yr
=	<b>Water Losses:</b>	<b>257.628</b>	<b>MG/Yr</b>

? Unavoidable Annual Real Losses (UARL): 53.06 MG/Yr

Annual cost of Apparent Losses: \$116,652

Annual cost of Real Losses: \$2,514,763      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:	38.6%	
		Non-revenue water as percent by cost of operating system:	167.0%	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	4.96	gallons/connection/day
		Real Losses per service connection per day:	107.02	gallons/connection/day
		Real Losses per length of main per day*:	N/A	
		Real Losses per service connection per day per psi pressure:	1.26	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 246.21 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 4.64

\* 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: Reporting Worksheet

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American Water Works Association  
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[?](#) Click to access definition  
[+](#) Click to add a comment

Water Audit Report for: **PAW- Kane District 460 (6420019)**  
Reporting Year: **2014** 1/2014 - 12/2014

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: MILLION GALLONS (US) 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: <input type="button" value="+"/> <input type="button" value="?"/> <input type="text" value="9"/> 132.700 MG/Yr Water imported: <input type="button" value="+"/> <input type="button" value="?"/> <input type="text" value="n/a"/> 0.000 MG/Yr Water exported: <input type="button" value="+"/> <input type="button" value="?"/> <input type="text" value="n/a"/> 0.000 MG/Yr	Master Meter and Supply Error Adjustments Pcnt: <input type="text" value="-4.90%"/> Value: <input type="text" value=""/> MG/Yr <input type="button" value="+"/> <input type="button" value="?"/> <input type="text" value=""/> MG/Yr <input type="button" value="+"/> <input type="button" value="?"/> <input type="text" value=""/> MG/Yr <input type="button" value="+"/> <input type="button" value="?"/> <input type="text" value=""/> MG/Yr
---	--

**WATER SUPPLIED:**  **139.537** MG/Yr

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

### AUTHORIZED CONSUMPTION

Billed metered:    110.583 MG/Yr  
 Billed unmetered:    0.000 MG/Yr  
 Unbilled metered:    3.203 MG/Yr  
 Unbilled unmetered:    1.744 MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:**  **115.530** MG/Yr

Click here:  for help using option buttons below  
 Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

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

**24.007** MG/Yr

#### Apparent Losses

Unauthorized consumption:    **0.349** MG/Yr

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

Customer metering inaccuracies:    2.322 MG/Yr  
 Systematic data handling errors:    0.276 MG/Yr

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

**Apparent Losses:**  **2.947** MG/Yr

Pcnt:  Value:  MG/Yr

MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  **21.060** MG/Yr

**WATER LOSSES:**  **24.007** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:**  **28.954** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:    46.5 miles  
 Number of active AND inactive service connections:    2,723  
 Service connection density:    59 conn./mile main

Are customer meters typically located at the curbside or property line?  (length of service line, beyond the property boundary, that is the responsibility of the utility)  
 Average length of customer service line:    34.0 ft

Average operating pressure:    88.0 psi

### COST DATA

Total annual cost of operating water system:    \$623,257 \$/Year  
 Customer retail unit cost (applied to Apparent Losses):    \$10.21 \$/1000 gallons (US)  
 Variable production cost (applied to Real Losses):    \$422.62 \$/Million gallons  Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 85 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

WAS v5.0

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Water Audit Report for: **PAW- Kane District 460 (6420019)**

Reporting Year: **2014**      **1/2014 - 12/2014**

**\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 85 out of 100 \*\*\***

**System Attributes:**

	Apparent Losses:	<b>2.947</b>	MG/Yr
+	Real Losses:	<b>21.060</b>	MG/Yr
=	<b>Water Losses:</b>	<b>24.007</b>	MG/Yr

? Unavoidable Annual Real Losses (UARL): **25.42** MG/Yr

Annual cost of Apparent Losses: **\$30,105**

Annual cost of Real Losses: **\$215,103**

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:	<b>20.8%</b>	
		Non-revenue water as percent by cost of operating system:	<b>47.5%</b>	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	<b>2.97</b>	gallons/connection/day
		Real Losses per service connection per day:	<b>21.19</b>	gallons/connection/day
		Real Losses per length of main per day*:	<b>N/A</b>	
		Real Losses per service connection per day per psi pressure:	<b>0.24</b>	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): **21.06** million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: **0.83**

\* 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: Reporting Worksheet

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American Water Works Association  
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? Click to access definition  
+ Click to add a comment

Water Audit Report for: **PAW- Norriston District 510 (1460046)**  
Reporting Year: **2014**      1/2014 - 12/2014

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: MILLION GALLONS (US) 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:	+ ?	9	3,399.375	MG/Yr
Water imported:	+ ?	9	18.532	MG/Yr
Water exported:	+ ?	n/a		MG/Yr

### Master Meter and Supply Error Adjustments

Pcnt:	Value:	MG/Yr
+ ?	9	-2.30%
+ ?		
+ ?		

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

**WATER SUPPLIED:**      **3,497.933** MG/Yr

### AUTHORIZED CONSUMPTION

Billed metered:	+ ?	10	2,456.080	MG/Yr
Billed unmetered:	+ ?	n/a	0.000	MG/Yr
Unbilled metered:	+ ?	10	0.104	MG/Yr
Unbilled unmetered:	+ ?		43.724	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:**      **2,499.908** MG/Yr

Click here: ?  
for help using option buttons below

Pcnt:	Value:	MG/Yr
1.25%		

Use buttons to select percentage of water supplied OR value

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

**998.025** MG/Yr

#### Apparent Losses

Unauthorized consumption: + ?      **8.745** MG/Yr

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

Customer metering inaccuracies:	+ ?	7	50.126	MG/Yr
Systematic data handling errors:	+ ?	7	36.841	MG/Yr

**Apparent Losses:**      **95.712** MG/Yr

Pcnt:	Value:	MG/Yr
0.25%		

Pcnt:	Value:	MG/Yr
2.00%		
37.25%		36.841

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

**Real Losses = Water Losses - Apparent Losses:**      **902.313** MG/Yr

**WATER LOSSES:**      **998.025** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:**      **1,041.853** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	+ ?	9	390.0	miles
Number of active AND inactive service connections:	+ ?	9	33,713	
Service connection density:	?		86	conn./mile main

Are customer meters typically located at the curbside or property line?      No  
Average length of customer service line: + ?      7      40.0 ft      (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average operating pressure: + ?      8      93.0 psi

### COST DATA

Total annual cost of operating water system:	+ ?	9	\$9,670,501	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?	9	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ?	9	\$569.77	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: PAW- Norriston District 510 (1460046)  
 Reporting Year: 2014 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\*

System Attributes:

Apparent Losses:	<span style="border: 1px solid black; padding: 2px;">95.712</span>	MG/Yr
+	Real Losses:	<span style="border: 1px solid black; padding: 2px;">902.313</span> MG/Yr
=	<b>Water Losses:</b>	<span style="border: 1px solid black; padding: 2px;">998.025</span> MG/Yr

? Unavoidable Annual Real Losses (UARL): 308.30 MG/Yr

Annual cost of Apparent Losses: \$977,605

Annual cost of Real Losses: \$9,216,223 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: 29.8%  
 Non-revenue water as percent by cost of operating system: 110.0% Real Losses valued at Customer Retail Unit Cost

Operational Efficiency: { Apparent Losses per service connection per day: 7.78 gallons/connection/day  
 Real Losses per service connection per day: 73.33 gallons/connection/day  
 Real Losses per length of main per day\*: N/A  
 Real Losses per service connection per day per psi pressure: 0.79 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 902.31 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 2.93

\* 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: Reporting Worksheet

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Water Audit Report for: **PAW- Yardley District 520 (1090074)**  
Reporting Year: **2014**      1/2014 - 12/2014

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: MILLION GALLONS (US) 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:	<input type="button" value="+"/> <input type="button" value="9"/>	1,102.728	MG/Yr
Water imported:	<input type="button" value="+"/> <input type="button" value="n/a"/>	0.000	MG/Yr
Water exported:	<input type="button" value="+"/> <input type="button" value="9"/>	93.785	MG/Yr

### Master Meter and Supply Error Adjustments

<input type="button" value="+"/> <input type="button" value="9"/>	0.20%	<input type="radio"/>	<input type="radio"/>		MG/Yr
<input type="button" value="+"/> <input type="button" value="9"/>		<input type="radio"/>	<input type="radio"/>		MG/Yr
<input type="button" value="+"/> <input type="button" value="9"/>		<input type="radio"/>	<input type="radio"/>		MG/Yr

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

**WATER SUPPLIED: 1,006.742** MG/Yr

### AUTHORIZED CONSUMPTION

Billed metered:	<input type="button" value="+"/> <input type="button" value="10"/>	800.179	MG/Yr
Billed unmetered:	<input type="button" value="+"/> <input type="button" value="n/a"/>	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+"/> <input type="button" value="9"/>	0.249	MG/Yr
Unbilled unmetered:	<input type="button" value="+"/> <input type="button" value="9"/>	12.584	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION: 813.012** MG/Yr

Click here:  for help using option buttons below

Pcnt:	<input type="radio"/>	Value:	<input type="text"/>	MG/Yr
1.25%	<input checked="" type="radio"/>			

Use buttons to select percentage of water supplied OR value

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

**193.730** MG/Yr

#### Apparent Losses

Unauthorized consumption:   **2.517** MG/Yr

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

Customer metering inaccuracies:	<input type="button" value="+"/> <input type="button" value="7"/>	16.335	MG/Yr
Systematic data handling errors:	<input type="button" value="+"/> <input type="button" value="7"/>	12.003	MG/Yr

**Apparent Losses: 30.855** MG/Yr

Pcnt:	<input type="radio"/>	Value:	<input type="text"/>	MG/Yr
0.25%	<input checked="" type="radio"/>			

Pcnt:	<input type="radio"/>	Value:	<input type="text"/>	MG/Yr
2.00%	<input checked="" type="radio"/>			
	<input type="radio"/>	12.003		MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  **162.875** MG/Yr

**WATER LOSSES: 193.730** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER: 206.563** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	<input type="button" value="+"/> <input type="button" value="9"/>	187.3	miles
Number of active AND inactive service connections:	<input type="button" value="+"/> <input type="button" value="9"/>	12,639	
Service connection density:	<input type="button" value="9"/>	67	conn./mile main

Are customer meters typically located at the curbside or property line?  (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line:   **50.0** ft

Average operating pressure:   **62.0** psi

### COST DATA

Total annual cost of operating water system:	<input type="button" value="+"/> <input type="button" value="9"/>	\$3,676,705	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+"/> <input type="button" value="9"/>	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+"/> <input type="button" value="9"/>	\$440.00	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: **PAW- Yardley District 520 (1090074)**

Reporting Year: **2014** | **1/2014 - 12/2014**

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\*

### System Attributes:

Apparent Losses:	30.855	MG/Yr
+	Real Losses:	162.875
=	<b>Water Losses:</b>	<b>193.730</b>
		MG/Yr

