



**Susan Simms Marsh**

Deputy General Counsel

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April 30, 2021

**VIA** e-File

Rosemary Chiavetta, Secretary  
Commonwealth of Pennsylvania  
Pennsylvania Public Utility Commission  
Commonwealth Keystone Building, 2<sup>nd</sup> Floor  
400 North Street  
Harrisburg, PA 17120

Re: Annual Water Audit Summaries for year ended December 31, 2020  
Docket No.: M-2021-3023555

Dear Secretary Chiavetta:

Today, Pennsylvania-American Water Company filed the Company's annual water audit summaries for the year ended December 31, 2020.

Attached is an updated report that includes a complete Bangor District summary.

If you have any questions, please do not hesitate to contact me.

Sincerely,

A handwritten signature in blue ink that reads "Susan Simms Marsh".

Susan Simms Marsh

Enclosure

cc: C. McKinley w/Annual Water Audit Summaries (Updated)



# AWWA Free Water Audit Software: Reporting Worksheet

WAS  
American Water Works Association

Water Audit Report for: **PAW - All Districts ( )**  
Reporting Year: **2020**    **1/2020 - 12/2020**

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	68,179.103	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	9	1,014.854	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	9	704.194	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	-0.32%	<input type="text" value=""/>
		<input type="text" value=""/>
		<input type="text" value=""/>

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

**WATER SUPPLIED:** **68,708.637** MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	44,938.172	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	10	4.838	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	10	1,464.841	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	501.124	MG/Yr

Click here:   
for help using option

Pcnt:  Value:  MG/Yr

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

**AUTHORIZED CONSUMPTION:** **46,908.975** MG/Yr

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

**21,799.662** MG/Yr

**Apparent Losses**

Unauthorized consumption:  **171.772** MG/Yr  
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	947.000	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>		112.345	MG/Yr

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

**Apparent Losses:** **1,231.117** MG/Yr

Pcnt:  Value:

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

Real Losses = Water Losses - Apparent Losses:  **20,568.544** MG/Yr

**WATER LOSSES:** **21,799.662** MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  **23,765.627** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	10,235.3	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	<input type="button" value="+ ?"/>	9	665,506	
Service connection density:	<input style="border: 1px solid black;" type="button" value=" ? "/>		65	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="+ ?"/>	9	\$192,882,282	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$389.35	\$/Million gallo 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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: PAW - All Districts ( )  
 Reporting Year: 2020 | 1/2020 - 12/2020

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 87 out of 100 \*\*\*

### System Attributes:

	Apparent Losses:	1,231.117	MG/Yr
+	Real Losses:	20,568.544	MG/Yr
=	<b>Water Losses:</b>	<b>21,799.662</b>	MG/Yr

?

Unavoidable Annual Real Losses (UARL): 5,914.55 MG/Yr

Annual cost of Apparent Losses: \$12,520,463

Annual cost of Real Losses: \$8,008,363 Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 34.6%

Non-revenue water as percent by cost of operating system: 11.0% Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: 5.07 gallons/connection/day

Real Losses per service connection per day: 84.68 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 0.90 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 20,568.54 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

WAS  
American Water Works Association

? Click to access  
+ Click to add a

Water Audit Report for: **PAW- Abington District 530 (2359008)**  
Reporting Year: **2020**    1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="text" value="9"/>	531.355	MG/Yr
Water imported:	<input type="text" value="10"/>	0.000	MG/Yr
Water exported:	<input type="text" value="n/a"/>	0.000	MG/Yr

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	
9	-0.33%	MG/Yr
		MG/Yr
		MG/Yr

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

**WATER SUPPLIED:**    **533.114** MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="text" value="10"/>	383.652	MG/Yr
Billed unmetered:	<input type="text" value="n/a"/>	0.000	MG/Yr
Unbilled metered:	<input type="text" value="10"/>	0.026	MG/Yr
Unbilled unmetered:	<input type="text" value="10"/>	3.330	MG/Yr

Click here: ?  
for help using option

Pcnt:    Value:    MG/Yr  
   

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:**    **387.008** MG/Yr

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

**146.106** MG/Yr

**Apparent Losses**

Unauthorized consumption:	<input type="text" value="5"/>	1.333	MG/Yr
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed			
Customer metering inaccuracies:	<input type="text" value="7"/>	7.830	MG/Yr
Systematic data handling errors:	<input type="text" value="5"/>	0.959	MG/Yr
Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed			
<b>Apparent Losses:</b>		<b>10.122</b>	MG/Yr

Pcnt:    Value:    MG/Yr  
   

  

  

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

Real Losses = Water Losses - Apparent Losses:    **135.984** MG/Yr

**WATER LOSSES:**    **146.106** MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**    **149.462** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="text" value="9"/>	136.9	miles
Number of active AND inactive service connections:	<input type="text" value="9"/>	6,500	
Service connection density:	<input type="text" value="7"/>	47	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="text" value="9"/>	\$1,802,694	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="text" value="9"/>	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="text" value="9"/>	\$286.69	\$/Million gallo 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: Systematic data handling errors**



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: **PAW- Abington District 530 (2359008)**  
Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

	Apparent Losses:	10.122	MG/Yr
+	Real Losses:	135.984	MG/Yr
=	<b>Water Losses:</b>	<b>146.106</b>	MG/Yr

?

Unavoidable Annual Real Losses (UARL): 66.12 MG/Yr

Annual cost of Apparent Losses: \$102,942

Annual cost of Real Losses: \$38,985 Valued at **Variable Production Cost**  
Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied:	28.0%	
Non-revenue water as percent by cost of operating system:	7.9%	Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day:	4.27	gallons/connection/day
Real Losses per service connection per day:	57.32	gallons/connection/day
Real Losses per length of main per day*:	N/A	
Real Losses per service connection per day per psi pressure:	0.60	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 135.98 million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: 2.06

\* 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  
Copyright © 2014. All Rights Reserved.

? Click to access definition  
+ Click to add a comment

**Water Audit Report for:** PAW- Bangor District 550 (3480038)  
**Reporting Year:** 2020 1/2020 - 12/2020

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

**All volumes to be entered as: MILLION GALLONS (US) PER YEAR**

To select the correct data grading for each input, determine the highest grade below 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	252.808	MG/Yr
Water imported:	+ ?	n/a	0.000	MG/Yr
Water exported:	+ ?	9	0.000	MG/Yr

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
+ ? 9 1.16%	<input checked="" type="radio"/> <input type="radio"/>	MG/Yr
+ ?	<input checked="" type="radio"/> <input type="radio"/>	MG/Yr
+ ?	<input checked="" type="radio"/> <input type="radio"/>	MG/Yr

**WATER SUPPLIED:** 249.909 MG/Yr

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

**AUTHORIZED CONSUMPTION**

Billed metered:	+ ?	10	182.415	MG/Yr
Billed unmetered:	+ ?	n/a	0.000	MG/Yr
Unbilled metered:	+ ?	10	0.121	MG/Yr
Unbilled unmetered:	+ ?	10	0.648	MG/Yr

**AUTHORIZED CONSUMPTION:** 183.184 MG/Yr

Click here: ?  
for help using option buttons below

Pcnt: Value: MG/Yr  
  0.648

Use buttons to select percentage of water supplied OR value

Pcnt: Value: MG/Yr  
0.25%

2.00%   MG/Yr  
0.25%   2.736 MG/Yr

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

66.725 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	3.725	MG/Yr
Systematic data handling errors:	+ ?		2.736	MG/Yr

**Apparent Losses:** 7.086 MG/Yr

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

Real Losses = Water Losses - Apparent Losses: ? 59.639 MG/Yr

**WATER LOSSES:** 66.725 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:** ? 67.494 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	+ ?	9	57.0	miles
Number of active AND inactive service connections:	+ ?	9	3,471	
Service connection density:	?		61	conn./mile main

Are customer meters typically located at the curbside or property line? No  
Average length of customer service line: + ? 7 16.4 ft (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average operating pressure: + ? 8 83.9 psi

**COST DATA**

Total annual cost of operating water system:	+ ?	9	\$1,074,220	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ?	9	\$388.68	\$/Million gallons <input type="checkbox"/> Use Customer Retail Unit Cost to value real losses

**WATER AUDIT DATA VALIDITY SCORE:**

Add a grading value for 1 parameter(s) to enable an audit score to be calculated

**PRIORITY AREAS FOR ATTENTION:**

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

- 1: Systematic data handling errors
- 2: Volume from own sources
- 3: Unauthorized consumption



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: **PAW- Bangor District 550 (3480038)**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

	Apparent Losses:	4.806	MG/Yr
+	Real Losses:	61.919	MG/Yr
=	<b>Water Losses:</b>	<b>66.725</b>	MG/Yr

?

Unavoidable Annual Real Losses (UARL): 27.86 MG/Yr

Annual cost of Apparent Losses: \$48,877

Annual cost of Real Losses: \$24,067

Valued at **Variable Production Cost**  
 Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 27.0%

Non-revenue water as percent by cost of operating system: 6.8% Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: 3.79 gallons/connection/day

Real Losses per service connection per day: 48.87 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 0.58 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 61.92 million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: 2.22

\* 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  
American Water Works Association

**Water Audit Report for:** PAW- Berwick District 730 (4190013)

**Reporting Year:** 2020      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	460.226	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	-0.20%	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

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

**WATER SUPPLIED:** 461.148 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	328.148	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	10	0.021	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	2.261	MG/Yr

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:** 330.430 MG/Yr

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

**Apparent Losses**

Unauthorized consumption:	<input type="button" value="+ ?"/>	<span style="background-color: yellow;">1.153</span>	MG/Yr
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed			
Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	6.697
Systematic data handling errors:	<input type="button" value="+ ?"/>	<span style="background-color: yellow;">0.820</span>	
Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed			
<b>Apparent Losses:</b>	<input type="button" value="?"/>	<span style="background-color: yellow;">8.671</span>	MG/Yr

Pcnt:  Value:  MG/Yr

2.00%  MG/Yr

0.25%  MG/Yr

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

**Real Losses = Water Losses - Apparent Losses:**  122.048 MG/Yr

**WATER LOSSES:** 130.718 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  133.000 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	81.9	miles
Number of active AND inactive service connections:	<input type="button" value="+ ?"/>	9	7,000	
Service connection density:	<input type="button" value="?"/>	<span style="background-color: yellow;">85</span>	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  17.5 ft

Average operating pressure:  8  90.5 psi

**COST DATA**

Total annual cost of operating water system:	<input type="button" value="+ ?"/>	9	\$1,806,995	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$171.23	\$/Million gallo 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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: **PAW- Berwick District 730 (4190013)**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

	Apparent Losses:	<b>8.671</b>	MG/Yr
	+ Real Losses:	<b>122.048</b>	MG/Yr
	= <b>Water Losses:</b>	<b>130.718</b>	MG/Yr

?

