

A close-up photograph of a hand holding a small amount of water, with the sun shining through the water droplets, creating a lens flare effect. The background shows a blurred landscape with trees and water.

# Operational Visibility

## Temetra™ Analysis

It is becoming increasingly challenging for water utilities to serve their communities while managing aging infrastructure. Many water utilities do not have a quick, efficient way to see what is happening in their water distribution networks. This lack of operational visibility presents many challenges:

- » Difficulty identifying potential sources of non-revenue water (NRW)
- » Obstacles responding quickly to customers and regulators about water network status
- » Uncertainty about where to invest to best reduce NRW

Itron's Temetra Analysis solution helps you overcome these challenges by delivering measurable results that address non-revenue water losses in your water distribution system. Operational Visibility is the core offering of Temetra Analysis and provides a comprehensive view of your entire water distribution system by integrating data from multiple sources into a single platform. Data can originate from:

- » Field sensors
- » SCADA
- » Hydraulic modelling software
- » Geographic information systems (GIS)
- » Itron's Temetra headend software and meter data management
- » Customer information systems (CIS)

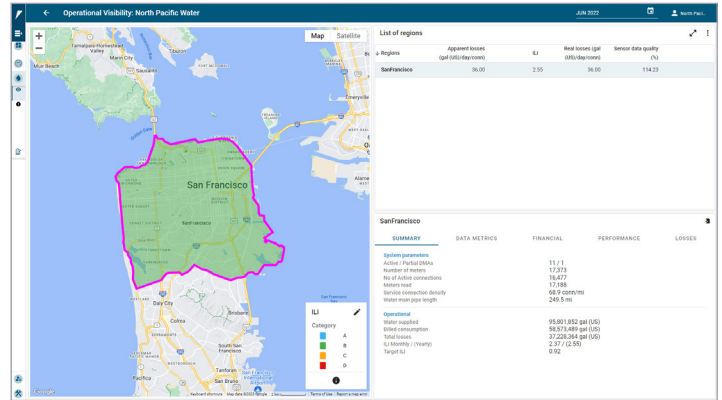
This solution provides you with valuable insights about NRW when deployed either across your entire territory or district metered areas (DMAs), if you have them. Temetra Analysis saves you significant time in understanding your NRW and enabling quick, decisive action to reduce it.

## OPERATIONAL VISIBILITY FEATURES

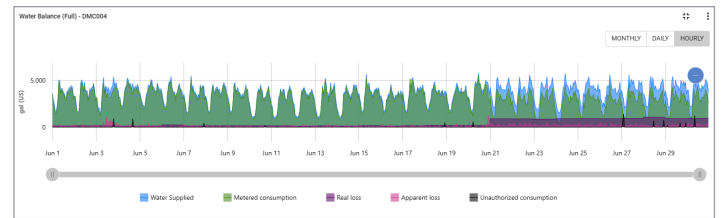
### Automated Water Balance

Operational Visibility provides an automated water balance table that enables you to prioritize your efforts and resources to areas that need the most attention. Calculated according to International Water Association (IWA)/American Water and Wastewater Association (AWWA) standards, water balance quantifies real losses (leaks) and apparent losses (metering inaccuracies and theft), and is computed for your entire water distribution system (territory-wide) and/or broken down by DMAs.

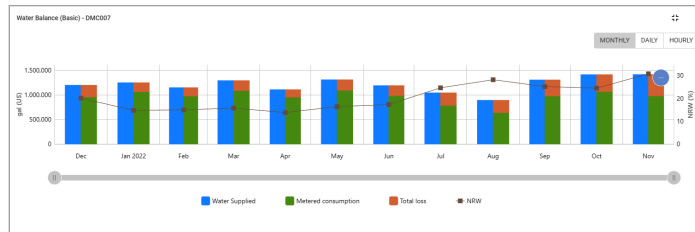
You can establish and track critical Key Performance Indicators (KPIs) over time to monitor performance and identify opportunities for improvement.



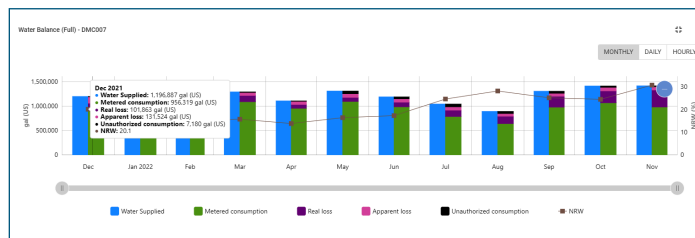
*Temetra Analysis uses a bottom-up approach to analyze data from individual sensor/service points at the territory-wide and DMA level.*



*With high granularity consumption data, the hourly water balance can be observed showing the diurnal curve of supplied water vs. consumption and losses.*



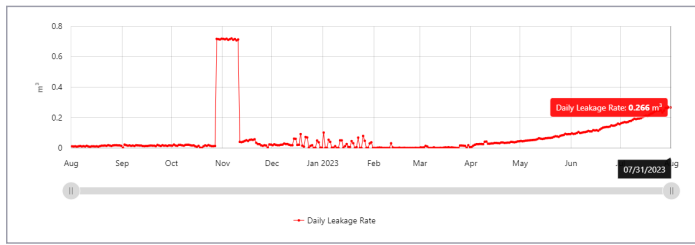
*Basic monthly water balance, with total losses*