? Unavoidable Annual Real Losses (UARL): 86.14 MG/Yr

Annual cost of Apparent Losses: \$315,151

Annual cost of Real Losses: \$1,663,604

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: 20.5%

Non-revenue water as percent by cost of operating system: 57.4%

Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:



Apparent Losses per service connection per day: 6.69 gallons/connection/day

Real Losses per service connection per day: 35.31 gallons/connection/day

Real Losses per length of main per day\*: N/A

Real Losses per service connection per day per psi pressure: 0.57 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 162.87 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 1.89

\* 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: Reporting Worksheet

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Click to access definition  
 Click to add a comment

Water Audit Report for: **PAW- Abington District 530 (2359008)**  
 Reporting Year: **2014**    1/2014 - 12/2014

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: MILLION GALLONS (US) 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:	<input type="button" value="+"/> <input type="button" value="?"/> 9	462.321	MG/Yr
Water imported:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	0.000	MG/Yr
Water exported:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	0.000	MG/Yr

#### Master Meter and Supply Error Adjustments

Pcnt:	Value:	MG/Yr
<input type="button" value="+"/> <input type="button" value="?"/> 9	-1.22%	<input type="text"/>
<input type="button" value="+"/> <input type="button" value="?"/> 9		<input type="text"/>
<input type="button" value="+"/> <input type="button" value="?"/> 9		<input type="text"/>

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

**WATER SUPPLIED:** **468.040** MG/Yr

### AUTHORIZED CONSUMPTION

Billed metered:	<input type="button" value="+"/> <input type="button" value="?"/> 10	373.520	MG/Yr
Billed unmetered:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+"/> <input type="button" value="?"/> 10	0.028	MG/Yr
Unbilled unmetered:	<input type="button" value="+"/> <input type="button" value="?"/> 5	5.851	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:** **379.399** MG/Yr

Click here:  for help using option buttons below

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

Pcnt:  Value:  MG/Yr

MG/Yr

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

**88.642** MG/Yr

#### Apparent Losses

Unauthorized consumption:   5 **1.170** MG/Yr

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

Customer metering inaccuracies:	<input type="button" value="+"/> <input type="button" value="?"/> 7	7.623	MG/Yr
Systematic data handling errors:	<input type="button" value="+"/> <input type="button" value="?"/> 7	5.603	MG/Yr

**Apparent Losses:** **14.396** MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  **74.246** MG/Yr

**WATER LOSSES:** **88.642** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:**  **94.520** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	<input type="button" value="+"/> <input type="button" value="?"/> 9	109.5	miles
Number of active AND inactive service connections:	<input type="button" value="+"/> <input type="button" value="?"/> 9	6,044	
Service connection density:	<input type="button" value="?"/> 55	55	conn./mile main

Are customer meters typically located at the curbside or property line?  (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line:   7  ft

Average operating pressure:   8  psi

### COST DATA

Total annual cost of operating water system:	<input type="button" value="+"/> <input type="button" value="?"/> 9	\$1,765,644	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+"/> <input type="button" value="?"/> 9	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+"/> <input type="button" value="?"/> 9	\$180.31	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: **PAW- Abington District 530 (2359008)**  
 Reporting Year: **2014**      **1/2014 - 12/2014**

**\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\***

**System Attributes:**

	Apparent Losses:	14.396	MG/Yr
	+	Real Losses:	74.246 MG/Yr
	=	<b>Water Losses:</b>	<b>88.642 MG/Yr</b>

? Unavoidable Annual Real Losses (UARL): 52.79 MG/Yr

Annual cost of Apparent Losses: \$147,044

Annual cost of Real Losses: \$758,345 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:	<span style="border: 1px solid black; padding: 2px;">20.2%</span>	
		Non-revenue water as percent by cost of operating system:	<span style="border: 1px solid black; padding: 2px;">54.7%</span>	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">6.53</span>	gallons/connection/day
		Real Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">33.66</span>	gallons/connection/day
		Real Losses per length of main per day*:	<span style="border: 1px solid black; padding: 2px;">N/A</span>	
		Real Losses per service connection per day per psi pressure:	<span style="border: 1px solid black; padding: 2px;">0.45</span>	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 74.25 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 1.41

\* 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: Reporting Worksheet

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American Water Works Association  
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? Click to access definition  
+ Click to add a comment

Water Audit Report for: **PAW- Susquehanna District 540 (2580224;2580023;2580026)**  
Reporting Year: **2014** 1/2014 - 12/2014

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: MILLION GALLONS (US) 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' ----->				Master Meter and Supply Error Adjustments	
		Pcnt:	Value:			Pcnt:	Value:
Volume from own sources:	+ ? 9		320.560	MG/Yr	+ ? 9	3.05%	
Water imported:	+ ? n/a		0.000	MG/Yr	+ ?		
Water exported:	+ ? n/a		0.000	MG/Yr	+ ?		

**WATER SUPPLIED:** **311.072** MG/Yr

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

### AUTHORIZED CONSUMPTION

Billed metered:	+ ? 10	145.800	MG/Yr
Billed unmetered:	+ ? n/a	0.000	MG/Yr
Unbilled metered:	+ ? 10	0.037	MG/Yr
Unbilled unmetered:	+ ?	<b>3.888</b>	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:** **149.725** MG/Yr

Click here: ? for help using option buttons below

Pcnt: 1.25% Value: MG/Yr

Use buttons to select percentage of water supplied OR value

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

**161.347** MG/Yr

#### Apparent Losses

Unauthorized consumption: + ? **0.778** MG/Yr

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

Customer metering inaccuracies:	+ ? 7	2.976	MG/Yr
Systematic data handling errors:	+ ? 7	2.187	MG/Yr

**Apparent Losses:** **5.941** MG/Yr

Pcnt: 0.25% Value: MG/Yr

2.00% Value: 2.187 MG/Yr

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

Real Losses = Water Losses - Apparent Losses: **155.406** MG/Yr

**WATER LOSSES:** **161.347** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:** **165.272** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	+ ? 9	61.2	miles
Number of active AND inactive service connections:	+ ? 9	3,123	
Service connection density:	? 7	<b>51</b>	conn./mile main

Are customer meters typically located at the curbside or property line? No (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line: + ? 7 50.0 ft

Average operating pressure: + ? 8 78.3 psi

### COST DATA

Total annual cost of operating water system:	+ ? 9	\$770,768	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ? 9	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ? 9	\$581.26	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

American Water Works Association.  
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Water Audit Report for: PAW- Susquehanna District 540 (2580224;2580023;2580026)  
 Reporting Year: 2014 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\*

System Attributes:

	Apparent Losses:	5.941	MG/Yr
+	Real Losses:	155.406	MG/Yr
=	<b>Water Losses:</b>	<b>161.347</b>	MG/Yr

? Unavoidable Annual Real Losses (UARL): 29.18 MG/Yr

Annual cost of Apparent Losses: \$60,681

Annual cost of Real Losses: \$1,587,316 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:	53.1%	
		Non-revenue water as percent by cost of operating system:	219.0%	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	5.21	gallons/connection/day
		Real Losses per service connection per day:	136.33	gallons/connection/day
		Real Losses per length of main per day*:	N/A	
		Real Losses per service connection per day per psi pressure:	1.74	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 155.41 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 5.32

\* 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: Reporting Worksheet

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American Water Works Association  
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? Click to access definition  
+ Click to add a comment

Water Audit Report for: **PAW- Bangor District 550 (3480038)**  
Reporting Year: **2014** 1/2014 - 12/2014

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: MILLION GALLONS (US) 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' ----->		Master Meter and Supply Error Adjustments	
	Grading	Value	Unit	Pcnt:	Value:
Volume from own sources:	+ ? 9	249.583	MG/Yr	+ ? 9	-0.10%
Water imported:	+ ? n/a	0.000	MG/Yr	+ ?	
Water exported:	+ ? n/a	0.000	MG/Yr	+ ?	

**WATER SUPPLIED:** **249.833** MG/Yr

### AUTHORIZED CONSUMPTION

Billed metered:	+ ? 10	186.245	MG/Yr	Pcnt:	Value:
Billed unmetered:	+ ? n/a	0.000	MG/Yr	1.25%	
Unbilled metered:	+ ? 10	0.136	MG/Yr		
Unbilled unmetered:	+ ?	3.123	MG/Yr		

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:** **189.504** MG/Yr

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

**60.329** MG/Yr

#### Apparent Losses

Unauthorized consumption: + ? **0.625** MG/Yr

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

Customer metering inaccuracies: + ? 7 **3.804** MG/Yr

Systematic data handling errors: + ? **0.466** MG/Yr

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

**Apparent Losses:** **4.894** MG/Yr

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

Real Losses = Water Losses - Apparent Losses: ? **55.435** MG/Yr

**WATER LOSSES:** **60.329** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:** **63.588** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains: + ? 9 56.5 miles  
Number of active AND inactive service connections: + ? 9 3,946  
Service connection density: ? 70 conn./mile main

Are customer meters typically located at the curbside or property line? No (length of service line beyond the property boundary, that is the responsibility of the utility)  
Average length of customer service line: + ? 7 50.0 ft

Average operating pressure: + ? 8 84.0 psi

### COST DATA

Total annual cost of operating water system: + ? 9 \$1,095,112 \$/Year  
Customer retail unit cost (applied to Apparent Losses): + ? 9 \$10.21 \$/1000 gallons (US)  
Variable production cost (applied to Real Losses): + ? 9 \$377.85 \$/Million gallons  Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 85 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

WAS v5.0

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Water Audit Report for: PAW- Bangor District 550 (3480038)  
 Reporting Year: 2014 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 85 out of 100 \*\*\*

### System Attributes:

Apparent Losses:	<span style="border: 1px solid black; padding: 2px;">4.894</span>	MG/Yr
+	Real Losses:	<span style="border: 1px solid black; padding: 2px;">55.435</span> MG/Yr
=	<b>Water Losses:</b>	<span style="border: 1px solid black; padding: 2px;">60.329</span> MG/Yr

? Unavoidable Annual Real Losses (UARL): 36.11 MG/Yr

Annual cost of Apparent Losses: \$49,986

Annual cost of Real Losses: \$566,213 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:	<span style="border: 1px solid black; padding: 2px;">25.5%</span>	
		Non-revenue water as percent by cost of operating system:	<span style="border: 1px solid black; padding: 2px;">59.3%</span>	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">3.40</span>	gallons/connection/day
		Real Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">38.49</span>	gallons/connection/day
		Real Losses per length of main per day*:	<span style="border: 1px solid black; padding: 2px;">N/A</span>	
		Real Losses per service connection per day per psi pressure:	<span style="border: 1px solid black; padding: 2px;">0.46</span>	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 55.44 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 1.54

\* 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: Reporting Worksheet

WAS v5.0  
American Water Works Association  
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? Click to access definition  
+ Click to add a comment

Water Audit Report for: **PAW- Blue Mnt. / Nazareth District 560 (2450133)**  
Reporting Year: **2014**      1/2014 - 12/2014