Unavoidable Annual Real Losses (UARL): **55.07** MG/Yr

Annual cost of Apparent Losses: **\$88,180**

Annual cost of Real Losses: **\$20,898**

Valued at **Variable Production Cost**  
 Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: **28.8%**

Non-revenue water as percent by cost of operating system: **6.1%** Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: **3.39** gallons/connection/day

Real Losses per service connection per day: **47.77** gallons/connection/day

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

Real Losses per service connection per day per psi pressure: **0.53** gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): **122.05** million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: **2.22**

\* 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  
American Water Works Association

**Water Audit Report for:** PAW- Blue Mt. / Nazareth District 560 (2450133)  
**Reporting Year:** 2020      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	705.647	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	-2.27%	<input type="text" value=""/>
<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>
<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>

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

**WATER SUPPLIED:** 722.037 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	623.992	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	10	4.806	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	4.292	MG/Yr

Click here:  for help using option buttons below

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:** 633.090 MG/Yr

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

88.947 MG/Yr

**Apparent Losses**

Unauthorized consumption:  1.805 MG/Yr  
 Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	12.833	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>	7	9.360	MG/Yr

**Apparent Losses:** 23.998 MG/Yr

Pcnt:  Value:  MG/Yr

MG/Yr  
  MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  64.950 MG/Yr

**WATER LOSSES:** 88.947 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  98.045 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	155.2	miles
Number of active AND inactive service connections:	<input type="button" value="+ ?"/>	9	10,444	
Service connection density:	<input type="button" value="?"/>		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:    ft

Average operating pressure:    psi

**COST DATA**

Total annual cost of operating water system:	<input type="button" value="+ ?"/>	9	\$2,884,082	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$301.98	\$/Million gallo 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  
American Water Works Association.

Water Audit Report for: PAW- Blue Mt. / Nazareth District 560 (2450133)  
 Reporting Year: 2020 | 1/2020 - 12/2020

\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 87 out of 100 \*\*\*

### System Attributes:

	Apparent Losses:	23.998	MG/Yr
+	Real Losses:	64.950	MG/Yr
=	<b>Water Losses:</b>	<b>88.947</b>	MG/Yr

?

Unavoidable Annual Real Losses (UARL): 93.06 MG/Yr

Annual cost of Apparent Losses: \$244,055

Annual cost of Real Losses: \$19,613 Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 13.6%

Non-revenue water as percent by cost of operating system: 9.2% Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: 6.30 gallons/connection/day

Real Losses per service connection per day: 17.04 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): 64.95 million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: 0.70

\* 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  
American Water Works Association

**Water Audit Report for:** PAW- Brownsville District 250 (5260005)

**Reporting Year:** 2020      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	304.383	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	9	0.156	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	9	0.000	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

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

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

**WATER SUPPLIED:** 304.539 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	237.616	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	10	0.000	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	5.718	MG/Yr

Unbilled Unmetered volume entered is greater than the recommended default value

**AUTHORIZED CONSUMPTION:** 243.334 MG/Yr

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

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

61.205 MG/Yr

**Apparent Losses**

Unauthorized consumption:  0.761 MG/Yr

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

Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	4.849	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>		0.594	MG/Yr

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

**Apparent Losses:** 6.205 MG/Yr

Pcnt:  Value:  MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  55.000 MG/Yr

**WATER LOSSES:** 61.205 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  66.923 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	111.3	miles
Number of active AND inactive service connections:	<input type="button" value="+ ?"/>	9	3,677	
Service connection density:	<input type="button" value="?"/>		33	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="+ ?"/>	9	\$1,351,447	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$1,977.41	\$/Million gallo 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  
American Water Works Association.

Water Audit Report for: **PAW- Brownsville District 250 (5260005)**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

	Apparent Losses:	6.205	MG/Yr	
	+ Real Losses:	55.000	MG/Yr	
	= <b>Water Losses:</b>	<b>61.205</b>	MG/Yr	

?

Unavoidable Annual Real Losses (UARL): 42.23 MG/Yr

Annual cost of Apparent Losses: \$63,102

Annual cost of Real Losses: \$108,758 Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 22.0%

Non-revenue water as percent by cost of operating system: 13.6% Real Losses valued at Variable Production Cost

Operational: {

Apparent Losses per service connection per day: 4.62 gallons/connection/day

Real Losses per service connection per day: 40.98 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 0.44 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 55.00 million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: 1.30

\* 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

Water Audit Report for: **PAW- Butler District 330 (5100012)**  
Reporting Year: **2020**      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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**

	Grade	Value	Unit	Confidence
Volume from own sources:	9	1,925.604	MG/Yr	+ ?
Water imported:	n/a	0.000	MG/Yr	+ ?
Water exported:	n/a	0.000	MG/Yr	+ ?

**Master Meter and Supply Error Adjustments**

Grade	Pcnt:	Value:	Unit
9	0.00%		MG/Yr
			MG/Yr
			MG/Yr

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

**WATER SUPPLIED:**      **1,925.604** MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	10	1,598.911	MG/Yr	+ ?
Billed unmetered:	n/a	0.000	MG/Yr	+ ?
Unbilled metered:	10	0.128	MG/Yr	+ ?
Unbilled unmetered:		24.070	MG/Yr	+ ?

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

**AUTHORIZED CONSUMPTION:**      **1,623.109** MG/Yr

Click here:  for help using option

Pcnt: 1.25%      Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

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

**302.495** MG/Yr

**Apparent Losses**

Unauthorized consumption:  **4.814** MG/Yr

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

Customer metering inaccuracies:	7	32.633	MG/Yr	+ ?
Systematic data handling errors:		3.997	MG/Yr	+ ?

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

**Apparent Losses:**      **41.445** MG/Yr

Pcnt: 0.25%      Value:  MG/Yr

Pcnt: 2.00%      Value:  MG/Yr

Pcnt: 0.25%      Value:  MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  **261.050** MG/Yr

**WATER LOSSES:**      **302.495** MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**      **326.693** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	9	328.8	miles	+ ?
Number of active AND inactive service connections:	9	20,038		+ ?
Service connection density:		61	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:	9	\$5,568,342	\$/Year	+ ?
Customer retail unit cost (applied to Apparent Losses):	9	\$10.17	\$/1000 gallons (US)	+ ?
Variable production cost (applied to Real Losses):	9	\$394.29	\$/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  
American Water Works Association.

Water Audit Report for: **PAW- Butler District 330 (5100012)**  
Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

Apparent Losses:	41.445	MG/Yr
+	Real Losses:	261.050
=	<b>Water Losses:</b>	<b>302.495</b>
		MG/Yr

?

Unavoidable Annual Real Losses (UARL): 150.94 MG/Yr

Annual cost of Apparent Losses: \$421,493

Annual cost of Real Losses: \$102,929 Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 17.0%

Non-revenue water as percent by cost of operating system: 9.6% Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: 5.67 gallons/connection/day

Real Losses per service connection per day: 35.69 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 0.46 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 261.05 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

WAS  
American Water Works Association

Water Audit Report for: **PAW- Centre County (Nittany/Boggs) (District 780)**  
Reporting Year: **2020**      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	64.158	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	-0.86%	<input type="text" value=""/>
		<input type="text" value=""/>
		<input type="text" value=""/>

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

**WATER SUPPLIED:** **64.715** MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	39.302	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	0.139	MG/Yr

Click here:   
for help using option

Pcnt:  Value:  MG/Yr

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

**AUTHORIZED CONSUMPTION:** **39.441** MG/Yr

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

**25.274** MG/Yr

**Apparent Losses**

Unauthorized consumption:	<input type="button" value="+ ?"/>		0.162	MG/Yr
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed				
Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	0.802	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>		0.098	MG/Yr
Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed				
<b>Apparent Losses:</b>	<input type="button" value=" ?"/>		<b>1.062</b>	MG/Yr

Pcnt:  Value:

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

Real Losses = Water Losses - Apparent Losses:  **24.211** MG/Yr

**WATER LOSSES:** **25.274** MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  **25.413** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	18.6	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	<input type="button" value="+ ?"/>	9	731	
Service connection density:	<input type="button" value=" ?"/>		39	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="+ ?"/>	9	\$170,212	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$9.00	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$614.47	\$/Million gallo 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  
American Water Works Association.

Water Audit Report for: **PAW- Centre County (Nittany/Boggs) (District 780)**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

	Apparent Losses:	<b>1.062</b>	MG/Yr
+	Real Losses:	<b>24.211</b>	MG/Yr
=	<b>Water Losses:</b>	<b>25.274</b>	MG/Yr

?

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

Annual cost of Apparent Losses: **\$9,559**

Annual cost of Real Losses: **\$14,877** Valued at **Variable Production Cost**  
 Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied:	<b>39.3%</b>	
Non-revenue water as percent by cost of operating system:	<b>14.4%</b>	Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day:	<b>3.98</b>	gallons/connection/day
Real Losses per service connection per day:	<b>90.74</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>0.92</b>	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): **24.21** 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

WAS  
American Water Works Association

Water Audit Report for: **PAW- Clarion District 430 (6160001)**  
Reporting Year: **2020**      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	497.229	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	9	18.663	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	-1.02%	<input type="text" value=""/>
		<input type="text" value=""/>
n/a	0.00%	<input type="text" value=""/>

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

**WATER SUPPLIED:** **483.690** MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	342.105	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	10	6.003	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	3.810	MG/Yr

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:** **351.918** MG/Yr

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

**131.772** MG/Yr

**Apparent Losses**

Unauthorized consumption:  **1.209** MG/Yr  
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	7.104	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>		0.855	MG/Yr

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

**Apparent Losses:** **9.169** MG/Yr

Pcnt:  Value:

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

Real Losses = Water Losses - Apparent Losses:  **122.603** MG/Yr

**WATER LOSSES:** **131.772** MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  **141.585** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	128.0	miles
Number of active AND inactive service connections:	<input type="button" value="+ ?"/>	9	4,444	
Service connection density:	<input style="border: 1px solid black; padding: 2px;" type="button" 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="+ ?"/>	9	\$1,213,550	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$709.18	\$/Million gallo 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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: **PAW- Clarion District 430 (6160001)**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

	Apparent Losses:	9.169	MG/Yr	
	+ Real Losses:	122.603	MG/Yr	
	= <b>Water Losses:</b>	<b>131.772</b>	MG/Yr	

?