*Full monthly water balance, with split between real and apparent losses*

## Event Investigation

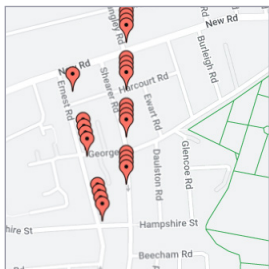
Event investigation allows for the quick detection of trends and anomalies within your utility's infrastructure. These events may go unnoticed when looking at separate data solutions. The solution also offers sort and filtering capabilities with the ability to drill down to device-level details.



Graph showing the progress of a leak at a service point

Examples include:

- » Consumption trend
- » Customer leakage
- » Endpoints with no read
- » Zero consumption

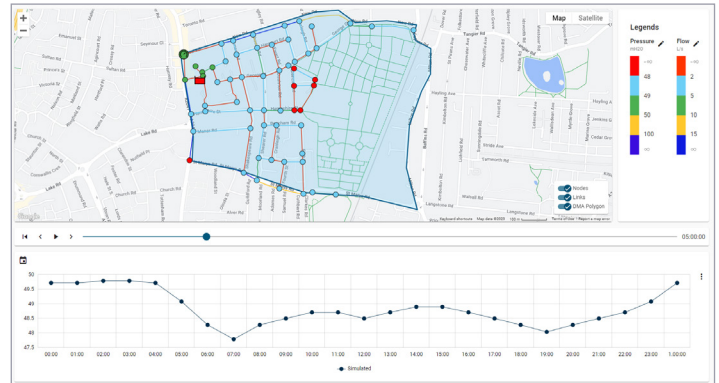


Entity	Service Point ID	No of Days With Active Leak	Start Date Of Leak	Total Leakage Volume	Leakage Hour	Consumer Leakage Score 1	Consumer Leakage Score 2	Threshold Days
<input type="checkbox"/>	108960	153	3/17/2023 12:00:00 A.	26.880	0.014	129	0.17	3
<input type="checkbox"/>	21793	76	5/31/2023 12:00:00 A.	44.664	0.043	12	0.57	3
<input type="checkbox"/>	21861	411	7/2/2023 12:00:00 AM	41.401	0.003	17	0.1	3
<input type="checkbox"/>	111219	145	3/29/2023 12:00:00 A.	440.832	0.350	76	3.01	3
<input type="checkbox"/>	40012	489	4/18/2022 12:00:00 A.	136.176	0.004	252	0.28	3
<input type="checkbox"/>	101565	700	9/16/2021 12:00:00 A.	220.732	0.032	343	0.31	3

Events identified within a map or table view. Tables can be sorted/filtered through various attributes/severity. Users can drill down into individual entities for a detailed review.

## Hydraulic Model Visualization

By incorporating CAD or GIS data, Operational Visibility generates a “digital twin” of your water infrastructure. Hydraulic modelling can then help you see anomalies in your network more quickly, including leaks and potential issues due to seasonal demand fluctuations.

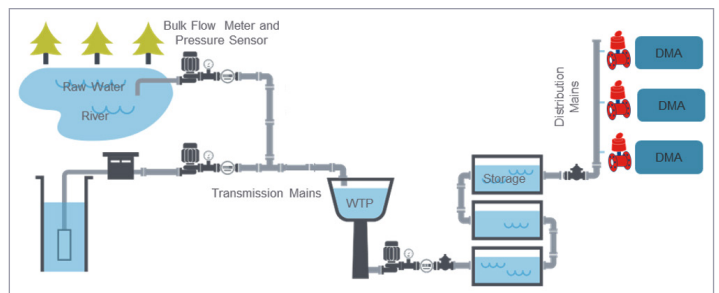


With only a few pressure and flow sensors installed, hydraulic model visualization allows the user to see the pressure and flow at all locations.

## Transmission Mains Monitoring

A water distribution network contains multiple sectors from sources including reservoirs/wells, water treatment plants, water storage, transmission/mains and the destination regions/DMA. Operational Visibility captures time-series data from flow sensors, pressure sensors and tank-level sensors, providing tools to monitor and detect potential issues within your distribution network.

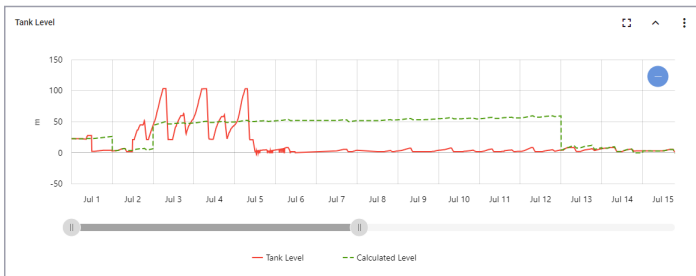
This information is critical when you are looking to manage your water end-to-end—from high-level transmission mains into regions/DMAs.