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: **MILLION GALLONS (US) 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:	+ ?	9	706.418	MG/Yr
Water imported:	+ ?	n/a	0.000	MG/Yr
Water exported:	+ ?	n/a	0.000	MG/Yr

### Master Meter and Supply Error Adjustments

Pcnt:	Value:	MG/Yr
-0.94%	<input type="radio"/>	
	<input type="radio"/>	
	<input type="radio"/>	
	<input type="radio"/>	

**WATER SUPPLIED:** **713.121** MG/Yr

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

### AUTHORIZED CONSUMPTION

Billed metered:	+ ?	10	600.605	MG/Yr
Billed unmetered:	+ ?	n/a	0.000	MG/Yr
Unbilled metered:	+ ?	10	1.507	MG/Yr
Unbilled unmetered:	+ ?		8.914	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:** **611.026** MG/Yr

Click here: ?  
for help using option buttons below

Pcnt:	Value:	MG/Yr
1.25%	<input checked="" type="radio"/>	
	<input type="radio"/>	

Use buttons to select percentage of water supplied OR value

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

**102.095** MG/Yr

#### Apparent Losses

Unauthorized consumption: + ? **1.783** MG/Yr

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

Customer metering inaccuracies:	+ ?	7	12.288	MG/Yr
Systematic data handling errors:	+ ?	7	9.009	MG/Yr

**Apparent Losses:** **23.080** MG/Yr

Pcnt:	Value:	MG/Yr
0.25%	<input checked="" type="radio"/>	
	<input type="radio"/>	

2.00%	<input type="radio"/>	
9.009	<input checked="" type="radio"/>	MG/Yr

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

Real Losses = Water Losses - Apparent Losses: **79.015** MG/Yr

**WATER LOSSES:** **102.095** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:** **112.516** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	+ ?	9	157.1	miles
Number of active AND inactive service connections:	+ ?	9	10,174	
Service connection density:	?		65	conn./mile main

Are customer meters typically located at the curbside or property line? **No** (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line: + ? 7 25.0 ft

Average operating pressure: + ? 8 95.0 psi

### COST DATA

Total annual cost of operating water system:	+ ?	9	\$2,884,095	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?	9	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ?	9	\$287.23	\$/Million gallons

Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

American Water Works Association.  
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Water Audit Report for: PAW- Blue Mt. / Nazareth District 560 (2450133)  
 Reporting Year: 2014 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\*

### System Attributes:

	Apparent Losses:	23.080	MG/Yr
	+		
	Real Losses:	79.015	MG/Yr
	=		
	<b>Water Losses:</b>	<b>102.095</b>	<b>MG/Yr</b>

? Unavoidable Annual Real Losses (UARL): 94.91 MG/Yr

Annual cost of Apparent Losses: \$235,738

Annual cost of Real Losses: \$807,064 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: 15.8%  
 Non-revenue water as percent by cost of operating system: 39.8% Real Losses valued at Customer Retail Unit Cost

Operational Efficiency: { Apparent Losses per service connection per day: 6.22 gallons/connection/day  
 Real Losses per service connection per day: 21.28 gallons/connection/day  
 Real Losses per length of main per day\*: N/A  
 Real Losses per service connection per day per psi pressure: 0.22 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 79.02 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 0.83

\* 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: Reporting Worksheet

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Water Audit Report for: **PAW- Pocono District 570 (2450063)**  
Reporting Year: **2014**      **1/2014 - 12/2014**

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: **MILLION GALLONS (US) 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:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="665.729"/>	MG/Yr
Water imported:	<input type="button" value="+"/> <input type="button" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr
Water exported:	<input type="button" value="+"/> <input type="button" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr

### Master Meter and Supply Error Adjustments

Pcnt:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="-1.10%"/>	<input type="radio"/>	<input type="radio"/>	<input type="text"/>	MG/Yr
	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="text"/>	MG/Yr
	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="text"/>	MG/Yr

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

**WATER SUPPLIED:**      **673.133** MG/Yr

### AUTHORIZED CONSUMPTION

Billed metered:	<input type="button" value="+"/> <input type="button" value="10"/>	<input type="text" value="370.071"/>	MG/Yr
Billed unmetered:	<input type="button" value="+"/> <input type="button" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr
Unbilled metered:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="0.132"/>	MG/Yr
Unbilled unmetered:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="8.414"/>	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:**      **378.617** MG/Yr

Click here:  for help using option buttons below

Pcnt:	<input type="button" value="+"/> <input type="button" value="1.25%"/>	<input type="radio"/>	<input type="radio"/>	<input type="text"/>	MG/Yr
-------	---	-----------------------	-----------------------	----------------------	-------

Use buttons to select percentage of water supplied OR value

Pcnt:	<input type="button" value="+"/> <input type="button" value="0.25%"/>	<input type="radio"/>	<input type="radio"/>	<input type="text"/>	MG/Yr
-------	---	-----------------------	-----------------------	----------------------	-------

	<input type="button" value="+"/> <input type="button" value="2.00%"/>	<input type="radio"/>	<input type="radio"/>	<input type="text"/>	MG/Yr
	<input type="button" value="+"/> <input type="button" value="5.551"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="text"/>	MG/Yr

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

**294.516** MG/Yr

#### Apparent Losses

Unauthorized consumption:        **1.683** MG/Yr

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

Customer metering inaccuracies:	<input type="button" value="+"/> <input type="button" value="7"/>	<input type="text" value="7.555"/>	MG/Yr
Systematic data handling errors:	<input type="button" value="+"/> <input type="button" value="7"/>	<input type="text" value="5.551"/>	MG/Yr

**Apparent Losses:**      **14.789** MG/Yr

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

Real Losses = Water Losses - Apparent Losses:      **279.727** MG/Yr

**WATER LOSSES:**      **294.516** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:**      **303.062** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="144.1"/>	miles
Number of active AND inactive service connections:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="9,768"/>	
Service connection density:	<input type="button" value="9"/>	<input type="text" value="68"/>	conn./mile main

Are customer meters typically located at the curbside or property line?      No (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line:         ft

Average operating pressure:         psi

### COST DATA

Total annual cost of operating water system:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="\$2,310,208"/>	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="\$10.21"/>	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="\$403.36"/>	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

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Water Audit Report for: **PAW- Pocono District 570 (2450063)**

Reporting Year: **2014** | **1/2014 - 12/2014**

**\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\***

### System Attributes:

	Apparent Losses:	14.789	MG/Yr
	+ Real Losses:	279.727	MG/Yr
	= <b>Water Losses:</b>	<b>294.516</b>	MG/Yr

? Unavoidable Annual Real Losses (UARL): 80.45 MG/Yr

Annual cost of Apparent Losses: \$151,055

Annual cost of Real Losses: \$2,857,134 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: 45.0%  
 Non-revenue water as percent by cost of operating system: 134.0% Real Losses valued at Customer Retail Unit Cost

Operational Efficiency: { Apparent Losses per service connection per day: 4.15 gallons/connection/day  
 Real Losses per service connection per day: 78.46 gallons/connection/day  
 Real Losses per length of main per day\*: N/A  
 Real Losses per service connection per day per psi pressure: 1.05 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 279.73 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 3.48

\* 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: Reporting Worksheet

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+ Click to add a comment

Water Audit Report for: **PAW- Mechanicsburg District 610 (7210029)**  
Reporting Year: **2014**      1/2014 - 12/2014

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: **MILLION GALLONS (US) 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:	+ ? 9	4,052.626	MG/Yr
Water imported:	+ ? n/a	0.000	MG/Yr
Water exported:	+ ? n/a	0.000	MG/Yr

### Master Meter and Supply Error Adjustments

Pcnt:	Value:	MG/Yr
+ ? 9	-0.85%	
+ ?		
+ ?		

**WATER SUPPLIED:**      **4,087.369** MG/Yr

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

### AUTHORIZED CONSUMPTION

Billed metered:	+ ? 10	2,806.228	MG/Yr
Billed unmetered:	+ ? n/a	0.000	MG/Yr
Unbilled metered:	+ ? 10	0.214	MG/Yr
Unbilled unmetered:	+ ?	51.092	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:**      **2,857.534** MG/Yr

Click here: ?  
for help using option buttons below

Pcnt:	Value:	MG/Yr
1.25%		

Use buttons to select percentage of water supplied  
OR  
value

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

**1,229.835** MG/Yr

#### Apparent Losses

Unauthorized consumption: + ?      **10.218** MG/Yr

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

Customer metering inaccuracies:	+ ? 7	57.274	MG/Yr
Systematic data handling errors:	+ ? 7	42.093	MG/Yr

**Apparent Losses:**      **109.586** MG/Yr

Pcnt:	Value:	MG/Yr
0.25%		

Pcnt:	Value:	MG/Yr
2.00%		
0.25%	42.093	MG/Yr

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

Real Losses = Water Losses - Apparent Losses:      **1,120.248** MG/Yr

**WATER LOSSES:**      **1,229.835** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:**      **1,281.141** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	+ ? 9	515.7	miles
Number of active AND inactive service connections:	+ ? 9	41,324	
Service connection density:	+ ?	80	conn./mile main

Are customer meters typically located at the curbside or property line?      No (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line: + ? 7      50.0 ft

Average operating pressure: + ? 8      94.0 psi

### COST DATA

Total annual cost of operating water system:	+ ? 9	\$11,519,326	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ? 9	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ? 9	\$319.52	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: **PAW- Mechanicsburg District 610 (7210029)**  
 Reporting Year: **2014**      **1/2014 - 12/2014**

**\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\***

**System Attributes:**

	Apparent Losses:	109.586	MG/Yr
	+ Real Losses:	1,120.248	MG/Yr
	= <b>Water Losses:</b>	<b>1,229.835</b>	MG/Yr

? Unavoidable Annual Real Losses (UARL): 409.09 MG/Yr

Annual cost of Apparent Losses: \$1,119,313

Annual cost of Real Losses: \$11,442,217

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:	<span style="border: 1px solid black; padding: 2px;">31.3%</span>	
		Non-revenue water as percent by cost of operating system:	<span style="border: 1px solid black; padding: 2px;">113.6%</span>	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">7.27</span>	gallons/connection/day
		Real Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">74.27</span>	gallons/connection/day
		Real Losses per length of main per day*:	<span style="border: 1px solid black; padding: 2px;">N/A</span>	
		Real Losses per service connection per day per psi pressure:	<span style="border: 1px solid black; padding: 2px;">0.79</span>	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 1,120.25 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 2.74

\* 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: Reporting Worksheet

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American Water Works Association  
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+ Click to add a comment

Water Audit Report for: **PAW- Hershey Palmyra District 620 (7220017)**  
Reporting Year: **2014** 1/2014 - 12/2014

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: MILLION GALLONS (US) 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:	+ ? 9	2,185.130	MG/Yr
Water imported:	+ ? 9	11.930	MG/Yr
Water exported:	+ ? n/a	0.000	MG/Yr