Unavoidable Annual Real Losses (UARL): 46.45 MG/Yr

Annual cost of Apparent Losses: \$93,246

Annual cost of Real Losses: \$86,948

Valued at **Variable Production Cost**  
 Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 29.3%

Non-revenue water as percent by cost of operating system: 15.4% Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: 5.65 gallons/connection/day

Real Losses per service connection per day: 75.58 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 0.89 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 122.60 million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: 2.64

\* 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

WAS  
American Water Works Association

Water Audit Report for: **PAW- Coatesville District 650 (1150106)**  
Reporting Year: **2020**      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	1,234.473	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	9	41.644	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	0.40%	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>

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

**WATER SUPPLIED: 1,187.911** MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	898.972	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	10	114.068	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	14.917	MG/Yr

Unbilled Unmetered volume entered is greater than the recommended default value

**AUTHORIZED CONSUMPTION: 1,027.957** MG/Yr

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

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

**159.954** MG/Yr

**Apparent Losses**

Unauthorized consumption:  **2.970** MG/Yr  
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	20.674	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>		2.247	MG/Yr

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

**Apparent Losses: 25.891** MG/Yr

Pcnt:  Value:  MG/Yr

Value:  MG/Yr  
  Value:  MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  **134.062** MG/Yr

**WATER LOSSES: 159.954** MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER: 288.939** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	199.5	miles
Number of active AND inactive service connections:	<input type="button" value="+ ?"/>	9	12,775	
Service connection density:	<input type="button" value="?"/>		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:   ft

Average operating pressure:   psi

**COST DATA**

Total annual cost of operating water system:	<input type="button" value="+ ?"/>	9	\$3,632,337	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$894.30	\$/Million gallo 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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: **PAW- Coatesville District 650 (1150106)**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

	Apparent Losses:	25.891	MG/Yr
+	Real Losses:	134.062	MG/Yr
=	<b>Water Losses:</b>	<b>159.954</b>	MG/Yr

?

Unavoidable Annual Real Losses (UARL): 102.12 MG/Yr

Annual cost of Apparent Losses: \$263,316

Annual cost of Real Losses: \$119,892 Valued at **Variable Production Cost**  
Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied:	24.3%	
Non-revenue water as percent by cost of operating system:	13.7%	Real Losses valued at Variable Production Cost

Operational: {

Apparent Losses per service connection per day:	5.55	gallons/connection/day
Real Losses per service connection per day:	28.75	gallons/connection/day
Real Losses per length of main per day*:	N/A	
Real Losses per service connection per day per psi pressure:	0.34	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 134.06 million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: 1.31

\* 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  
American Water Works Association

Water Audit Report for: **PAW- Frackville District 740 (3540032;3540072;3540053)**  
Reporting Year: **2020**      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	110.256 MG/Yr
Water imported:	<input type="button" value="+ ?"/>	9	1.939 MG/Yr
Water exported:	<input type="button" value="+ ?"/>	n/a	0.000 MG/Yr

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	
9	0.31%	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> MG/Yr
		<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> MG/Yr
		<input type="radio"/> <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:** 111.854 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	97.710 MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000 MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	10	0.023 MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	<span style="background-color: yellow;">0.599</span> MG/Yr

Click here:  for help using option

Pcnt:     Value:  MG/Yr

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

**AUTHORIZED CONSUMPTION:** 98.332 MG/Yr

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

13.522 MG/Yr

**Apparent Losses**

Unauthorized consumption:	<input type="button" value="+ ?"/>	<span style="background-color: yellow;">0.280</span> MG/Yr
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed		
Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7 <span style="background-color: yellow;">1.995</span> MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>	<span style="background-color: yellow;">0.244</span> MG/Yr
Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed		
<b>Apparent Losses:</b>	<input type="button" value="?"/>	<span style="background-color: yellow;">2.518</span> MG/Yr

Pcnt:     Value:  MG/Yr

Value:  MG/Yr

Value:  MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  11.004 MG/Yr

**WATER LOSSES:** 13.522 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  14.144 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	26.6 miles
Number of <u>active</u> AND <u>inactive</u> service connections:	<input type="button" value="+ ?"/>	9	2,681
Service connection density:	<input type="button" value="?"/>		<span style="background-color: yellow;">101</span> 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="+ ?"/>	9	\$671,137	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$577.21	\$/Million gallo 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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: **PAW- Frackville District 740 (3540032;3540072;3540053)**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

	Apparent Losses:	<b>2.518</b>	MG/Yr
+	Real Losses:	<b>11.004</b>	MG/Yr
=	<b>Water Losses:</b>	<b>13.522</b>	MG/Yr

?

Unavoidable Annual Real Losses (UARL): **11.20** MG/Yr

Annual cost of Apparent Losses: **\$25,613**

Annual cost of Real Losses: **\$6,352** Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: **12.6%**

Non-revenue water as percent by cost of operating system: **4.8%** Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: **2.57** gallons/connection/day

Real Losses per service connection per day: **11.24** gallons/connection/day

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

Real Losses per service connection per day per psi pressure: **0.23** gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): **11.00** million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: **0.98**

\* 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  
American Water Works Association

**Water Audit Report for:** PAW- Glen Alsace District 633 (3060088;3060126)

**Reporting Year:** 2020      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	472.999	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	9	175.055	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	-0.34%	<input type="text"/>
		<input type="text"/>
		<input type="text"/>

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

**WATER SUPPLIED:** 649.668 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	568.132	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	10	0.024	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	8.121	MG/Yr

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

**AUTHORIZED CONSUMPTION:** 576.277 MG/Yr

Click here:   
for help using option

Pcnt:  Value:  MG/Yr

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

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

73.391 MG/Yr

**Apparent Losses**

Unauthorized consumption:  1.624 MG/Yr

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

Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	11.595	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>		1.420	MG/Yr

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

**Apparent Losses:** 14.640 MG/Yr

Pcnt:  Value:  MG/Yr

MG/Yr  
  MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  58.751 MG/Yr

**WATER LOSSES:** 73.391 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  81.536 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	143.8	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	<input type="button" value="+ ?"/>	9	9,352	
Service connection density:	<input style="border: 1px solid black;" type="button" value=" ? "/>		65	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="+ ?"/>	9	\$2,712,642	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$924.68	\$/Million gallo 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: Unauthorized consumption
- 2: Systematic data handling errors
- 3: Volume from own sources



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: **PAW- Glen Alsace District 633 (3060088;3060126)**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

	Apparent Losses:	14.640	MG/Yr
	+ Real Losses:	58.751	MG/Yr
	= <b>Water Losses:</b>	<b>73.391</b>	MG/Yr

?

Unavoidable Annual Real Losses (UARL): 73.56 MG/Yr

Annual cost of Apparent Losses: \$148,884

Annual cost of Real Losses: \$54,326

Valued at **Variable Production Cost**  
 Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 12.6%

Non-revenue water as percent by cost of operating system: 7.8% Real Losses valued at Variable Production Cost

Operational: {

Apparent Losses per service connection per day: 4.29 gallons/connection/day

Real Losses per service connection per day: 17.21 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 0.21 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 58.75 million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: 0.80

\* 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  
American Water Works Association

? Click to access  
+ Click to add a

Water Audit Report for: **PAW- Hershey\_Palmyra District 620 (7220017)**  
Reporting Year: **2020**      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="text" value="9"/>	<input type="text" value="2,278.945"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>
Water imported:	<input type="text" value="9"/>	<input type="text" value="1.477"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>
Water exported:	<input type="text" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	<input type="text" value="-1.18%"/>	Value:	<input type="text" value=""/>	MG/Yr
	<input type="text" value="9"/>		<input type="text" value=""/>	MG/Yr
	<input type="text" value="9"/>		<input type="text" value=""/>	MG/Yr

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

**WATER SUPPLIED:**      **2,307.635** MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="text" value="10"/>	<input type="text" value="1,795.398"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>
Billed unmetered:	<input type="text" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>
Unbilled metered:	<input type="text" value="10"/>	<input type="text" value="0.017"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>
Unbilled unmetered:	<input type="text" value="10"/>	<input type="text" value="5.578"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:**      **1,800.993** MG/Yr

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

**506.642** MG/Yr

**Apparent Losses**

Unauthorized consumption:	<input type="text" value="7"/>	<input type="text" value="5.769"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed					
Customer metering inaccuracies:	<input type="text" value="7"/>	<input type="text" value="36.641"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>
Systematic data handling errors:	<input type="text" value="7"/>	<input type="text" value="4.488"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>
Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed					
<b>Apparent Losses:</b>	<input type="text" value="7"/>	<input type="text" value="46.899"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>

Pcnt:  Value:

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

Real Losses = Water Losses - Apparent Losses:      **459.743** MG/Yr

**WATER LOSSES:**      **506.642** MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**      **512.237** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="text" value="9"/>	<input type="text" value="319.7"/>	miles	<input type="text" value="+"/>	<input type="text" value="?"/>
Number of active AND inactive service connections:	<input type="text" value="9"/>	<input type="text" value="23,470"/>		<input type="text" value="+"/>	<input type="text" value="?"/>
Service connection density:	<input type="text" value="7"/>	<input type="text" value="73"/>	conn./mile main	<input type="text" value="+"/>	<input type="text" value="?"/>

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="text" value="9"/>	<input type="text" value="\$5,774,470"/>	\$/Year	<input type="text" value="+"/>	<input type="text" value="?"/>
Customer retail unit cost (applied to Apparent Losses):	<input type="text" value="9"/>	<input type="text" value="\$10.17"/>	\$/1000 gallons (US)	<input type="text" value="+"/>	<input type="text" value="?"/>
Variable production cost (applied to Real Losses):	<input type="text" value="9"/>	<input type="text" value="\$369.27"/>	\$/Million gallo	<input type="text" value="+"/>	<input type="text" value="?"/> 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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: PAW- Hershey\_Palmyra District 620 (7220017)  
 Reporting Year: 2020 | 1/2020 - 12/2020

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

### System Attributes:

	Apparent Losses:	46.899	MG/Yr
+	Real Losses:	459.743	MG/Yr
=	<b>Water Losses:</b>	<b>506.642</b>	MG/Yr

?

