

Leakage Component Analysis Example: Utilize the Leakage Component Analysis Model to determine the breakdown of real loss components for the audit year. You may use the example data provided on this sheet. You may also use your own data from the previous Applied Activities, if you brought it with you today.

PART 1: Go to tab called **AWWA-Water Balance Data Transf.** Fill in info from the AWWA Water Audit shown on next page.

PART 2: Go to tab called **Real Losses Component Analysis.** Fill in info from the Rockville information shown below. Note: if you don't have a data item it's asking for, just leave it blank. The total storage capacity is 1 MG.

The system does not perform any proactive leak detection.

Average age of the pipe network is 60 years.

Pipe network data:

- Total miles of 2" = 5 miles
- Total miles of 6" = 18 miles
- Total miles of 8" = 2 miles
- Total miles of 12" = 1 mile

Service connection data:

- Total Services <1" = 340
- Total Services ≥1" = 16

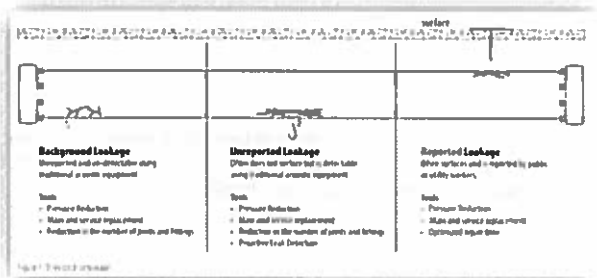
Available leak/break failure data for the audit year is shown on the attached Repair Summary.

Break data on valves and hydrants is not available.

Average awareness time for Reported Breaks on 6" and larger mains is estimated at 3 days.

Average awareness time for Reported Breaks on 4" mains and smaller (including services) is estimated at 30 days.

Average time to locate and repair any leak, once the utility is aware of it, is 2 days.



PART 3: Look for Summary Table (Lines 10-17 of the **Real Losses Component Analysis** tab) and the pie chart on the **Real Loss Components Chart** tab. What is the leakage breakdown in % and MG for Background vs Unreported (Hidden) vs Reported?

Background:	_____ %	_____ MG
Hidden/Unreported:	_____ %	_____ MG
Reported:	_____ %	_____ MG

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.

Master Meter and Supply

WATER SUPPLIED

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

Volume from own sources: 73.056 MG/Yr
 Water imported: MG/Yr
 Water exported: MG/Yr

Pcnt:

Enter negative % or value
 Enter positive % or value

WATER SUPPLIED: MG/Yr

AUTHORIZED CONSUMPTION

Billed metered: 31.945 MG/Yr
 Billed unmetered: MG/Yr
 Unbilled metered: 0.252 MG/Yr
 Unbilled unmetered: 0.798 MG/Yr

Click for but

Pcnt:

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

AUTHORIZED CONSUMPTION: MG/Yr

Use pe

WATER LOSSES (Water Supplied - Authorized Consumption)

MG/Yr

Apparent Losses

Unauthorized consumption: 0.160 MG/Yr

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

Customer metering inaccuracies: 1.695 MG/Yr

Systematic data handling errors: 0.080 MG/Yr

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

Apparent Losses: MG/Yr

Pcnt:

Real Losses (Current Annual Real Losses or CARL)

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

WATER LOSSES: MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains: 20.0 miles
 Number of active AND inactive service connections: 356
 Service connection density: 18 conn./mile main

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

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

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

Average operating pressure: 60.0 psi

COST DATA

Total annual cost of operating water system: \$395,000 \$/Year
 Customer retail unit cost (applied to Apparent Losses): \$1.56 \$/1000 gallons (US)
 Variable production cost (applied to Real Losses): \$446.68 \$/Million gallons Use Customer Retail Unit Cost to value

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 51 out of 100 ***

ID#	Description: Main or Service	Location/Address	Pipe Diameter	Material Type	Failure Type: joint, hole, split	Date/Time Break called in	Date/Time Break Repaired
1	M	1789 Washington	8	DIP	joint	1/4/15 3:30 AM	1/6/2015 03:30
2	M	1797 Adams	2	galv	split	1/9/15 1:30 AM	1/11/2015 01:30
3	M	1801 Jefferson	6	pvc	split	2/7/15 9:30 AM	2/9/2015 09:30
4	S	1809 Madison	5/8	PE	split	2/15/15 10:00 AM	2/17/2015 10:00
5	S	1817 Monroe	5/8	PE	hole	2/27/15 3:00 AM	3/1/2015 03:00
6	M	1825 Adams	6	pvc	joint	3/1/15 4:00 AM	3/3/2015 04:00
7	S	1829 Jackson	5/8	galv	hole	3/15/15 1:30 AM	3/17/2015 01:30
8	M	1837 Van Buren	2	galv	hole	3/29/15 4:00 AM	3/31/2015 04:00
9	S	1841 Harrison	5/8	galv	hole	4/5/15 3:00 AM	4/7/2015 03:00
10	M	1845 Tyler	2	galv	hole	4/19/15 2:45 AM	4/21/2015 02:45
11	M	1849 Polk	6	pvc	joint	5/20/15 9:00 AM	5/22/2015 09:00
12	S	1850 Taylor	1.5	galv	split	8/10/15 10:30 AM	8/12/2015 10:30
13	S	1853 Fillmore	5/8	PE	hole	9/11/15 1:00 AM	9/13/2015 01:00
14	S	1857 Pierce	5/8	PE	hole	10/10/15 3:00 AM	10/12/2015 03:00
15	M	1861 Buchanan	8	DIP	joint	10/21/15 6:00 AM	10/23/2015 06:00
16	S	1865 Lincoln	5/8	PE	hole	11/13/15 9:00 AM	11/15/2015 09:00
17	M	1869 Johnson	2	galv	split	11/29/15 8:00 AM	12/1/2015 08:00
18	M	1877 Grant	6	pvc	split	12/13/15 3:00 AM	12/15/2015 03:00
19	M	1881 Hayes	12	DIP	joint	12/25/15 4:00 AM	12/27/2015 04:00