### Master Meter and Supply Error Adjustments

Pcnt:	Value:	MG/Yr
+ ? 9	-2.80%	● ○
+ ? 9		● ○
+ ? 9		● ○

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

**WATER SUPPLIED:** **2,260.006** MG/Yr

### AUTHORIZED CONSUMPTION

Billed metered:	+ ? 10	1,752.475	MG/Yr
Billed unmetered:	+ ? n/a	0.000	MG/Yr
Unbilled metered:	+ ? 10	0.348	MG/Yr
Unbilled unmetered:	+ ?	28.250	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:** **1,781.073** MG/Yr

Click here: ? for help using option buttons below

Pcnt:	Value:	MG/Yr
1.25%	● ○	

Use buttons to select percentage of water supplied OR value

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

**478.933** MG/Yr

#### Apparent Losses

Unauthorized consumption: + ? 5.650 MG/Yr

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

Customer metering inaccuracies:	+ ? 7	35.772	MG/Yr
Systematic data handling errors:	+ ? 7	26.287	MG/Yr

**Apparent Losses:** **67.709** MG/Yr

Pcnt:	Value:	MG/Yr
0.25%	● ○	

Pcnt:	Value:	MG/Yr
2.00%	● ○	26.287

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

Real Losses = Water Losses - Apparent Losses: ? **411.224** MG/Yr

**WATER LOSSES:** **478.933** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:** ? **507.531** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	+ ? 9	325.8	miles
Number of active AND inactive service connections:	+ ? 9	20,782	
Service connection density:	? 64		conn./mile main

Are customer meters typically located at the curbside or property line?  (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line: + ? 7 50.0 ft

Average operating pressure: + ? 8 79.0 psi

### COST DATA

Total annual cost of operating water system:	+ ? 9	\$5,617,987	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ? 9	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ? 9	\$397.60	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: PAW- Hershey\_Palmyra District 620 (7220017)  
 Reporting Year: 2014 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\*

System Attributes:

Apparent Losses:	<span style="border: 1px solid black; padding: 2px;">67.709</span>	MG/Yr
+	Real Losses:	<span style="border: 1px solid black; padding: 2px;">411.224</span> MG/Yr
=	<b>Water Losses:</b>	<span style="border: 1px solid black; padding: 2px;">478.933</span> MG/Yr
<span style="border: 1px solid black; padding: 2px; color: blue; font-weight: bold;">?</span> Unavoidable Annual Real Losses (UARL): <span style="border: 1px solid black; padding: 2px;">183.28</span> MG/Yr		
Annual cost of Apparent Losses:		<span style="border: 1px solid black; padding: 2px;">\$691,580</span>
Annual cost of Real Losses:		<span style="border: 1px solid black; padding: 2px;">\$4,200,242</span> Valued at <b>Customer Retail Unit Cost</b>

Return to Reporting Worksheet to change this assumption

Performance Indicators:

Financial:	{	Non-revenue water as percent by volume of Water Supplied:	<span style="border: 1px solid black; padding: 2px;">22.5%</span>	
		Non-revenue water as percent by cost of operating system:	<span style="border: 1px solid black; padding: 2px;">92.3%</span>	Real Losses valued at Customer Retail Unit Cost
Operational Efficiency:	{	Apparent Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">8.93</span>	gallons/connection/day
		Real Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">54.21</span>	gallons/connection/day
		Real Losses per length of main per day*:	<span style="border: 1px solid black; padding: 2px;">N/A</span>	
		Real Losses per service connection per day per psi pressure:	<span style="border: 1px solid black; padding: 2px;">0.69</span>	gallons/connection/day/psi
		From Above, Real Losses = Current Annual Real Losses (CARL):	<span style="border: 1px solid black; padding: 2px;">411.22</span>	million gallons/year
		<span style="border: 1px solid black; padding: 2px; color: blue; font-weight: bold;">?</span> Infrastructure Leakage Index (ILI) [CARL/UARL]:	<span style="border: 1px solid black; padding: 2px;">2.24</span>	

\* 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: Reporting Worksheet

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[?](#) Click to access definition  
[+](#) Click to add a comment

Water Audit Report for: **PAW- Wyomissing Penn District 630 (3060069)**  
Reporting Year: **2014**    1/2014 - 12/2014

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: MILLION GALLONS (US) 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:	<a href="#">+</a> <a href="#">?</a> 9	877.744	MG/Yr
Water imported:	<a href="#">+</a> <a href="#">?</a> n/a	0.000	MG/Yr
Water exported:	<a href="#">+</a> <a href="#">?</a> n/a	0.000	MG/Yr

### Master Meter and Supply Error Adjustments

Pcnt:	Value:	MG/Yr
<a href="#">+</a> <a href="#">?</a> 9	0.20%	<input checked="" type="radio"/> <input type="radio"/>
<a href="#">+</a> <a href="#">?</a>		<input type="radio"/> <input checked="" type="radio"/>
<a href="#">+</a> <a href="#">?</a>		<input type="radio"/> <input checked="" type="radio"/>

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

**WATER SUPPLIED:** **875.992** MG/Yr

### AUTHORIZED CONSUMPTION

Billed metered:	<a href="#">+</a> <a href="#">?</a> 10	801.799	MG/Yr
Billed unmetered:	<a href="#">+</a> <a href="#">?</a> n/a	0.000	MG/Yr
Unbilled metered:	<a href="#">+</a> <a href="#">?</a> 10	1.661	MG/Yr
Unbilled unmetered:	<a href="#">+</a> <a href="#">?</a>	10.950	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:** **814.410** MG/Yr

Click here: [?](#)  
for help using option buttons below

Pcnt:	Value:	MG/Yr
1.25%	<input checked="" type="radio"/> <input type="radio"/>	

Use buttons to select percentage of water supplied OR value

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

**61.582** MG/Yr

#### Apparent Losses

Unauthorized consumption: [+](#) [?](#) **2.190** MG/Yr

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

Customer metering inaccuracies:	<a href="#">+</a> <a href="#">?</a> 7	16.397	MG/Yr
Systematic data handling errors:	<a href="#">+</a> <a href="#">?</a> 7	12.027	MG/Yr

**Apparent Losses:** **30.614** MG/Yr

Pcnt:	Value:	MG/Yr
0.25%	<input checked="" type="radio"/> <input type="radio"/>	

2.00%	<input type="radio"/> <input checked="" type="radio"/>	12.027
0.25%	<input type="radio"/> <input checked="" type="radio"/>	

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

Real Losses = Water Losses - Apparent Losses: **30.968** MG/Yr

**WATER LOSSES:** **61.582** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:** **74.193** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	<a href="#">+</a> <a href="#">?</a> 9	162.0	miles
Number of active AND inactive service connections:	<a href="#">+</a> <a href="#">?</a> 9	12,476	
Service connection density:	<a href="#">?</a>	77	conn./mile main

Are customer meters typically located at the curbside or property line?  No (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line: [+](#) [?](#) 7 **20.0** ft

Average operating pressure: [+](#) [?](#) 8 **86.0** psi

### COST DATA

Total annual cost of operating water system:	<a href="#">+</a> <a href="#">?</a> 9	\$3,621,052	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<a href="#">+</a> <a href="#">?</a> 9	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<a href="#">+</a> <a href="#">?</a> 9	\$230.22	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: PAW- Wyomissing\_Penn District 630 (3060069)  
 Reporting Year: 2014 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\*

### System Attributes:

	Apparent Losses:	<span style="border: 1px solid black; padding: 2px;">30.614</span>	MG/Yr
	+ Real Losses:	<span style="border: 1px solid black; padding: 2px;">30.968</span>	MG/Yr
	= <b>Water Losses:</b>	<span style="border: 1px solid black; padding: 2px;">61.582</span>	MG/Yr

? Unavoidable Annual Real Losses (UARL): 97.38 MG/Yr

Annual cost of Apparent Losses: \$312,692

Annual cost of Real Losses: \$316,307

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:	<span style="border: 1px solid black; padding: 2px;">8.5%</span>	
	Non-revenue water as percent by cost of operating system:	<span style="border: 1px solid black; padding: 2px;">20.9%</span>	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:

{	Apparent Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">6.72</span>	gallons/connection/day
	Real Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">6.80</span>	gallons/connection/day
	Real Losses per length of main per day*:	<span style="border: 1px solid black; padding: 2px;">N/A</span>	
	Real Losses per service connection per day per psi pressure:	<span style="border: 1px solid black; padding: 2px;">0.08</span>	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 30.97 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 0.32

\* 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: Reporting Worksheet

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Water Audit Report for: **PAW- Glenn Alsace District 633 (3060088;3060126)**  
Reporting Year: **2014**      1/2014 - 12/2014

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: MILLION GALLONS (US) 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:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="538.708"/>	MG/Yr
Water imported:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="173.159"/>	MG/Yr
Water exported:	<input type="button" value="+"/> <input type="button" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr

### Master Meter and Supply Error Adjustments

Pcnt:	<input type="text" value="0.71%"/>	<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>	MG/Yr
	<input type="text" value="2.00%"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="text" value=""/>	MG/Yr
	<input type="text" value=""/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="text" value=""/>	MG/Yr

**WATER SUPPLIED:**      **704.690** MG/Yr

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

### AUTHORIZED CONSUMPTION

Billed metered:	<input type="button" value="+"/> <input type="button" value="10"/>	<input type="text" value="608.337"/>	MG/Yr
Billed unmetered:	<input type="button" value="+"/> <input type="button" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr
Unbilled metered:	<input type="button" value="+"/> <input type="button" value="10"/>	<input type="text" value="0.015"/>	MG/Yr
Unbilled unmetered:	<input type="button" value="+"/> <input type="button" value="5"/>	<input type="text" value="8.809"/>	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:**      **617.161** MG/Yr

Click here:  for help using option buttons below

Pcnt:	<input type="text" value="1.25%"/>	<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>	MG/Yr
-------	------------------------------------	-----------------------	-----------------------	-------------------------------	-------

Use buttons to select percentage of water supplied  
OR  
value

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

**87.529** MG/Yr

#### Apparent Losses

Unauthorized consumption:        **1.762** MG/Yr

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

Customer metering inaccuracies:	<input type="button" value="+"/> <input type="button" value="7"/>	<input type="text" value="12.415"/>	MG/Yr
Systematic data handling errors:	<input type="button" value="+"/> <input type="button" value="7"/>	<input type="text" value="9.125"/>	MG/Yr

**Apparent Losses:**      **23.302** MG/Yr

Pcnt:	<input type="text" value="0.25%"/>	<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>	MG/Yr
-------	------------------------------------	-----------------------	-----------------------	-------------------------------	-------

Pcnt:	<input type="text" value="2.00%"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="text" value=""/>	MG/Yr
	<input type="text" value="0.125%"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="text" value="9.125"/>	MG/Yr

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

Real Losses = Water Losses - Apparent Losses:      **64.227** MG/Yr

**WATER LOSSES:**      **87.529** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:**      **96.353** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="141.1"/>	miles
Number of active AND inactive service connections:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="9,690"/>	
Service connection density:	<input type="button" value="7"/>	<input type="text" value="69"/>	conn./mile main