Unavoidable Annual Real Losses (UARL): 171.31 MG/Yr

Annual cost of Apparent Losses: \$476,960

Annual cost of Real Losses: \$169,769 Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 22.2%

Non-revenue water as percent by cost of operating system: 11.2% Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: 5.47 gallons/connection/day

Real Losses per service connection per day: 53.67 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 0.68 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 459.74 million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: 2.68

\* 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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?   
+

**Water Audit Report for:** PAW- Indiana District 410 (5320025)  
**Reporting Year:** 2020      1/2020 - 12/2020

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

**All volumes to be entered as: 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	675.949	MG/Yr
Water imported:	+ ?	n/a	0.000	MG/Yr
Water exported:	+ ?	9	13.461	MG/Yr

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
+ ? 9	-2.00%	<input checked="" type="radio"/> <input type="radio"/>
+ ?		<input checked="" type="radio"/> <input type="radio"/>
+ ? n/a	0.00%	<input checked="" type="radio"/> <input type="radio"/>

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

**WATER SUPPLIED:** 676.283 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	+ ?	10	544.734	MG/Yr
Billed unmetered:	+ ?	n/a	0.000	MG/Yr
Unbilled metered:	+ ?	10	0.146	MG/Yr
Unbilled unmetered:	+ ?	10	1.358	MG/Yr

Click here: ?  
for help using option buttons below

Pcnt:   Value: 1.358 MG/Yr

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:** 546.238 MG/Yr

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

**Apparent Losses**

Unauthorized consumption: + ? 1.691 MG/Yr

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

Customer metering inaccuracies:	+ ?	7	11.120	MG/Yr
Systematic data handling errors:	+ ?	7	9.607	MG/Yr

**Apparent Losses:** 22.418 MG/Yr

Pcnt: 0.25%   Value: 1.691 MG/Yr

2.00%   MG/Yr  
0.25%   9.607 MG/Yr

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

Real Losses = Water Losses - Apparent Losses: 107.627 MG/Yr

**WATER LOSSES:** 130.045 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:** 131.549 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	+ ?	9	119.0	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	+ ?	9	7,145	
Service connection density:	?		60	conn./mile main

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

Average length of customer service line: + ? 7 19.4 ft

Average operating pressure: + ? 8 79.4 psi

**COST DATA**

Total annual cost of operating water system:	+ ?	9	\$2,144,427	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ?	9	\$585.37	\$/Million gallons <input 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

American Water Works Association.  
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Water Audit Report for: **PAW- Indiana District 410 (5320025)**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

**\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 87 out of 100 \*\*\***

**System Attributes:**

	Apparent Losses:	<b>22.418</b>	MG/Yr
+	Real Losses:	<b>107.627</b>	MG/Yr
=	<b>Water Losses:</b>	<b>130.045</b>	MG/Yr

**? Unavoidable Annual Real Losses (UARL):** **55.42** MG/Yr

Annual cost of Apparent Losses: **\$227,988**

Annual cost of Real Losses: **\$63,002** Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

**Performance Indicators:**

Financial:	{	Non-revenue water as percent by volume of Water Supplied:	<b>19.5%</b>	
		Non-revenue water as percent by cost of operating system:	<b>13.6%</b>	Real Losses valued at Variable Production Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	<b>8.60</b>	gallons/connection/day
		Real Losses per service connection per day:	<b>41.27</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>0.52</b>	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): **107.63** million gallons/year

**? Infrastructure Leakage Index (ILI) [CARL/UARL]:** **1.94**

\* 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  
American Water Works Association

? Click to access  
+ Click to add a

Water Audit Report for: **PAW- Kane District 460 (6420019)**  
Reporting Year: **2020**    1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="text" value="9"/>	128.174	MG/Yr	<input type="text" value="9"/>	<input type="text" value="9"/>
Water imported:	<input type="text" value="n/a"/>	0.000	MG/Yr	<input type="text" value="9"/>	<input type="text" value="9"/>
Water exported:	<input type="text" value="9"/>	0.000	MG/Yr	<input type="text" value="9"/>	<input type="text" value="9"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	
9	-0.90%	<input type="text" value="9"/> MG/Yr
		<input type="text" value="9"/> MG/Yr
		<input type="text" value="9"/> MG/Yr

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

**WATER SUPPLIED:** 129.338 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="text" value="10"/>	105.447	MG/Yr
Billed unmetered:	<input type="text" value="n/a"/>	0.000	MG/Yr
Unbilled metered:	<input type="text" value="10"/>	4.587	MG/Yr
Unbilled unmetered:	<input type="text" value="10"/>	6.500	MG/Yr

Unbilled Unmetered volume entered is greater than the recommended default value

**AUTHORIZED CONSUMPTION:** 116.534 MG/Yr

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

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

12.804 MG/Yr

**Apparent Losses**

Unauthorized consumption:  0.323 MG/Yr

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

Customer metering inaccuracies:  2.246 MG/Yr

Systematic data handling errors:  0.264 MG/Yr

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

**Apparent Losses:** 2.833 MG/Yr

Pcnt:  Value:  MG/Yr

MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  9.971 MG/Yr

**WATER LOSSES:** 12.804 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  23.891 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="text" value="9"/>	42.9	miles
Number of active AND inactive service connections:	<input type="text" value="9"/>	2,379	
Service connection density:	<input type="text" value="9"/>	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:   ft

Average operating pressure:   psi

**COST DATA**

Total annual cost of operating water system:	<input type="text" value="9"/>	\$595,451	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="text" value="9"/>	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="text" value="9"/>	\$643.54	\$/Million gallo 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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: **PAW- Kane District 460 (6420019)**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

Apparent Losses:	<b>2.833</b>	MG/Yr
+	Real Losses:	<b>9.971</b> MG/Yr
=	<b>Water Losses:</b>	<b>12.804</b> MG/Yr

?

Unavoidable Annual Real Losses (UARL): **23.46** MG/Yr

Annual cost of Apparent Losses: **\$28,807**

Annual cost of Real Losses: **\$6,417** Valued at **Variable Production Cost**  
 Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied:	<b>18.5%</b>	
Non-revenue water as percent by cost of operating system:	<b>7.1%</b>	Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day:	<b>3.26</b>	gallons/connection/day
Real Losses per service connection per day:	<b>11.48</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>0.12</b>	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): **9.97** million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: **0.43**

\* 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  
American Water Works Association

**Water Audit Report for:** PAW- Kittanning District 440 (5030008)

**Reporting Year:** 2020      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	117.397	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

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

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

**WATER SUPPLIED:** 117.397 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	98.817	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	10	0.015	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	3.866	MG/Yr

Unbilled Unmetered volume entered is greater than the recommended default value

**AUTHORIZED CONSUMPTION:** 102.698 MG/Yr

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

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

14.699 MG/Yr

**Apparent Losses**

Unauthorized consumption:  0.293 MG/Yr

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

Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	2.017	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>		0.247	MG/Yr

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

**Apparent Losses:** 2.558 MG/Yr

Pcnt:  Value:  MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  12.141 MG/Yr

**WATER LOSSES:** 14.699 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  18.580 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	21.5	miles
Number of active AND inactive service connections:	<input type="button" value="+ ?"/>	9	2,035	
Service connection density:	<input type="button" value="?"/>		95	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="+ ?"/>	9	\$562,769	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$1,083.77	\$/Million gallo 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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: PAW- Kittanning District 440 (5030008)  
 Reporting Year: 2020 | 1/2020 - 12/2020

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

### System Attributes:

	Apparent Losses:	2.558	MG/Yr
+	Real Losses:	12.141	MG/Yr
=	<b>Water Losses:</b>	<b>14.699</b>	MG/Yr

?

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

Annual cost of Apparent Losses: \$26,010

Annual cost of Real Losses: \$13,159 Valued at **Variable Production Cost**  
Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 15.8%

Non-revenue water as percent by cost of operating system: 7.7% Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: 3.44 gallons/connection/day

Real Losses per service connection per day: 16.35 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 0.19 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 12.14 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

**Water Audit Report for:** PAW- Lake Heritage District 660 (7010035)

**Reporting Year:** 2020      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	47.984	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

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

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

**WATER SUPPLIED:** 47.984 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	38.703	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	10	0.000	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	0.144	MG/Yr

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:** 38.847 MG/Yr

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

9.137 MG/Yr

**Apparent Losses**

Unauthorized consumption:  0.120 MG/Yr  
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	0.790	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>		0.097	MG/Yr

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

**Apparent Losses:** 1.007 MG/Yr

Pcnt:  Value:  MG/Yr

Value:  MG/Yr

Value:  MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  8.130 MG/Yr

**WATER LOSSES:** 9.137 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  9.281 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	13.0	miles
Number of active AND inactive service connections:	<input type="button" value="+ ?"/>	9	755	
Service connection density:	<input type="button" value="?"/>		58	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="+ ?"/>	9	\$246,552	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$248.32	\$/Million gallo 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  
American Water Works Association.

Water Audit Report for: **PAW- Lake Heritage District 660 (7010035)**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

Apparent Losses:	1.007	MG/Yr
+	Real Losses:	8.130 MG/Yr
=	<b>Water Losses:</b>	<b>9.137</b> MG/Yr

?

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

Annual cost of Apparent Losses: **\$10,237**

Annual cost of Real Losses: **\$2,019** Valued at **Variable Production Cost**  
 Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied:	19.3%	
Non-revenue water as percent by cost of operating system:	5.0%	Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day:	3.65	gallons/connection/day
Real Losses per service connection per day:	29.50	gallons/connection/day
Real Losses per length of main per day*:	N/A	
Real Losses per service connection per day per psi pressure:	0.40	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): **8.13** 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

WAS  
American Water Works Association

**Water Audit Report for:** PAW- Lehman Pike District 680 (Multiple)

**Reporting Year:** 2020      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	539.266	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	0.02%	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>

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

**WATER SUPPLIED:** 539.158 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	303.622	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	10	4.838	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	9	3.173	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	3.919	MG/Yr

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:** 315.552 MG/Yr

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

223.606 MG/Yr

**Apparent Losses**

Unauthorized consumption:  1.348 MG/Yr  
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	6.261	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>		0.759	MG/Yr

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

**Apparent Losses:** 8.368 MG/Yr

Pcnt:  Value:  MG/Yr

MG/Yr

MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  215.238 MG/Yr

**WATER LOSSES:** 223.606 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  230.698 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	172.9	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	<input type="button" value="+ ?"/>	9	9,461	
Service connection density:	<input type="button" value="?"/>		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:    ft

Average operating pressure:    psi

**COST DATA**

Total annual cost of operating water system:	<input type="button" value="+ ?"/>	9	\$2,282,323	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$616.45	\$/Million gallo 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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: PAW- Lehman Pike District 680 (Multiple)  
 Reporting Year: 2020 | 1/2020 - 12/2020

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

### System Attributes:

	Apparent Losses:	8.368	MG/Yr
+	Real Losses:	215.238	MG/Yr
=	<b>Water Losses:</b>	<b>223.606</b>	MG/Yr

?