Are customer meters typically located at the curbside or property line?       (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line:         ft

Average operating pressure:         psi

### COST DATA

Total annual cost of operating water system:	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="\$2,753,639"/>	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="\$10.21"/>	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="\$1,091.30"/>	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

American Water Works Association.  
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Water Audit Report for: **PAW- Glenn Alsace District 633 (3060088;3060126)**  
 Reporting Year: **2014** | **1/2014 - 12/2014**

**\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\***

**System Attributes:**

Apparent Losses:	23.302	MG/Yr
+	Real Losses:	64.227 MG/Yr
=	<b>Water Losses:</b>	<b>87.529 MG/Yr</b>
<span style="background-color: #e0e0e0; padding: 2px;">?</span> Unavoidable Annual Real Losses (UARL):	84.40	MG/Yr
Annual cost of Apparent Losses:	\$238,008	
Annual cost of Real Losses:	\$656,015	Valued at <b>Customer Retail Unit Cost</b>

Return to Reporting Worksheet to change this assumption

**Performance Indicators:**

Financial:	{	Non-revenue water as percent by volume of Water Supplied:	13.7%	
		Non-revenue water as percent by cost of operating system:	35.7%	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	6.59	gallons/connection/day
		Real Losses per service connection per day:	18.16	gallons/connection/day
		Real Losses per length of main per day*:	N/A	
		Real Losses per service connection per day per psi pressure:	0.24	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): **64.23** million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: **0.76**

\* 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: Reporting Worksheet

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Water Audit Report for: **PAW-Royersford District 640 (1150166;1150206)**  
Reporting Year: **2014**      1/2014 - 12/2014

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: MILLION GALLONS (US) 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:	<input type="button" value="+"/> <input type="button" value="9"/>	1,301.640	MG/Yr
Water imported:	<input type="button" value="+"/> <input type="button" value="9"/>	61.288	MG/Yr
Water exported:	<input type="button" value="+"/> <input type="button" value="n/a"/>	0.000	MG/Yr

### Master Meter and Supply Error Adjustments

Pcnt:	<input type="button" value="-0.45%"/>	<input type="radio"/>	<input type="radio"/>	Value:	<input type="text"/>	MG/Yr
	<input type="button" value="+"/>	<input type="radio"/>	<input type="radio"/>		<input type="text"/>	MG/Yr
	<input type="button" value="+"/>	<input type="radio"/>	<input type="radio"/>		<input type="text"/>	MG/Yr

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

**WATER SUPPLIED:**      **1,368.812** MG/Yr

### AUTHORIZED CONSUMPTION

Billed metered:	<input type="button" value="+"/> <input type="button" value="10"/>	1,218.749	MG/Yr
Billed unmetered:	<input type="button" value="+"/> <input type="button" value="n/a"/>	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+"/> <input type="button" value="10"/>	0.012	MG/Yr
Unbilled unmetered:	<input type="button" value="+"/> <input type="button" value="7"/>	17.110	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:**      **1,235.871** MG/Yr

Click here:  for help using option buttons below

Pcnt:	<input type="button" value="1.25%"/>	<input type="radio"/>	<input type="radio"/>	Value:	<input type="text"/>	MG/Yr
-------	--------------------------------------	-----------------------	-----------------------	--------	----------------------	-------

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

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

**132.941** MG/Yr

#### Apparent Losses

Unauthorized consumption:        **3.422** MG/Yr

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

Customer metering inaccuracies:	<input type="button" value="+"/> <input type="button" value="7"/>	24.873	MG/Yr
Systematic data handling errors:	<input type="button" value="+"/> <input type="button" value="7"/>	18.281	MG/Yr

**Apparent Losses:**      **46.576** MG/Yr

Pcnt:	<input type="button" value="0.25%"/>	<input type="radio"/>	<input type="radio"/>	Value:	<input type="text"/>	MG/Yr
-------	--------------------------------------	-----------------------	-----------------------	--------	----------------------	-------

Pcnt:	<input type="button" value="2.00%"/>	<input type="radio"/>	<input type="radio"/>	Value:	<input type="text"/>	MG/Yr
	<input type="button" value="18.281"/>	<input type="radio"/>	<input checked="" type="radio"/>		<input type="text"/>	MG/Yr

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

Real Losses = Water Losses - Apparent Losses:      **86.365** MG/Yr

**WATER LOSSES:**      **132.941** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:**      **150.063** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	<input type="button" value="+"/> <input type="button" value="9"/>	275.1	miles
Number of active AND inactive service connections:	<input type="button" value="+"/> <input type="button" value="9"/>	16,801	
Service connection density:	<input type="button" value="7"/>	61	conn./mile main

Are customer meters typically located at the curbside or property line?      No (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line:        60.0 ft

Average operating pressure:        70.0 psi

### COST DATA

Total annual cost of operating water system:	<input type="button" value="+"/> <input type="button" value="9"/>	\$4,737,109	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+"/> <input type="button" value="9"/>	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+"/> <input type="button" value="9"/>	\$469.56	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: PAW- Royersford District 640 (1150166;1150206)  
 Reporting Year: 2014 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\*

System Attributes:

Apparent Losses:	<span style="border: 1px solid black; padding: 2px;">46.576</span>	MG/Yr
+	Real Losses:	<span style="border: 1px solid black; padding: 2px;">86.365</span> MG/Yr
=	<b>Water Losses:</b>	<span style="border: 1px solid black; padding: 2px;">132.941</span> MG/Yr

? Unavoidable Annual Real Losses (UARL): 139.00 MG/Yr

Annual cost of Apparent Losses: \$475,727

Annual cost of Real Losses: \$882,130

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: 11.0%  
 Non-revenue water as percent by cost of operating system: 32.4% Real Losses valued at Customer Retail Unit Cost

Operational Efficiency: { Apparent Losses per service connection per day: 7.60 gallons/connection/day  
 Real Losses per service connection per day: 14.08 gallons/connection/day  
 Real Losses per length of main per day\*: N/A  
 Real Losses per service connection per day per psi pressure: 0.20 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 86.36 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 0.62

\* 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: Reporting Worksheet

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?	Click to access definition
+	Click to add a comment

Water Audit Report for: **PAW- Coatesville District 650 (1150106)**  
Reporting Year: **2014**      1/2014 - 12/2014

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: MILLION GALLONS (US) 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:  1,290.204 MG/Yr  
Water imported:  0.000 MG/Yr  
Water exported:  49.756 MG/Yr

### Master Meter and Supply Error Adjustments

Enter grading in column 'E' and 'J' -----> Pcnt:  4.90%   MG/Yr  
Value:  MG/Yr  
  MG/Yr  
  MG/Yr

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

**WATER SUPPLIED: 1,180.181 MG/Yr**

### AUTHORIZED CONSUMPTION

Billed metered:  903.075 MG/Yr  
Billed unmetered:  0.000 MG/Yr  
Unbilled metered:  36.725 MG/Yr  
Unbilled unmetered:  14.752 MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION: 954.552 MG/Yr**

Click here: ?  
for help using option buttons below

Pcnt:    MG/Yr  
Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

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

**225.629 MG/Yr**

#### Apparent Losses

Unauthorized consumption:  2.950 MG/Yr

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

Customer metering inaccuracies:  19.180 MG/Yr  
Systematic data handling errors:  13.546 MG/Yr

**Apparent Losses: 35.676 MG/Yr**

Pcnt:    MG/Yr  
Value:  MG/Yr

13.546 MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  **189.953 MG/Yr**

**WATER LOSSES: 225.629 MG/Yr**

### NON-REVENUE WATER

**NON-REVENUE WATER: 277.106 MG/Yr**

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:  200.1 miles  
Number of active AND inactive service connections:  13,318  
Service connection density:  67 conn./mile main

Are customer meters typically located at the curbside or property line?  (length of service line, beyond the property boundary, that is the responsibility of the utility)  
Average length of customer service line:  24.0 ft

Average operating pressure:  85.0 psi

### COST DATA

Total annual cost of operating water system:  \$3,645,587 \$/Year  
Customer retail unit cost (applied to Apparent Losses):  \$10.21 \$/1000 gallons (US)  
Variable production cost (applied to Real Losses):  \$627.95 \$/Million gallons  Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

American Water Works Association.  
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Water Audit Report for: PAW- Coatesville District 650 (1150106)  
 Reporting Year: 2014 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\*

System Attributes:

	Apparent Losses:	35.676	MG/Yr
	+	189.953	MG/Yr
	=	<b>225.629</b>	<b>MG/Yr</b>
	<hr/>		
	? Unavoidable Annual Real Losses (UARL):	109.65	MG/Yr
	Annual cost of Apparent Losses:	\$364,396	
	Annual cost of Real Losses:	\$1,940,176	Valued at <b>Customer Retail Unit Cost</b>

Return to Reporting Worksheet to change this assumption

Performance Indicators:

	Financial: {	Non-revenue water as percent by volume of Water Supplied:	23.5%
		Non-revenue water as percent by cost of operating system:	77.6% <span style="font-size: small;">Real Losses valued at Customer Retail Unit Cost</span>
	Operational Efficiency: {	Apparent Losses per service connection per day:	7.34 gallons/connection/day
		Real Losses per service connection per day:	39.08 gallons/connection/day
		Real Losses per length of main per day*:	N/A
		Real Losses per service connection per day per psi pressure:	0.46 gallons/connection/day/psi
		From Above, Real Losses = Current Annual Real Losses (CARL):	189.95 million gallons/year
		? Infrastructure Leakage Index (ILI) [CARL/UARL]:	1.73

\* 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: Reporting Worksheet

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Water Audit Report for: **PAW- Lake Heritage District 660 (7010035)**  
 Reporting Year: **2014**      1/2014 - 12/2014

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: MILLION GALLONS (US) 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:	<input type="button" value="+"/> <input type="button" value="?"/> 9	38.515	MG/Yr
Water imported:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	0.000	MG/Yr
Water exported:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	0.000	MG/Yr

Master Meter and Supply Error Adjustments

	Pcnt:	Value:	
<input type="button" value="+"/> <input type="button" value="?"/> 9	0.00%	<input type="radio"/> <input type="radio"/>	MG/Yr
<input type="button" value="+"/> <input type="button" value="?"/> 9		<input type="radio"/> <input type="radio"/>	MG/Yr
<input type="button" value="+"/> <input type="button" value="?"/> 9		<input type="radio"/> <input type="radio"/>	MG/Yr

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

**WATER SUPPLIED:**      **38.515** MG/Yr

### AUTHORIZED CONSUMPTION

Billed metered:	<input type="button" value="+"/> <input type="button" value="?"/> 10	37.082	MG/Yr
Billed unmetered:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+"/> <input type="button" value="?"/> 10	0.000	MG/Yr
Unbilled unmetered:	<input type="button" value="+"/> <input type="button" value="?"/> 7	0.481	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:**      **37.563** MG/Yr

Click here:  for help using option buttons below

Pcnt:	Value:	
1.25%	<input type="radio"/> <input type="radio"/>	MG/Yr

Use buttons to select percentage of water supplied OR value

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

**0.952** MG/Yr

#### Apparent Losses

Unauthorized consumption:   7      **0.096** MG/Yr

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

Customer metering inaccuracies:   7      **0.757** MG/Yr

Systematic data handling errors:   7      **0.093** MG/Yr

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

**Apparent Losses:**      **0.946** MG/Yr

Pcnt:      Value:

0.25%	<input type="radio"/> <input type="radio"/>	MG/Yr
-------	---	-------

2.00%	<input type="radio"/> <input type="radio"/>	MG/Yr
0.25%	<input type="radio"/> <input type="radio"/>	MG/Yr

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

Real Losses = Water Losses - Apparent Losses:      **0.006** MG/Yr

**WATER LOSSES:**      **0.952** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:**      **1.433** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	<input type="button" value="+"/> <input type="button" value="?"/> 9	13.3	miles
Number of active AND inactive service connections:	<input type="button" value="+"/> <input type="button" value="?"/> 9	849	
Service connection density:	<input type="button" value="?"/> 7	64	conn./mile main

Are customer meters typically located at the curbside or property line?      No (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line:   7      50.0 ft

Average operating pressure:   8      54.0 psi

### COST DATA

Total annual cost of operating water system:	<input type="button" value="+"/> <input type="button" value="?"/> 9	\$246,251	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+"/> <input type="button" value="?"/> 9	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+"/> <input type="button" value="?"/> 9	\$259.07	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 84 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

WAS v5.0

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Water Audit Report for: PAW- Lake Heritage District 660 (7010035)  
 Reporting Year: 2014 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 84 out of 100 \*\*\*

System Attributes:

	Apparent Losses:	0.946	MG/Yr
+	Real Losses:	0.006	MG/Yr
=	<b>Water Losses:</b>	<b>0.952</b>	MG/Yr

? Unavoidable Annual Real Losses (UARL): See limits in definition MG/Yr

Annual cost of Apparent Losses: \$9,660

Annual cost of Real Losses: \$59 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: 3.7%  
 Non-revenue water as percent by cost of operating system: 5.9% Real Losses valued at Customer Retail Unit Cost

Operational Efficiency: { Apparent Losses per service connection per day: 3.05 gallons/connection/day  
 Real Losses per service connection per day: 0.02 gallons/connection/day  
 Real Losses per length of main per day\*: N/A  
 Real Losses per service connection per day per psi pressure: 0.00 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 0.01 million gallons/year

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

\* 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: Reporting Worksheet

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Water Audit Report for: **PAW- Lehman Pike District 680 (Multiple)**  
Reporting Year: **2014**      1/2014 - 12/2014

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: **MILLION GALLONS (US) 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:	<input type="button" value="+"/> <input type="button" value="9"/>	549.709	MG/Yr
Water imported:	<input type="button" value="+"/> <input type="button" value="n/a"/>	0.000	MG/Yr
Water exported:	<input type="button" value="+"/> <input type="button" value="n/a"/>	0.000	MG/Yr

### Master Meter and Supply Error Adjustments

Pcnt:	Value:	MG/Yr
<input type="button" value="+"/> <input type="button" value="9"/> -1.10%	<input type="radio"/> <input type="radio"/>	
<input type="button" value="+"/> <input type="button" value="9"/>	<input type="radio"/> <input type="radio"/>	
<input type="button" value="+"/> <input type="button" value="9"/>	<input type="radio"/> <input type="radio"/>	

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

**WATER SUPPLIED:**      **555.823** MG/Yr

### AUTHORIZED CONSUMPTION

Billed metered:	<input type="button" value="+"/> <input type="button" value="10"/>	283.787	MG/Yr
Billed unmetered:	<input type="button" value="+"/> <input type="button" value="n/a"/>	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+"/> <input type="button" value="9"/>	0.013	MG/Yr
Unbilled unmetered:	<input type="button" value="+"/> <input type="button" value="5"/>	6.948	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:**      **290.748** MG/Yr

Click here:  for help using option buttons below

Pcnt:	Value:	MG/Yr
<input type="button" value="+"/> <input type="button" value="10"/> 1.25%	<input type="radio"/> <input type="radio"/>	

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

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

#### Apparent Losses

Unauthorized consumption:        **1.390** MG/Yr

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

Customer metering inaccuracies:	<input type="button" value="+"/> <input type="button" value="7"/>	5.792	MG/Yr
Systematic data handling errors:	<input type="button" value="+"/> <input type="button" value="7"/>	4.257	MG/Yr

**Apparent Losses:**      **11.438** MG/Yr

Pcnt:	Value:	MG/Yr
<input type="button" value="+"/> <input type="button" value="10"/> 0.25%	<input type="radio"/> <input type="radio"/>	

Pcnt:	Value:	MG/Yr
<input type="button" value="+"/> <input type="button" value="10"/> 2.00%	<input type="radio"/> <input type="radio"/>	
<input type="button" value="+"/> <input type="button" value="10"/> 0.1%	<input type="radio"/> <input type="radio"/>	4.257

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

Real Losses = Water Losses - Apparent Losses:      **253.637** MG/Yr

**WATER LOSSES:**      **265.075** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:**      **272.036** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	<input type="button" value="+"/> <input type="button" value="9"/>	170.0	miles
Number of active AND inactive service connections:	<input type="button" value="+"/> <input type="button" value="9"/>	10,647	
Service connection density:	<input type="button" value="7"/>	63	conn./mile main

Are customer meters typically located at the curbside or property line?      No (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line:        50.0 ft

Average operating pressure:        71.0 psi

### COST DATA

Total annual cost of operating water system:	<input type="button" value="+"/> <input type="button" value="9"/>	\$2,155,516	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+"/> <input type="button" value="9"/>	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+"/> <input type="button" value="9"/>	\$378.91	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: PAW- Lehman Pike District 680 (Multiple)  
 Reporting Year: 2014 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\*

System Attributes:

	Apparent Losses:	11.438	MG/Yr
	+ Real Losses:	253.637	MG/Yr
	= <b>Water Losses:</b>	<b>265.075</b>	MG/Yr

? Unavoidable Annual Real Losses (UARL): 84.82 MG/Yr

Annual cost of Apparent Losses: \$116,830

Annual cost of Real Losses: \$2,590,649 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: 48.9%  
 Non-revenue water as percent by cost of operating system: 128.9% Real Losses valued at Customer Retail Unit Cost

Operational Efficiency: { Apparent Losses per service connection per day: 2.94 gallons/connection/day  
 Real Losses per service connection per day: 65.27 gallons/connection/day  
 Real Losses per length of main per day\*: N/A  
 Real Losses per service connection per day per psi pressure: 0.92 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 253.64 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 2.99

\* 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: Reporting Worksheet

WAS v5.0

American Water Works Association  
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Click to access definition  
 Click to add a comment

Water Audit Report for: **PAW- Milton District 710 (District 710)**  
 Reporting Year: **2014**      1/2014 - 12/2014

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: MILLION GALLONS (US) 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:	<input type="button" value="+"/> <input type="button" value="9"/>	1,869.076	MG/Yr
Water imported:	<input type="button" value="+"/> <input type="button" value="n/a"/>	0.000	MG/Yr
Water exported:	<input type="button" value="+"/> <input type="button" value="n/a"/>	0.000	MG/Yr

**Master Meter and Supply Error Adjustments**

Pcnt:	<input type="button" value="+"/> <input type="button" value="9"/>	2.00%	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	MG/Yr
Value:	<input type="button" value="+"/> <input type="button" value=""/>		<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	MG/Yr
	<input type="button" value="+"/> <input type="button" value=""/>		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	MG/Yr

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

**WATER SUPPLIED: 1,832.427 MG/Yr**

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+"/> <input type="button" value="10"/>	1,658.344	MG/Yr
Billed unmetered:	<input type="button" value="+"/> <input type="button" value="n/a"/>		MG/Yr
Unbilled metered:	<input type="button" value="+"/> <input type="button" value="10"/>	2,279	MG/Yr
Unbilled unmetered:	<input type="button" value="+"/> <input type="button" value="5"/>	22,905	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION: 1,683.528 MG/Yr**

Click here:  for help using option buttons below

Pcnt:	<input type="button" value="+"/> <input type="button" value="10"/>	1.25%	<input checked="" type="radio"/>	<input type="radio"/>	MG/Yr
-------	--	-------	----------------------------------	-----------------------	-------

Use buttons to select percentage of water supplied OR value

Pcnt:	<input type="button" value="+"/> <input type="button" value="10"/>	0.25%	<input checked="" type="radio"/>	<input type="radio"/>	MG/Yr
-------	--	-------	----------------------------------	-----------------------	-------

Pcnt:	<input type="button" value="+"/> <input type="button" value="10"/>	2.00%	<input checked="" type="radio"/>	<input type="radio"/>	MG/Yr
Value:	<input type="button" value="+"/> <input type="button" value=""/>	24.875	<input type="radio"/>	<input checked="" type="radio"/>	MG/Yr

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

**148.899 MG/Yr**

**Apparent Losses**

Unauthorized consumption:   **4,581 MG/Yr**

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

Customer metering inaccuracies:	<input type="button" value="+"/> <input type="button" value="7"/>	33,890	MG/Yr
Systematic data handling errors:	<input type="button" value="+"/> <input type="button" value="7"/>	24,875	MG/Yr

**Apparent Losses: 63,346 MG/Yr**

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

Real Losses = Water Losses - Apparent Losses:  **85,553 MG/Yr**

**WATER LOSSES: 148.899 MG/Yr**

**NON-REVENUE WATER**

**NON-REVENUE WATER: 174.083 MG/Yr**

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+"/> <input type="button" value="9"/>	235.6	miles
Number of active AND inactive service connections:	<input type="button" value="+"/> <input type="button" value="9"/>	13,791	
Service connection density:	<input type="button" value="7"/>	59	conn./mile main

Are customer meters typically located at the curbside or property line?  (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line:   **45.0 ft**

Average operating pressure:   **73.0 psi**

**COST DATA**

Total annual cost of operating water system:	<input type="button" value="+"/> <input type="button" value="9"/>	\$3,752,705	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+"/> <input type="button" value="9"/>	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+"/> <input type="button" value="9"/>	\$285.97	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

**WATER AUDIT DATA VALIDITY SCORE:**

**\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

American Water Works Association.  
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Water Audit Report for: PAW- Milton District 710 (District 710)  
 Reporting Year: 2014 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\*