Unavoidable Annual Real Losses (UARL): 52.23 MG/Yr

Annual cost of Apparent Losses: \$85,103

Annual cost of Real Losses: \$132,684 Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 42.8%

Non-revenue water as percent by cost of operating system: 9.7% Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: 2.42 gallons/connection/day

Real Losses per service connection per day: 62.33 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 1.16 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 215.24 million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: 4.12

\* 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

**Water Audit Report for:** PAW- Mechanicsburg District 610 (7210029)

**Reporting Year:** 2020      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	3,972.772	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	0.22%	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>

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

**WATER SUPPLIED:** 3,964.051 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	2,794.802	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	10	4.704	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	20.623	MG/Yr

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:** 2,820.129 MG/Yr

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

1,143.922 MG/Yr

**Apparent Losses**

Unauthorized consumption:	<input type="button" value="+ ?"/>	<span style="background-color: yellow;">9.910</span>	MG/Yr
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed			
Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	57.133
Systematic data handling errors:	<input type="button" value="+ ?"/>	<span style="background-color: yellow;">6.987</span>	MG/Yr
Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed			
<b>Apparent Losses:</b>	<input type="button" value="?"/>	<span style="background-color: yellow;">74.030</span>	MG/Yr

Pcnt:  Value:  MG/Yr

Value:  MG/Yr

Value:  MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  1,069.892 MG/Yr

**WATER LOSSES:** 1,143.922 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  1,169.249 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	537.2	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	<input type="button" value="+ ?"/>	9	48,765	
Service connection density:	<input type="button" value="?"/>	<span style="background-color: yellow;">91</span>		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="+ ?"/>	9	\$11,892,967	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$373.38	\$/Million gallo 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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: PAW- Mechanicsburg District 610 (7210029)  
 Reporting Year: 2020 | 1/2020 - 12/2020

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

### System Attributes:

	Apparent Losses:	<span style="border: 1px solid black; padding: 2px;">74.030</span>	MG/Yr	
+	Real Losses:	<span style="border: 1px solid black; padding: 2px;">1,069.892</span>	MG/Yr	
=	<b>Water Losses:</b>	<span style="border: 1px solid black; padding: 2px;">1,143.922</span>	MG/Yr	



Unavoidable Annual Real Losses (UARL): 387.03 MG/Yr

Annual cost of Apparent Losses: \$752,884

Annual cost of Real Losses: \$399,476 Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 29.5%

Non-revenue water as percent by cost of operating system: 9.8% Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: 4.16 gallons/connection/day

Real Losses per service connection per day: 60.11 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 0.65 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 1,069.89 million gallons/year



Infrastructure Leakage Index (ILI) [CARL/UARL]: 2.76

\* 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

WAS  
American Water Works Association

**Water Audit Report for:** **PAW- Milton (Districts 710; 840;) (4490023; 4490298; 4490016 )**

**Reporting Year:** **2020**      **1/2020 - 12/2020**

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	1,898.179	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	0.25%	<input type="text" value=""/>
		<input type="text" value=""/>
		<input type="text" value=""/>

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

**WATER SUPPLIED:** **1,893.445** MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	1,563.267	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a		MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	10	1.617	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	20.705	MG/Yr

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:** **1,585.589** MG/Yr

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

**307.856** MG/Yr

**Apparent Losses**

Unauthorized consumption:  **4.734** MG/Yr  
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	31.936	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>	7	3.908	MG/Yr

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

**Apparent Losses:** **40.578** MG/Yr

Pcnt:  Value:

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

Real Losses = Water Losses - Apparent Losses:  **267.278** MG/Yr

**WATER LOSSES:** **307.856** MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  **330.178** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	247.1	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	<input type="button" value="+ ?"/>	9	14,014	
Service connection density:	<input type="button" value="?"/>		57	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="+ ?"/>	9	\$3,934,794	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$304.29	\$/Million gallo 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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: **PAW- Milton (Districts 710; 840;) (4490023; 4490298; 4490016 )**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

	Apparent Losses:	40.578	MG/Yr
	+ Real Losses:	267.278	MG/Yr
	= <b>Water Losses:</b>	<b>307.856</b>	MG/Yr

?

Unavoidable Annual Real Losses (UARL): 102.92 MG/Yr

Annual cost of Apparent Losses: \$412,680

Annual cost of Real Losses: \$81,330 Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 17.4%

Non-revenue water as percent by cost of operating system: 12.7% Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: 7.93 gallons/connection/day

Real Losses per service connection per day: 52.25 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 0.71 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 267.28 million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: 2.60

\* 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

WAS v5.0

American Water Works Association  
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?   
+

**Water Audit Report for:** PAW- New Castle / Ellwood Ditrict 310 (6370034;6370011)  
**Reporting Year:** 2020 1/2020 - 12/2020

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

**All volumes to be entered as: 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	2,666.968	MG/Yr
Water imported:	+ ?	n/a	0.000	MG/Yr
Water exported:	+ ?	9	68.992	MG/Yr

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
+ ? 9	0.00%	<input type="radio"/> <input checked="" type="radio"/>
+ ?		<input type="radio"/> <input checked="" type="radio"/>
+ ? n/a	0.00%	<input type="radio"/> <input checked="" type="radio"/>

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

**WATER SUPPLIED:** 2,597.976 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	+ ?	10	1,597.143	MG/Yr
Billed unmetered:	+ ?	n/a	0.000	MG/Yr
Unbilled metered:	+ ?	10	1.153	MG/Yr
Unbilled unmetered:	+ ?	10	12.910	MG/Yr

Click here: ?  
for help using option buttons below

Pcnt: Value: MG/Yr  
  12.910

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:** ? 1,611.206 MG/Yr

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

986.770 MG/Yr

**Apparent Losses**

Unauthorized consumption: + ? 6.495 MG/Yr  
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	+ ?	7	32.618	MG/Yr
Systematic data handling errors:	+ ?		3.993	MG/Yr

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

**Apparent Losses:** ? 43.106 MG/Yr

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

Real Losses = Water Losses - Apparent Losses: ? 943.664 MG/Yr

**WATER LOSSES:** 986.770 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:** ? 1,000.833 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	+ ?	9	528.0	miles
Number of active AND inactive service connections:	+ ?	9	29,456	
Service connection density:	?		56	conn./mile main

Are customer meters typically located at the curbside or property line? No  
Average length of customer service line: + ? 7 18.2 ft (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average operating pressure: + ? 8 92.0 psi

**COST DATA**

Total annual cost of operating water system:	+ ?	9	\$7,555,663	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ?	9	\$503.89	\$/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: Systematic data handling errors



## 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- New Castle / Ellwood Ditric 310 (6370034;6370011)  
 Reporting Year: 2020 | 1/2020 - 12/2020

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

### System Attributes:

	Apparent Losses:	43.106	MG/Yr
+	Real Losses:	943.664	MG/Yr
=	<b>Water Losses:</b>	<b>986.770</b>	MG/Yr

? Unavoidable Annual Real Losses (UARL): 269.86 MG/Yr

Annual cost of Apparent Losses: \$438,389

Annual cost of Real Losses: \$475,503 Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial:	{	Non-revenue water as percent by volume of Water Supplied:	38.5%	
		Non-revenue water as percent by cost of operating system:	12.2%	Real Losses valued at Variable Production Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	4.01	gallons/connection/day
		Real Losses per service connection per day:	87.77	gallons/connection/day
		Real Losses per length of main per day*:	N/A	
		Real Losses per service connection per day per psi pressure:	0.95	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 943.66 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 3.50

\* 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  
American Water Works Association

? Click to access  
+ Click to add a

Water Audit Report for: **PAW- Norristown District 510 (1460046)**  
Reporting Year: **2020**      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="text" value="9"/>	<input type="text" value="3,327.300"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>
Water imported:	<input type="text" value="9"/>	<input type="text" value="36.740"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>
Water exported:	<input type="text" value="10"/>	<input type="text" value="0.000"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	<input type="text" value="9"/>	<input type="text" value="1.14%"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	MG/Yr
Value:					MG/Yr
					MG/Yr

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

**WATER SUPPLIED:** 3,326.536 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="text" value="10"/>	<input type="text" value="2,319.379"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>
Billed unmetered:	<input type="text" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>
Unbilled metered:	<input type="text" value="10"/>	<input type="text" value="0.097"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>
Unbilled unmetered:	<input type="text" value="10"/>	<input style="background-color: yellow;" type="text" value="14.902"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:** 2,334.378 MG/Yr

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

992.158 MG/Yr

**Apparent Losses**

Unauthorized consumption:	<input type="text" value="7"/>	<input style="background-color: yellow;" type="text" value="8.316"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed					
Customer metering inaccuracies:	<input type="text" value="7"/>	<input style="background-color: yellow;" type="text" value="47.336"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>
Systematic data handling errors:	<input type="text" value="7"/>	<input style="background-color: yellow;" type="text" value="5.798"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>
Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed					
<b>Apparent Losses:</b>	<input type="text" value="7"/>	<input style="background-color: yellow;" type="text" value="61.451"/>	MG/Yr	<input type="text" value="+"/>	<input type="text" value="?"/>

Pcnt:  Value:

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

Real Losses = Water Losses - Apparent Losses: 930.707 MG/Yr

**WATER LOSSES:** 992.158 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:** 1,007.157 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="text" value="9"/>	<input type="text" value="385.2"/>	miles	<input type="text" value="+"/>	<input type="text" value="?"/>
Number of active AND inactive service connections:	<input type="text" value="9"/>	<input type="text" value="30,963"/>		<input type="text" value="+"/>	<input type="text" value="?"/>
Service connection density:	<input type="text" value="7"/>	<input style="background-color: yellow;" type="text" value="80"/>	conn./mile main	<input type="text" value="+"/>	<input type="text" value="?"/>

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="text" value="9"/>	<input type="text" value="\$9,503,422"/>	\$/Year	<input type="text" value="+"/>	<input type="text" value="?"/>
Customer retail unit cost (applied to Apparent Losses):	<input type="text" value="9"/>	<input type="text" value="\$10.17"/>	\$/1000 gallons (US)	<input type="text" value="+"/>	<input type="text" value="?"/>
Variable production cost (applied to Real Losses):	<input type="text" value="9"/>	<input type="text" value="\$538.38"/>	\$/Million gallo	<input type="text" value="+"/>	<input type="text" value="?"/>

**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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: PAW- Norristown District 510 (1460046)  
 Reporting Year: 2020 | 1/2020 - 12/2020

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

### System Attributes:

	Apparent Losses:	61.451	MG/Yr
+	Real Losses:	930.707	MG/Yr
=	<b>Water Losses:</b>	<b>992.158</b>	MG/Yr

? Unavoidable Annual Real Losses (UARL): 221.83 MG/Yr

Annual cost of Apparent Losses: \$624,957

Annual cost of Real Losses: \$501,074 Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 30.3%

Non-revenue water as percent by cost of operating system: 11.9% Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: 5.44 gallons/connection/day

Real Losses per service connection per day: 82.35 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 1.03 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 930.71 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 4.20

\* 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

**Water Audit Report for:** PAW- Phillipsburg District 720 (District 720)

**Reporting Year:** 2020      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	805.320	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	0.83%	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>

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

**WATER SUPPLIED:** 798.691 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	463.017	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	3.234	MG/Yr

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:** 466.251 MG/Yr

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

332.440 MG/Yr

**Apparent Losses**

Unauthorized consumption:	<input type="button" value="+ ?"/>	<span style="background-color: yellow;">1.997</span>	MG/Yr
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed			
Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	9.449
Systematic data handling errors:	<input type="button" value="+ ?"/>	<span style="background-color: yellow;">1.158</span>	MG/Yr
Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed			
<b>Apparent Losses:</b>	<input type="button" value="?"/>	<span style="background-color: yellow;">12.604</span>	MG/Yr

Pcnt:  Value:  MG/Yr

Value:  MG/Yr

Value:  MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  319.836 MG/Yr

**WATER LOSSES:** 332.440 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  335.674 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	318.6	miles
Number of active AND inactive service connections:	<input type="button" value="+ ?"/>	9	10,297	
Service connection density:	<input type="button" value="?"/>	<span style="background-color: yellow;">32</span>	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="+ ?"/>	9	\$2,287,484	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$557.87	\$/Million gallo 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  
American Water Works Association.

Water Audit Report for: **PAW- Phillipsburg District 720 (District 720)**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

	Apparent Losses:	12.604	MG/Yr
	+ Real Losses:	319.836	MG/Yr
	= <b>Water Losses:</b>	<b>332.440</b>	MG/Yr

?

Unavoidable Annual Real Losses (UARL): 126.97 MG/Yr

Annual cost of Apparent Losses: \$128,179

Annual cost of Real Losses: \$178,427

Valued at **Variable Production Cost**  
 Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 42.0%

Non-revenue water as percent by cost of operating system: 13.5% Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: 3.35 gallons/connection/day

Real Losses per service connection per day: 85.10 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 0.86 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 319.84 million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: 2.52

\* 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

**Water Audit Report for:** PAW-Pittsburgh Division (Districts 110;210;220) (5020039;5020039-MC;5020039)  
**Reporting Year:** 2020 1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	22,289.159	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	9	6.841	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	9	495.910	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	0.21%	<input type="text" value=""/>
		<input type="text" value=""/>
n/a	0.00%	<input type="text" value=""/>

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

**WATER SUPPLIED:** 21,753.381 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	13,474.497	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	10	69.863	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	34.618	MG/Yr

Click here:  for help using option

Pcnt:	Value:	MG/Yr
	<input type="text" value="34.618"/>	

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:** 13,578.978 MG/Yr

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

8,174.403 MG/Yr

**Apparent Losses**

Unauthorized consumption:  54.383 MG/Yr  
 Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	276.416	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>		33.686	MG/Yr

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

**Apparent Losses:** 364.485 MG/Yr

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

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

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

Real Losses = Water Losses - Apparent Losses: 7,809.918 MG/Yr

**WATER LOSSES:** 8,174.403 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:** 8,278.884 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	3,098.2	miles
Number of active AND inactive service connections:	<input type="button" value="+ ?"/>	9	205,545	
Service connection density:	<input type="button" value="+ ?"/>		66	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="+ ?"/>	9	\$61,554,216	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$361.62	\$/Million gallo 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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: **PAW-Pittsburgh Division (Districts 110;210;220) (5020039;5020039-MC;5020039)**  
Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

	Apparent Losses:	364.485	MG/Yr
	+ Real Losses:	7,809.918	MG/Yr
	= <b>Water Losses:</b>	<b>8,174.403</b>	MG/Yr

?

Unavoidable Annual Real Losses (UARL): 2,111.31 MG/Yr

Annual cost of Apparent Losses: \$3,706,815

Annual cost of Real Losses: \$2,824,222 Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 38.1%

Non-revenue water as percent by cost of operating system: 10.7% Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: 4.86 gallons/connection/day

Real Losses per service connection per day: 104.10 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 0.95 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 7,809.92 million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: 3.70

\* 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  
American Water Works Association

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

**Reporting Year:** 2020      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	617.958	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	-0.66%	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>

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

**WATER SUPPLIED:** 622.064 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	377.858	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	9	6.892	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	1.165	MG/Yr

Click here:   
for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:** 385.915 MG/Yr

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

236.149 MG/Yr

**Apparent Losses**

Unauthorized consumption:  1.555 MG/Yr  
 Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	7.852	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>		0.945	MG/Yr

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

**Apparent Losses:** 10.352 MG/Yr

Pcnt:  Value:  MG/Yr

MG/Yr

MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  225.797 MG/Yr

**WATER LOSSES:** 236.149 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  244.206 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	156.4	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	<input type="button" value="+ ?"/>	9	9,956	
Service connection density:	<input style="border: 1px solid blue;" type="button" value=" ? "/>		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:    ft

Average operating pressure:    psi

**COST DATA**

Total annual cost of operating water system:	<input type="button" value="+ ?"/>	9	\$2,423,374	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$527.92	\$/Million gallo 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  
American Water Works Association.

Water Audit Report for: **PAW- Pocono District 570 (2450063)**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

Apparent Losses:	10.352	MG/Yr
+	Real Losses:	225.797
=	<b>Water Losses:</b>	<b>236.149</b>
		MG/Yr

?

Unavoidable Annual Real Losses (UARL): 64.77 MG/Yr

Annual cost of Apparent Losses: \$105,278

Annual cost of Real Losses: \$119,203

Valued at **Variable Production Cost**  
 Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 39.3%

Non-revenue water as percent by cost of operating system: 9.4% Real Losses valued at Variable Production Cost

Operational: {

Apparent Losses per service connection per day: 2.85 gallons/connection/day

Real Losses per service connection per day: 62.14 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): 225.80 million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: 3.49

\* 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  
American Water Works Association

**Water Audit Report for:** PAW- Punxsutawney District 420 (6330010)

**Reporting Year:** 2020 1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="text" value="9"/>	<input type="text" value="287.277"/>	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	<input type="text" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	<input type="text" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	<input type="text" value="-1.00%"/>	Value:	<input type="text"/>	MG/Yr
	<input type="radio"/>		<input type="radio"/>	MG/Yr
	<input type="radio"/>		<input type="radio"/>	MG/Yr

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

**WATER SUPPLIED:** 290.179 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	<input type="text" value="10"/>	<input type="text" value="213.675"/>	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	<input type="text" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	<input type="text" value="10"/>	<input type="text" value="0.103"/>	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	<input type="text" value="10"/>	<input type="text" value="1.121"/>	MG/Yr

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:** 214.899 MG/Yr

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

75.280 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="text" value="7"/>	<input type="text" value="4.363"/>	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>	<input type="text" value="7"/>	<input type="text" value="0.534"/>	MG/Yr

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

**Apparent Losses:**  5.622 MG/Yr

Pcnt:  Value:

MG/Yr

MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  69.657 MG/Yr

**WATER LOSSES:** 75.280 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  76.504 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	<input type="text" value="9"/>	<input type="text" value="86.7"/>	miles
Number of active AND inactive service connections:	<input type="button" value="+ ?"/>	<input type="text" value="9"/>	<input type="text" value="3,624"/>	
Service connection density:	<input type="button" value="?"/>	<input type="text" value="7"/>	<input type="text" value="42"/>	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="text" value="9"/>	<input type="text" value="\$1,036,091"/>	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	<input type="text" value="9"/>	<input type="text" value="\$10.17"/>	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	<input type="text" value="9"/>	<input type="text" value="\$480.56"/>	\$/Million gallo 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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: **PAW- Punxsutawney District 420 (6330010)**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

	Apparent Losses:	5.622	MG/Yr
	+ Real Losses:	69.657	MG/Yr
	= <b>Water Losses:</b>	<b>75.280</b>	MG/Yr

?

Unavoidable Annual Real Losses (UARL): **37.80** MG/Yr

Annual cost of Apparent Losses: **\$57,180**

Annual cost of Real Losses: **\$33,475** Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: **26.4%**

Non-revenue water as percent by cost of operating system: **8.8%** Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: **4.25** gallons/connection/day

Real Losses per service connection per day: **52.66** gallons/connection/day

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

Real Losses per service connection per day per psi pressure: **0.56** gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): **69.66** million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: **1.84**

\* 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  
American Water Works Association

Water Audit Report for: **PAW- Royersford District 640 (1150166;1150206)**  
Reporting Year: **2020**      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	1,488.138	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	9	56.136	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	-0.13%	<input type="text" value=""/>
		<input type="text" value=""/>
		<input type="text" value=""/>

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

**WATER SUPPLIED:** **1,546.211** MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	1,333.098	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	10	0.010	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	9.954	MG/Yr

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:** **1,343.062** MG/Yr

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

**203.149** MG/Yr

**Apparent Losses**

Unauthorized consumption:	<input type="button" value="+ ?"/>		3.866	MG/Yr
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed				
Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	27.206	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>		3.333	MG/Yr
Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed				
<b>Apparent Losses:</b>	<input type="button" value="?"/>		<b>34.405</b>	MG/Yr

Pcnt:  Value:  MG/Yr

MG/Yr

MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  **168.745** MG/Yr

**WATER LOSSES:** **203.149** MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  **213.113** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	280.8	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	<input type="button" value="+ ?"/>	9	16,501	
Service connection density:	<input type="button" value="?"/>		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:  7  ft

Average operating pressure:  8  psi

**COST DATA**

Total annual cost of operating water system:	<input type="button" value="+ ?"/>	9	\$5,222,883	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$421.91	\$/Million gallo 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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: **PAW- Royersford District 640 (1150166;1150206)**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

	Apparent Losses:	<b>34.405</b>	MG/Yr
+	Real Losses:	<b>168.745</b>	MG/Yr
=	<b>Water Losses:</b>	<b>203.149</b>	MG/Yr

?