**System Attributes:**

	Apparent Losses:	<span style="border: 1px solid black; padding: 2px;">63.346</span>	MG/Yr
	+ Real Losses:	<span style="border: 1px solid black; padding: 2px;">85.553</span>	MG/Yr
	= <b>Water Losses:</b>	<span style="border: 1px solid black; padding: 2px;">148.899</span>	MG/Yr
<span style="border: 1px solid black; padding: 2px; color: blue;">?</span> Unavoidable Annual Real Losses (UARL): <span style="border: 1px solid black; padding: 2px;">112.57</span> MG/Yr			
	Annual cost of Apparent Losses:	<span style="border: 1px solid black; padding: 2px;">\$647,021</span>	
	Annual cost of Real Losses:	<span style="border: 1px solid black; padding: 2px;">\$873,834</span>	Valued at <b>Customer Retail Unit Cost</b>

Return to Reporting Worksheet to change this assumption

**Performance Indicators:**

Financial:	{	Non-revenue water as percent by volume of Water Supplied:	<span style="border: 1px solid black; padding: 2px;">9.5%</span>	
		Non-revenue water as percent by cost of operating system:	<span style="border: 1px solid black; padding: 2px;">47.4%</span>	Real Losses valued at Customer Retail Unit Cost
Operational Efficiency:	{	Apparent Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">12.58</span>	gallons/connection/day
		Real Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">17.00</span>	gallons/connection/day
		Real Losses per length of main per day*:	<span style="border: 1px solid black; padding: 2px;">N/A</span>	
		Real Losses per service connection per day per psi pressure:	<span style="border: 1px solid black; padding: 2px;">0.23</span>	gallons/connection/day/psi
		From Above, Real Losses = Current Annual Real Losses (CARL):	<span style="border: 1px solid black; padding: 2px;">85.55</span>	million gallons/year
		<span style="border: 1px solid black; padding: 2px; color: blue;">?</span> Infrastructure Leakage Index (ILI) [CARL/UARL]:	<span style="border: 1px solid black; padding: 2px;">0.76</span>	

\* 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: Reporting Worksheet

WAS v5.0  
American Water Works Association  
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[?](#) Click to access definition  
[+](#) Click to add a comment

Water Audit Report for: **PAW- Phillipsburg District 720 (District 720)**  
Reporting Year: **2014** | **1/2014 - 12/2014**

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: MILLION GALLONS (US) 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:	<input type="button" value="+"/> <input type="button" value="?"/> 9	776.514	MG/Yr
Water imported:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	0.000	MG/Yr
Water exported:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	0.000	MG/Yr

### Master Meter and Supply Error Adjustments

<input type="button" value="+"/> <input type="button" value="?"/> 9	Pcnt:	-0.15%	<input type="radio"/>	<input type="radio"/>	Value:		MG/Yr
<input type="button" value="+"/> <input type="button" value="?"/>			<input type="radio"/>	<input type="radio"/>			MG/Yr
<input type="button" value="+"/> <input type="button" value="?"/>			<input type="radio"/>	<input type="radio"/>			MG/Yr

**WATER SUPPLIED:** **777.681** MG/Yr

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

### AUTHORIZED CONSUMPTION

Billed metered:	<input type="button" value="+"/> <input type="button" value="?"/> 10	435.920	MG/Yr
Billed unmetered:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	0.000	MG/Yr
Unbilled unmetered:	<input type="button" value="+"/> <input type="button" value="?"/>	9.721	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:** **445.641** MG/Yr

Click here: [?](#)  
for help using option buttons below

<input type="button" value="+"/> <input type="button" value="?"/>	Pcnt:	1.25%	<input type="radio"/>	<input type="radio"/>	Value:		MG/Yr
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Use buttons to select percentage of water supplied OR value

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

**332.040** MG/Yr

#### Apparent Losses

Unauthorized consumption:   **1.944** MG/Yr

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

Customer metering inaccuracies:	<input type="button" value="+"/> <input type="button" value="?"/> 7	8.896	MG/Yr
Systematic data handling errors:	<input type="button" value="+"/> <input type="button" value="?"/> 7	6.539	MG/Yr

**Apparent Losses:** **17.379** MG/Yr

<input type="button" value="+"/> <input type="button" value="?"/>	Pcnt:	0.25%	<input type="radio"/>	<input type="radio"/>	Value:		MG/Yr
---	-------	-------	-----------------------	-----------------------	--------	--	-------

<input type="button" value="+"/> <input type="button" value="?"/>	Pcnt:	2.00%	<input type="radio"/>	<input type="radio"/>	Value:	6.539	MG/Yr
---	-------	-------	-----------------------	-----------------------	--------	-------	-------

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

Real Losses = Water Losses - Apparent Losses: **314.660** MG/Yr

**WATER LOSSES:** **332.040** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:** **341.761** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	<input type="button" value="+"/> <input type="button" value="?"/> 9	293.5	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	<input type="button" value="+"/> <input type="button" value="?"/> 9	9,260	
Service connection density:	<input type="button" value="+"/> <input type="button" value="?"/>	32	conn./mile main

Are customer meters typically located at the curbside or property line?  (length of service line, beyond the property boundary, that is the responsibility of the utility)

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:   8 | 85.0 psi

### COST DATA

Total annual cost of operating water system:	<input type="button" value="+"/> <input type="button" value="?"/> 9	\$2,271,311	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+"/> <input type="button" value="?"/> 9	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+"/> <input type="button" value="?"/> 9	\$499.25	\$/Million gallons <input type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 85 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: PAW- Phillipsburg District 720 (District 720)  
 Reporting Year: 2014 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 85 out of 100 \*\*\*

System Attributes:

		Apparent Losses:	17.379	MG/Yr
	+	Real Losses:	314.660	MG/Yr
	=	<b>Water Losses:</b>	<b>332.040</b>	MG/Yr

? Unavoidable Annual Real Losses (UARL): 92.35 MG/Yr

Annual cost of Apparent Losses: \$177,443

Annual cost of Real Losses: \$3,212,681 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:	43.9%	
		Non-revenue water as percent by cost of operating system:	153.6%	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	5.14	gallons/connection/day
		Real Losses per service connection per day:	N/A	gallons/connection/day
		Real Losses per length of main per day*:	2,937.57	gallons/mile/day
		Real Losses per service connection per day per psi pressure:	N/A	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 314.66 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 3.41

\* 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: Reporting Worksheet

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Click to access definition  
 Click to add a comment

Water Audit Report for: **PAW- Berwick District 730 (4190013)**  
Reporting Year: **2014**    **1/2014 - 12/2014**

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: MILLION GALLONS (US) 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:	<input type="button" value="+"/> <input type="button" value="?"/> 9	<input type="text" value="505.188"/>	MG/Yr
Water imported:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	<input type="text" value="0.000"/>	MG/Yr
Water exported:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	<input type="text" value="0.000"/>	MG/Yr

### Master Meter and Supply Error Adjustments

Pcnt:	<input type="button" value="+"/> <input type="button" value="?"/> 9	<input type="text" value="0.70%"/>	Value:	<input type="text"/>	MG/Yr
	<input type="button" value="+"/> <input type="button" value="?"/> 9	<input type="text"/>		<input type="text"/>	MG/Yr
	<input type="button" value="+"/> <input type="button" value="?"/> 9	<input type="text"/>		<input type="text"/>	MG/Yr

**WATER SUPPLIED:**        **501.676** MG/Yr

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

### AUTHORIZED CONSUMPTION

Billed metered:	<input type="button" value="+"/> <input type="button" value="?"/> 10	<input type="text" value="361.114"/>	MG/Yr
Billed unmetered:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	<input type="text" value="0.000"/>	MG/Yr
Unbilled metered:	<input type="button" value="+"/> <input type="button" value="?"/> 10	<input type="text" value="0.076"/>	MG/Yr
Unbilled unmetered:	<input type="button" value="+"/> <input type="button" value="?"/> 5	<input type="text" value="6.271"/>	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:**        **367.461** MG/Yr

Click here:  for help using option buttons below

Pcnt:	<input type="button" value="+"/> <input type="button" value="?"/> 9	<input type="text" value="1.25%"/>	Value:	<input type="text"/>	MG/Yr
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Use buttons to select percentage of water supplied **OR** value

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

**134.215** MG/Yr

#### Apparent Losses

Unauthorized consumption:      **1.254** MG/Yr

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

Customer metering inaccuracies:	<input type="button" value="+"/> <input type="button" value="?"/> 7	<input type="text" value="7.371"/>	MG/Yr
Systematic data handling errors:	<input type="button" value="+"/> <input type="button" value="?"/> 7	<input type="text" value="5.417"/>	MG/Yr

**Apparent Losses:**        **14.042** MG/Yr

Pcnt:	<input type="button" value="+"/> <input type="button" value="?"/> 9	<input type="text" value="0.25%"/>	Value:	<input type="text"/>	MG/Yr
-------	---	------------------------------------	--------	----------------------	-------

	<input type="button" value="+"/> <input type="button" value="?"/> 9	<input type="text" value="2.00%"/>		<input type="text" value="5.417"/>	MG/Yr
--	---	------------------------------------	--	------------------------------------	-------

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

Real Losses = Water Losses - Apparent Losses:        **120.173** MG/Yr

**WATER LOSSES:**        **134.215** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:**        **140.562** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	<input type="button" value="+"/> <input type="button" value="?"/> 9	<input type="text" value="84.5"/>	miles
Number of <u>active AND inactive</u> service connections:	<input type="button" value="+"/> <input type="button" value="?"/> 9	<input type="text" value="7,151"/>	
Service connection density:	<input type="button" value="?"/> 7	<input type="text" value="85"/>	conn./mile main

Are customer meters typically located at the curbside or property line?        (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line:   7     ft

Average operating pressure:   8     psi

### COST DATA

Total annual cost of operating water system:	<input type="button" value="+"/> <input type="button" value="?"/> 9	<input type="text" value="\$1,880,841"/>	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+"/> <input type="button" value="?"/> 9	<input type="text" value="\$10.21"/>	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+"/> <input type="button" value="?"/> 9	<input type="text" value="\$173.97"/>	\$/Million gallons <input type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

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Water Audit Report for: **PAW- Berwick District 730 (4190013)**

Reporting Year: **2014**      **1/2014 - 12/2014**

**\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\***

**System Attributes:**

	Apparent Losses:	<b>14.042</b>	MG/Yr
+	Real Losses:	<b>120.173</b>	MG/Yr
=	<b>Water Losses:</b>	<b>134.215</b>	MG/Yr

**?** Unavoidable Annual Real Losses (UARL): **60.93** MG/Yr

Annual cost of Apparent Losses: **\$143,426**

Annual cost of Real Losses: **\$1,227,449**      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:	<b>28.0%</b>	
		Non-revenue water as percent by cost of operating system:	<b>76.3%</b>	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	<b>5.38</b>	gallons/connection/day
		Real Losses per service connection per day:	<b>46.04</b>	gallons/connection/day
		Real Losses per length of main per day*:	<b>N/A</b>	
		Real Losses per service connection per day per psi pressure:	<b>0.51</b>	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): **120.17** million gallons/year

**?** Infrastructure Leakage Index (ILI) [CARL/UARL]: **1.97**

\* 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: Reporting Worksheet

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? Click to access definition  
+ Click to add a comment