Unavoidable Annual Real Losses (UARL): **114.40** MG/Yr

Annual cost of Apparent Losses: **\$349,894**

Annual cost of Real Losses: **\$71,195** Valued at **Variable Production Cost**  
 Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied:	<b>13.8%</b>	
Non-revenue water as percent by cost of operating system:	<b>8.1%</b>	Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day:	<b>5.71</b>	gallons/connection/day
Real Losses per service connection per day:	<b>28.02</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>0.40</b>	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): **168.74** million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: **1.48**

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

**Water Audit Report for:** PAW - Steelton District (7220036)  
**Reporting Year:** 2020 1/2020 - 12/2020

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

**All volumes to be entered as: MILLION GALLONS (US) PER YEAR**

To select the correct data grading for each input, determine the highest grade below 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	440.842	MG/Yr
Water imported:	+ ?	4	4.739	MG/Yr
Water exported:	+ ?	9	0.000	MG/Yr

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
+ ? 6 -1.40%	<input checked="" type="radio"/> <input type="radio"/>	MG/Yr
+ ? 6	<input type="radio"/> <input checked="" type="radio"/>	MG/Yr
+ ?	<input type="radio"/> <input checked="" type="radio"/>	MG/Yr

**WATER SUPPLIED:** 451.840 MG/Yr

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

**AUTHORIZED CONSUMPTION**

Billed metered:	+ ?	9	297.102	MG/Yr
Billed unmetered:	+ ?	n/a		MG/Yr
Unbilled metered:	+ ?	9	14.145	MG/Yr
Unbilled unmetered:	+ ?	9	12.292	MG/Yr

Unbilled Unmetered volume entered is greater than the recommended default value

**AUTHORIZED CONSUMPTION:** 323.539 MG/Yr

Click here: ?  
for help using option buttons below

Pcnt: Value: MG/Yr  
  12.292

Use buttons to select percentage of water supplied OR value

Pcnt: Value: MG/Yr  
0.25%

2.00%   MG/Yr  
0.25%   MG/Yr

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

128.301 MG/Yr

**Apparent Losses**

Unauthorized consumption: + ? 1.130 MG/Yr

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

Customer metering inaccuracies:	+ ?	5	6.352	MG/Yr
Systematic data handling errors:	+ ?	4	0.000	MG/Yr

Systematic data handling errors are likely, please enter a positive, non-zero value; otherwise grade = 1 (not displayed)

**Apparent Losses:** 7.482 MG/Yr

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

Real Losses = Water Losses - Apparent Losses: ? 120.820 MG/Yr

**WATER LOSSES:** 128.301 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:** ? 154.738 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	+ ?	7	28.3	miles
Number of active AND inactive service connections:	+ ?	5	2,415	
Service connection density:	?		85	conn./mile main

Are customer meters typically located at the curbside or property line? No  
Average length of customer service line: + ? 5 14.4 ft (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average operating pressure: + ? 5 83.6 psi

**COST DATA**

Total annual cost of operating water system:	+ ?	4	\$674,864	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?	5	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ?	5	\$706.86	\$/Million gallons <input type="checkbox"/> Use Customer Retail Unit Cost to value real losses

**WATER AUDIT DATA VALIDITY SCORE:**

\*\*\* YOUR SCORE IS: 69 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: Systematic data handling errors

2: Total annual cost of operating water system

3: Customer metering inaccuracies



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

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Water Audit Report for: **PAW - Steelton District (7220036)**  
Reporting Year: **2020** | **1/2020 - 12/2020**

**\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 69 out of 100 \*\*\***

### System Attributes:

	Apparent Losses:	7.482	MG/Yr
+	Real Losses:	120.820	MG/Yr
=	<b>Water Losses:</b>	<b>128.301</b>	MG/Yr

? Unavoidable Annual Real Losses (UARL): 17.23 MG/Yr

Annual cost of Apparent Losses: \$76,088

Annual cost of Real Losses: \$85,403 Valued at **Variable Production Cost**  
Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial:	{	Non-revenue water as percent by volume of Water Supplied:	34.2%	
		Non-revenue water as percent by cost of operating system:	26.7%	Real Losses valued at Variable Production Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	8.49	gallons/connection/day
		Real Losses per service connection per day:	137.07	gallons/connection/day
		Real Losses per length of main per day*:	N/A	
		Real Losses per service connection per day per psi pressure:	1.64	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 120.82 million gallons/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 7.01

\* 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

Water Audit Report for: **PAW- Susquehanna District 540 (2580224;2580023;2580026)**  
Reporting Year: **2020**      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	252.905	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	9	0.000	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	-0.92%	<input type="text"/>
<input type="radio"/>	<input type="radio"/>	<input type="text"/>
<input type="radio"/>	<input type="radio"/>	<input type="text"/>
<input type="radio"/>	<input type="radio"/>	<input type="text"/>

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

**WATER SUPPLIED:**      **255.253** MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	128.078	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	10	0.019	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	21.658	MG/Yr

Unbilled Unmetered volume entered is greater than the recommended default value

**AUTHORIZED CONSUMPTION:**      **149.755** MG/Yr

Click here:   
for help using option

Pcnt:      Value:      MG/Yr

          

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

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

**105.498** MG/Yr

**Apparent Losses**

Unauthorized consumption:	<input type="button" value="+ ?"/>		0.638	MG/Yr
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed				
Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	2.614	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>		0.320	MG/Yr
Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed				

**Apparent Losses:**      **3.573** MG/Yr

Pcnt:      Value:      MG/Yr

0.25%           

2.00%           

0.25%           

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

**Real Losses = Water Losses - Apparent Losses:**      **101.926** MG/Yr

**WATER LOSSES:**      **105.498** MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**      **127.175** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	62.1	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	<input type="button" value="+ ?"/>	9	2,893	
Service connection density:	<input type="button" value="+ ?"/>		47	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      18.4 ft

Average operating pressure:       8      79.2 psi

**COST DATA**

Total annual cost of operating water system:	<input type="button" value="+ ?"/>	9	\$727,041	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$796.77	\$/Million gallo 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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: **PAW- Susquehanna District 540 (2580224;2580023;2580026)**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

	Apparent Losses:	<b>3.573</b>	MG/Yr
	+ Real Losses:	<b>101.926</b>	MG/Yr
	= <b>Water Losses:</b>	<b>105.498</b>	MG/Yr



Unavoidable Annual Real Losses (UARL): **24.44** MG/Yr

Annual cost of Apparent Losses: **\$36,333**

Annual cost of Real Losses: **\$81,211** Valued at **Variable Production Cost**  
Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied:	<b>49.8%</b>	
Non-revenue water as percent by cost of operating system:	<b>18.5%</b>	Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day:	<b>3.38</b>	gallons/connection/day
Real Losses per service connection per day:	<b>96.53</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>1.22</b>	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): **101.93** million gallons/year



Infrastructure Leakage Index (ILI) [CARL/UARL]: **4.17**

\* 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

? Click to access  
+ Click to add a

**Water Audit Report for:** PAW- Uniontown/Connellsville District 230 (5260022;5260020)  
**Reporting Year:** 2020 1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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	629.774	MG/Yr	+ ?
Water imported:	+ ?	9	731.771	MG/Yr	+ ?
Water exported:	+ ?	9	0.000	MG/Yr	+ ?

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	
9	0.00%	MG/Yr
n/a		MG/Yr
		MG/Yr

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

**WATER SUPPLIED:** 1,361.545 MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	+ ?	10	845.421	MG/Yr
Billed unmetered:	+ ?	n/a	0.000	MG/Yr
Unbilled metered:	+ ?	10	2.043	MG/Yr
Unbilled unmetered:	+ ?		17.019	MG/Yr

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

**AUTHORIZED CONSUMPTION:** 864.483 MG/Yr

Click here: ?  
for help using option

Pcnt:	Value:	
1.25%		MG/Yr

Use buttons to select percentage of water supplied  
OR  
value

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

497.062 MG/Yr

**Apparent Losses**

Unauthorized consumption: + ? 3.404 MG/Yr

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

Customer metering inaccuracies:	+ ?	7	17.295	MG/Yr
Systematic data handling errors:	+ ?		2.114	MG/Yr

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

**Apparent Losses:** 22.813 MG/Yr

Pcnt:	Value:	
0.25%		MG/Yr

2.00%		MG/Yr
0.25%		MG/Yr

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

Real Losses = Water Losses - Apparent Losses: ? 474.249 MG/Yr

**WATER LOSSES:** 497.062 MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:** ? 516.124 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	+ ?	9	231.6	miles
Number of active AND inactive service connections:	+ ?	9	11,620	
Service connection density:	?		50	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 16.3 ft

Average operating pressure: + ? 8 98.0 psi

**COST DATA**

Total annual cost of operating water system:	+ ?	9	\$3,889,497	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+ ?	9	\$1,367.54	\$/Million gallo 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: Unauthorized consumption

2: Systematic data handling errors

3: Customer metering inaccuracies



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: PAW- Uniontown/Connellsville District 230 (5260022;5260020)  
 Reporting Year: 2020 | 1/2020 - 12/2020

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

### System Attributes:

	Apparent Losses:	<span style="border: 1px solid black; padding: 2px;">22.813</span>	MG/Yr	
+	Real Losses:	<span style="border: 1px solid black; padding: 2px;">474.249</span>	MG/Yr	
=	<b>Water Losses:</b>	<span style="border: 1px solid black; padding: 2px;">497.062</span>	MG/Yr	

?

Unavoidable Annual Real Losses (UARL): 116.79 MG/Yr

Annual cost of Apparent Losses: \$232,004

Annual cost of Real Losses: \$648,555 Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 37.9%

Non-revenue water as percent by cost of operating system: 23.3% Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: 5.38 gallons/connection/day

Real Losses per service connection per day: 111.82 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 1.14 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 474.25 million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: 4.06

\* 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  
American Water Works Association

? Click to access  
+ Click to add a

Water Audit Report for: **PAW- Warren District 450 (6620020)**  
Reporting Year: **2020**      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="text" value="9"/>	<input type="text" value="525.291"/>	MG/Yr	<input type="text" value="+ ?"/>
Water imported:	<input type="text" value="9"/>	<input type="text" value="0.000"/>	MG/Yr	<input type="text" value="+ ?"/>
Water exported:	<input type="text" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr	<input type="text" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	<input type="text" value="9"/>	<input type="text" value="-4.23%"/>	<input type="text" value="MG/Yr"/>
Value:	<input type="text" value="MG/Yr"/>	<input type="text" value="MG/Yr"/>	<input type="text" value="MG/Yr"/>

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

**WATER SUPPLIED: 548.492** MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="text" value="10"/>	<input type="text" value="354.272"/>	MG/Yr	<input type="text" value="+ ?"/>
Billed unmetered:	<input type="text" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr	<input type="text" value="+ ?"/>
Unbilled metered:	<input type="text" value="10"/>	<input type="text" value="0.000"/>	MG/Yr	<input type="text" value="+ ?"/>
Unbilled unmetered:	<input type="text" value="10"/>	<input type="text" value="16.194"/>	MG/Yr	<input type="text" value="+ ?"/>

Unbilled Unmetered volume entered is greater than the recommended default value

**AUTHORIZED CONSUMPTION: 370.466** MG/Yr

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

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

**178.026** 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="text" value="7"/>	<input type="text" value="7.230"/>	MG/Yr	<input type="text" value="+ ?"/>
Systematic data handling errors:	<input type="text" value="7"/>	<input type="text" value="0.886"/>	MG/Yr	<input type="text" value="+ ?"/>

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

**Apparent Losses: 9.487** MG/Yr

Pcnt:  Value:

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

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

**WATER LOSSES: 178.026** MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER: 194.220** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="text" value="9"/>	<input type="text" value="88.7"/>	miles	<input type="text" value="+ ?"/>
Number of active AND inactive service connections:	<input type="text" value="9"/>	<input type="text" value="5,748"/>		<input type="text" value="+ ?"/>
Service connection density:	<input type="text" value="65"/>		conn./mile main	<input "="" type="text" value="?"/>

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="text" value="9"/>	<input type="text" value="\$1,560,730"/>	\$/Year	<input type="text" value="+ ?"/>
Customer retail unit cost (applied to Apparent Losses):	<input type="text" value="9"/>	<input type="text" value="\$10.17"/>	\$/1000 gallons (US)	<input type="text" value="+ ?"/>
Variable production cost (applied to Real Losses):	<input type="text" value="9"/>	<input type="text" value="\$149.38"/>	\$/Million gallo	<input type="text" value="+ ?"/> 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  
American Water Works Association.

Water Audit Report for: **PAW- Warren District 450 (6620020)**  
 Reporting Year: **2020** | **1/2020 - 12/2020**

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

### System Attributes:

Apparent Losses:	9.487	MG/Yr
+	Real Losses:	168.539
=	<b>Water Losses:</b>	<b>178.026</b>
		MG/Yr

?

Unavoidable Annual Real Losses (UARL): 46.53 MG/Yr

Annual cost of Apparent Losses: \$96,482

Annual cost of Real Losses: \$25,176

Valued at **Variable Production Cost**  
 Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 35.4%

Non-revenue water as percent by cost of operating system: 7.9% Real Losses valued at Variable Production Cost

Operational: {

Apparent Losses per service connection per day: 4.52 gallons/connection/day

Real Losses per service connection per day: 80.33 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 0.95 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 168.54 million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: 3.62

\* 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

WAS  
American Water Works Association

Water Audit Report for: **Wilkes-Barre, Scranton (District 910)**  
Reporting Year: **2020**    1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	16,649.245	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	10	0.000	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	-0.10%	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>

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

**WATER SUPPLIED:**    **16,665.911** MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	9,441.344	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	10	229.586	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	133.767	MG/Yr

Click here:   
for help using option

Pcnt:    Value:    MG/Yr

  

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

**AUTHORIZED CONSUMPTION:**    **9,804.697** MG/Yr

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

**6,861.214** MG/Yr

**Apparent Losses**

Unauthorized consumption:     **41.665** MG/Yr  
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	197.366	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>		23.603	MG/Yr

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

**Apparent Losses:**    **262.634** MG/Yr

Pcnt:    Value:    MG/Yr

0.25%        

2.00%        

0.25%        

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

Real Losses = Water Losses - Apparent Losses:    **6,598.580** MG/Yr

**WATER LOSSES:**    **6,861.214** MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**    **7,224.567** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	1,774.0	miles
Number of active AND inactive service connections:	<input type="button" value="+ ?"/>	9	124,837	
Service connection density:	<input type="button" value="+ ?"/>		70	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="+ ?"/>	9	\$39,052,358	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$193.53	\$/Million gallo 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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: Wilkes-Barre\_Scranton (District 910)  
 Reporting Year: 2020 | 1/2020 - 12/2020

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

### System Attributes:

	Apparent Losses:	262.634	MG/Yr
+	Real Losses:	6,598.580	MG/Yr
=	<b>Water Losses:</b>	<b>6,861.214</b>	MG/Yr



Unavoidable Annual Real Losses (UARL): 1,093.39 MG/Yr

Annual cost of Apparent Losses: \$2,670,988

Annual cost of Real Losses: \$1,277,023 Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 43.3%

Non-revenue water as percent by cost of operating system: 10.3% Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: 5.76 gallons/connection/day

Real Losses per service connection per day: 144.82 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 1.52 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 6,598.58 million gallons/year



Infrastructure Leakage Index (ILI) [CARL/UARL]: 6.03

\* 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  
American Water Works Association

Water Audit Report for: **PAW- Wyomissing\_Penn District 630 (3060069)**  
Reporting Year: **2020**      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	961.253	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	-0.47%	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>

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

**WATER SUPPLIED:** **965.792** MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	771.979	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	10	0.506	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	11.499	MG/Yr

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:** **783.984** MG/Yr

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

**181.808** MG/Yr

**Apparent Losses**

Unauthorized consumption:  **2.414** MG/Yr  
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	15.765	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>		1.930	MG/Yr

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

**Apparent Losses:** **20.109** MG/Yr

Pcnt:  Value:  MG/Yr

MG/Yr  
  MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  **161.699** MG/Yr

**WATER LOSSES:** **181.808** MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  **193.813** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	162.1	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	<input type="button" value="+ ?"/>	9	11,740	
Service connection density:	<input type="button" value="?"/>		72	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="+ ?"/>	9	\$3,584,174	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$171.59	\$/Million gallo 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: Systematic data handling errors



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

WAS v5.0  
American Water Works Association.

Water Audit Report for: PAW- Wyomissing\_Penn District 630 (3060069)  
 Reporting Year: 2020 | 1/2020 - 12/2020

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

### System Attributes:

	Apparent Losses:	20.109	MG/Yr
+	Real Losses:	161.699	MG/Yr
=	<b>Water Losses:</b>	<b>181.808</b>	MG/Yr

?

Unavoidable Annual Real Losses (UARL): 94.02 MG/Yr

Annual cost of Apparent Losses: \$204,513

Annual cost of Real Losses: \$27,746 Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 20.1%

Non-revenue water as percent by cost of operating system: 6.5% Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: 4.69 gallons/connection/day

Real Losses per service connection per day: 37.74 gallons/connection/day

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

Real Losses per service connection per day per psi pressure: 0.44 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 161.70 million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: 1.72

\* 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

AWWA  
American Water Works Association

Water Audit Report for: **PAW- Yardley District 520 (1090074)**  
Reporting Year: **2020**      1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

**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="+ ?"/>	9	1,088.351	MG/Yr	<input type="button" value="+ ?"/>
Water imported:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr	<input type="button" value="+ ?"/>
Water exported:	<input type="button" value="+ ?"/>	9	65.554	MG/Yr	<input type="button" value="+ ?"/>

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:	MG/Yr
9	0.03%	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>
<input type="radio"/>	<input type="radio"/>	<input type="text" value=""/>

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

**WATER SUPPLIED:** **1,022.471** MG/Yr

**AUTHORIZED CONSUMPTION**

Billed metered:	<input type="button" value="+ ?"/>	10	868.985	MG/Yr
Billed unmetered:	<input type="button" value="+ ?"/>	n/a	0.000	MG/Yr
Unbilled metered:	<input type="button" value="+ ?"/>	9	0.370	MG/Yr
Unbilled unmetered:	<input type="button" value="+ ?"/>	10	11.430	MG/Yr

Click here:  for help using option

Pcnt:  Value:  MG/Yr

Use buttons to select percentage of water supplied OR value

**AUTHORIZED CONSUMPTION:** **880.785** MG/Yr

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

**141.686** MG/Yr

**Apparent Losses**

Unauthorized consumption:	<input type="button" value="+ ?"/>		2.556	MG/Yr
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed				
Customer metering inaccuracies:	<input type="button" value="+ ?"/>	7	17.742	MG/Yr
Systematic data handling errors:	<input type="button" value="+ ?"/>		2.172	MG/Yr
Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed				
<b>Apparent Losses:</b>	<input type="button" value=" ?"/>		<b>22.471</b>	MG/Yr

Pcnt:  Value:  MG/Yr

Value:  MG/Yr

Value:  MG/Yr

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

Real Losses = Water Losses - Apparent Losses:  **119.215** MG/Yr

**WATER LOSSES:** **141.686** MG/Yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**  **153.486** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	<input type="button" value="+ ?"/>	9	192.3	miles
Number of <u>active</u> AND <u>inactive</u> service connections:	<input type="button" value="+ ?"/>	9	11,505	
Service connection density:	<input type="button" value=" ?"/>		60	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="+ ?"/>	9	\$3,659,286	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+ ?"/>	9	\$10.17	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	<input type="button" value="+ ?"/>	9	\$348.83	\$/Million gallo 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  
American Water Works Association.

Water Audit Report for: PAW- Yardley District 520 (1090074)  
 Reporting Year: 2020 | 1/2020 - 12/2020

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

### System Attributes:

	Apparent Losses:	22.471	MG/Yr
+	Real Losses:	119.215	MG/Yr
=	<b>Water Losses:</b>	<b>141.686</b>	MG/Yr

?

Unavoidable Annual Real Losses (UARL): 71.15 MG/Yr

Annual cost of Apparent Losses: \$228,526

Annual cost of Real Losses: \$41,586 Valued at **Variable Production Cost**  
 Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial: {

Non-revenue water as percent by volume of Water Supplied: 15.0%  
 Non-revenue water as percent by cost of operating system: 7.5% Real Losses valued at Variable Production Cost

Operational {

Apparent Losses per service connection per day: 5.35 gallons/connection/day  
 Real Losses per service connection per day: 28.39 gallons/connection/day  
 Real Losses per length of main per day\*: N/A  
 Real Losses per service connection per day per psi pressure: 0.45 gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 119.22 million gallons/year

?

Infrastructure Leakage Index (ILI) [CARL/UARL]: 1.68

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