Water Audit Report for: **PAW- Frackville District 740 (3540032;3540072;3540053)**  
Reporting Year: **2014**    **1/2014 - 12/2014**

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: MILLION GALLONS (US) 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' ----->				Master Meter and Supply Error Adjustments	
Volume from own sources:	+ ? 9	132.134	MG/Yr	Pcnt:	-0.54%	Value:	MG/Yr
Water imported:	+ ? 9	2.996	MG/Yr				MG/Yr
Water exported:	+ ? n/a	0.000	MG/Yr				MG/Yr

**WATER SUPPLIED:** **135.847** MG/Yr

### AUTHORIZED CONSUMPTION

Billed metered:	+ ? 10	108.347	MG/Yr
Billed unmetered:	+ ? n/a	0.000	MG/Yr
Unbilled metered:	+ ? 10	0.030	MG/Yr
Unbilled unmetered:	+ ?	1.698	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:** **110.075** MG/Yr

Click here: ?  
for help using option buttons below

Pcnt: 1.25%    Value: MG/Yr

Use buttons to select percentage of water supplied OR value

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

**25.772** MG/Yr

#### Apparent Losses

Unauthorized consumption: + ? **0.340** MG/Yr

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

Customer metering inaccuracies:	+ ? 7	2.212	MG/Yr
Systematic data handling errors:	+ ? 7	1.625	MG/Yr

**Apparent Losses:** **4.177** MG/Yr

Pcnt: 0.25%    Value: MG/Yr

2.00%    Value: 1.625 MG/Yr

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

Real Losses = Water Losses - Apparent Losses: **21.596** MG/Yr

**WATER LOSSES:** **25.772** MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER:** **27.500** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	+ ? 9	27.2	miles
Number of active AND inactive service connections:	+ ? 9	2,794	
Service connection density:	+ ?	103	conn./mile main

Are customer meters typically located at the curbside or property line? **No** (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line: + ? 7 **20.0** ft

Average operating pressure: + ? 8 **55.0** psi

### COST DATA

Total annual cost of operating water system:	+ ? 9	\$695,366	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ? 9	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ? 9	\$584.88	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 86 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: PAW- Frackville District 740 (3540032;3540072;3540053)  
 Reporting Year: 2014 | 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 86 out of 100 \*\*\*

### System Attributes:

Apparent Losses:	<span style="border: 1px solid black; padding: 2px;">4.177</span>	MG/Yr
+	Real Losses:	<span style="border: 1px solid black; padding: 2px;">21.596</span> MG/Yr
=	<b>Water Losses:</b>	<span style="border: 1px solid black; padding: 2px;">25.772</span> MG/Yr

? Unavoidable Annual Real Losses (UARL): 12.96 MG/Yr

Annual cost of Apparent Losses: \$42,660

Annual cost of Real Losses: \$220,579

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:	<span style="border: 1px solid black; padding: 2px;">20.2%</span>	
Non-revenue water as percent by cost of operating system:	<span style="border: 1px solid black; padding: 2px;">40.4%</span>	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency: {

Apparent Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">4.10</span>	gallons/connection/day
Real Losses per service connection per day:	<span style="border: 1px solid black; padding: 2px;">21.18</span>	gallons/connection/day
Real Losses per length of main per day*:	<span style="border: 1px solid black; padding: 2px;">N/A</span>	
Real Losses per service connection per day per psi pressure:	<span style="border: 1px solid black; padding: 2px;">0.39</span>	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 21.60 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 1.67

\* 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: Reporting Worksheet

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 Click to add a comment

Water Audit Report for: **PAW- Centre County (Nittany/Boggs) 720 (District 720)**  
 Reporting Year: **2014**    1/2014 - 12/2014

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: MILLION GALLONS (US) 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.

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

### WATER SUPPLIED

Volume from own sources:	<input type="button" value="+"/> <input type="button" value="?"/> 9	54.956	MG/Yr
Water imported:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	0.000	MG/Yr
Water exported:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	0.000	MG/Yr

### Master Meter and Supply Error Adjustments

Pcnt:	Value:	MG/Yr
<input type="button" value="+"/> <input type="button" value="?"/> 9	-0.04%	<input type="button" value="0"/> <input type="button" value="1"/> <input type="button" value="2"/> <input type="button" value="3"/> <input type="button" value="4"/> <input type="button" value="5"/> <input type="button" value="6"/> <input type="button" value="7"/> <input type="button" value="8"/> <input type="button" value="9"/> <input type="button" value="n/a"/>
<input type="button" value="+"/> <input type="button" value="?"/> 9		
<input type="button" value="+"/> <input type="button" value="?"/> 9		

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

**WATER SUPPLIED: 54.978** MG/Yr

### AUTHORIZED CONSUMPTION

Billed metered:	<input type="button" value="+"/> <input type="button" value="?"/> 10	41.615	MG/Yr
Billed unmetered:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+"/> <input type="button" value="?"/> n/a	0.000	MG/Yr
Unbilled unmetered:	<input type="button" value="+"/> <input type="button" value="?"/> 5	0.687	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION: 42.302** MG/Yr

Click here:  for help using option buttons below

Pcnt:   9 Value:            MG/Yr

Use buttons to select percentage of water supplied OR value

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

**12.676** MG/Yr

#### Apparent Losses

Unauthorized consumption:   7 **0.137** MG/Yr

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

Customer metering inaccuracies:	<input type="button" value="+"/> <input type="button" value="?"/> 7	0.849	MG/Yr
Systematic data handling errors:	<input type="button" value="+"/> <input type="button" value="?"/> 7	0.624	MG/Yr

**Apparent Losses: 1.611** MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  **11.065** MG/Yr

**WATER LOSSES: 12.676** MG/Yr

Pcnt:   9 Value:            MG/Yr

Pcnt:   9 Value:            MG/Yr

### NON-REVENUE WATER

**NON-REVENUE WATER: 13.363** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	<input type="button" value="+"/> <input type="button" value="?"/> 9	26.0	miles
Number of active AND inactive service connections:	<input type="button" value="+"/> <input type="button" value="?"/> 9	567	
Service connection density:	<input type="button" value="+"/> <input type="button" value="?"/> 7	22	conn./mile main

Are customer meters typically located at the curbside or property line?            No (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line:   7 30.0 ft

Average operating pressure:   8 99.2 psi

### COST DATA

Total annual cost of operating water system:	<input type="button" value="+"/> <input type="button" value="?"/> 9	\$170,850	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+"/> <input type="button" value="?"/> 9	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+"/> <input type="button" value="?"/> 9	\$978.23	\$/Million gallons <input type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 85 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: Customer metering inaccuracies



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

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Water Audit Report for: PAW- Centre County (Nittany/Boggs) 720 (District 720)  
 Reporting Year: 2014 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 85 out of 100 \*\*\*

System Attributes:

	Apparent Losses:	1.611	MG/Yr
	+		
	Real Losses:	11.065	MG/Yr
	=		
	<b>Water Losses:</b>	<b>12.676</b>	MG/Yr

? Unavoidable Annual Real Losses (UARL): See limits in definition MG/Yr

Annual cost of Apparent Losses: \$16,448

Annual cost of Real Losses: \$112,972 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: 24.3%  
 Non-revenue water as percent by cost of operating system: 79.9% Real Losses valued at Customer Retail Unit Cost

Operational Efficiency: { Apparent Losses per service connection per day: 7.78 gallons/connection/day  
 Real Losses per service connection per day: N/A gallons/connection/day  
 Real Losses per length of main per day\*: 1,164.62 gallons/mile/day  
 Real Losses per service connection per day per psi pressure: N/A gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 11.06 million gallons/year

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

\* 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: Reporting Worksheet

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? Click to access definition  
+ Click to add a comment

Water Audit Report for: **Wilkes-Barre Scranton (District 910)**  
Reporting Year: **2014** 1/2014 - 12/2014

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: MILLION GALLONS (US) 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	16,784.510	MG/Yr
Water imported:	+ ? n/a	0.000	MG/Yr
Water exported:	+ ? n/a	0.000	MG/Yr

Master Meter and Supply Error Adjustments

Pcnt:	Value:
+ ? 9 -0.80%	MG/Yr
+ ?	MG/Yr
+ ?	MG/Yr

**WATER SUPPLIED:** 16,919.869 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	+ ? 10	10,287.285	MG/Yr
Billed unmetered:	+ ? n/a	0.000	MG/Yr
Unbilled metered:	+ ? 10	196.058	MG/Yr
Unbilled unmetered:	+ ? 9	265.472	MG/Yr

Unbilled Unmetered volume entered is greater than the recommended default value

**AUTHORIZED CONSUMPTION:** 10,748.815 MG/Yr

Click here: ? for help using option buttons below

Pcnt:	Value:
12.5%	265.472 MG/Yr

Use buttons to select percentage of water supplied OR value

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

6,171.054 MG/Yr

**Apparent Losses**

Unauthorized consumption:	+ ?	42.300	MG/Yr
Customer metering inaccuracies:	+ ? 7	213.946	MG/Yr
Systematic data handling errors:	+ ? 7	154.309	MG/Yr

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

**Apparent Losses:** 410.555 MG/Yr

Pcnt:	Value:
0.25%	MG/Yr
2.00%	154.309 MG/Yr

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

**Real Losses = Water Losses - Apparent Losses:** 5,760.499 MG/Yr

**WATER LOSSES:** 6,171.054 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:** 6,632.584 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	+ ? 9	1,824.3	miles
Number of active AND inactive service connections:	+ ? 9	151,193	
Service connection density:	? 83		conn./mile main

Are customer meters typically located at the curbstop or property line?  No (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line: + ? 8 25.0 ft

Average operating pressure: + ? 8 97.0 psi

**COST DATA**

Total annual cost of operating water system:	+ ? 9	\$40,310,310	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ? 9	\$10.21	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ? 9	\$180.31	\$/Million gallons <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

**WATER AUDIT DATA VALIDITY SCORE:**

**\*\*\* YOUR SCORE IS: 87 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: Customer metering inaccuracies





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

WAS v5.0

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Water Audit Report for: Wilkes-Barre Scranton (District 910)  
 Reporting Year: 2014 1/2014 - 12/2014

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 87 out of 100 \*\*\*

System Attributes:

	Apparent Losses:	410.555	MG/Yr
	+	5,760.499	MG/Yr
	=	6,171.054	MG/Yr
	<b>Water Losses:</b>		

? Unavoidable Annual Real Losses (UARL): 1,342.47 MG/Yr

Annual cost of Apparent Losses: \$4,193,406

Annual cost of Real Losses: \$58,837,739 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: 39.2%  
 Non-revenue water as percent by cost of operating system: 168.1% Real Losses valued at Customer Retail Unit Cost

Operational Efficiency: { Apparent Losses per service connection per day: 7.44 gallons/connection/day  
 Real Losses per service connection per day: 104.38 gallons/connection/day  
 Real Losses per length of main per day\*: N/A  
 Real Losses per service connection per day per psi pressure: 1.08 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 5,760.50 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 4.29

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