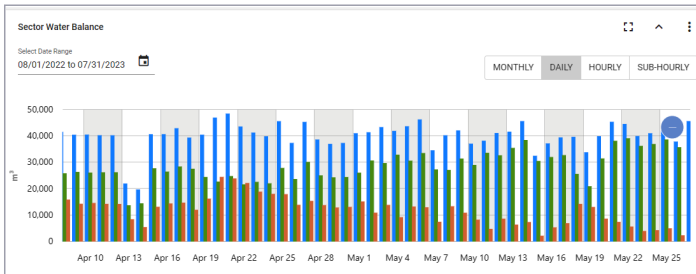
Conceptual view of a water distribution network

Entry	ID	Description	Type	Has Tank	08/16 Total Inflow	08/16 Total Outflow	08/16 Total Loss
0	OHT01	OHT inside WTP	Storage	False	-0.001	0.003	-0.003
0	PRK_IN_S501_OUTLET	Arcol Raw Water Outlet to OHT Inlet	Hybrid	False	0.158	0.111	0.046
0	S501	40MLD Water Loss WTP Outlet Line 1 to OHT Inlet	Transmission	False	0.127	0.111	0.016
0	S502	40MLD Water Loss WTP Outlet Line 2 to OHT Inlet	Transmission	False	0.004	0.019	-0.015
0	S503	18MLD Water loss WTP Outlet Line 1 to OHT Inlet	Transmission	False	-0.001	0.003	-0.004
0	SSRW01	40MLD Raw Water Loss Arcolcut Outlet to WTP Inlet	Transmission	False	0.158	0.146	0.012
0	SSRW1_WFP01	40MLD Raw Water Loss Arcolcut Outlet to WTP Out.	Hybrid	False	0.158	0.131	0.027
0	SSRW2_WFP02	18MLD Raw Water Outlet to WTP Outlet	Hybrid	False	0.028	-0.001	0.029
0	TANKWB_BGHOUT	Bagha OHT	Storage	True	0.007	0.000	0.002
0	TANKWB_BNDHT	Bahadur Nagar OHT	Storage	False	0.000	0.000	0.000
0	TANKWB_BPHOHT	Bipura OHT	Storage	False	0.000	0.000	0.000
0	TANKWB_COLGHT	Collectorate OHT	Storage	False	0.014	0.000	0.014
0	TANKWB_CVLGHT	Civil Line OHT	Storage	False	0.001	0.000	0.001
0	TANKWB_JNNKHT	Hanuman Nagar New OHT	Storage	False	0.017	0.001	0.016
0	TANKWB_JNDHT	Hanuman Nagar Old OHT	Storage	False	-0.000	0.001	-0.001
0	TANKWB_JUSOHT	Housing Board Colony Ltali OHT	Storage	True	0.000	0.000	0.000
0	TANKWB_JAWOHT	Jawahar Nagar OHT	Storage	False	0.015	0.000	0.014
0	TANKWB_PATHT	Pathari OHT	Storage	False	0.005	0.942	-0.936
0	TANKWB_SADHT	Sabzi Mandi OHT	Storage	True	0.018	0.000	0.003
0	TANKWB_SANDHT	Sandad Nivesh OHT	Storage	True	0.019	0.000	0.015
0	TANKWB_TKRGHT	Tiburiya Tola OHT	Storage	True	0.018	-0.000	0.003
0	TANKWB_TRNGHT	Transport Nagar OHT	Storage	True	0.000	0.000	-0.000
0	TANKWB_VENHT	Venkat OHT	Storage	True	0.000	-0.000	0.000
0	TANKWB_JKHHT	Jhankar Taluk OHT	Storage	True	0.017	0.000	-0.004

An overview of sectors are shown in a table that allows user to sort/filter on multiple attributes. Drill-down capability to review the individual sector at a more granular level can then take place.



Sector with storage tanks. Tank-level visualization shows actual and calculated level of the tank.



Sector Water Balance (monthly to sub-hourly). View the water balance for each sector with high level, at-a-glance monthly segregation down to hourly and sub-hourly (dependent on data granularity).

## KEY OUTCOMES

Capability	DMA	Territory-wide
<b>Water Balance</b>	<b>Hourly/daily/monthly<sup>1</sup></b>	
Aggregated Supplied Water	✓	✓
Aggregated Metered Consumption	✓	✓
Total Losses	✓	✓
Real Losses	✓ <sup>2</sup>	✓ <sup>4</sup>
Apparent Losses	✓ <sup>2</sup>	✓ <sup>4</sup>
Unauthorized Consumption	✓ <sup>3</sup>	
KPIs	✓ <sup>4, 5</sup>	✓ <sup>4, 5</sup>
<b>Events (service point)</b>		
Consumer-side Leaks	✓ <sup>3</sup>	✓ <sup>3</sup>
Consumption Trend	✓	✓
Zero Consumption	✓	✓
Zero Reads	✓	

<sup>1</sup>Granularity of water balance is determined by granularity of consumption and sensor data

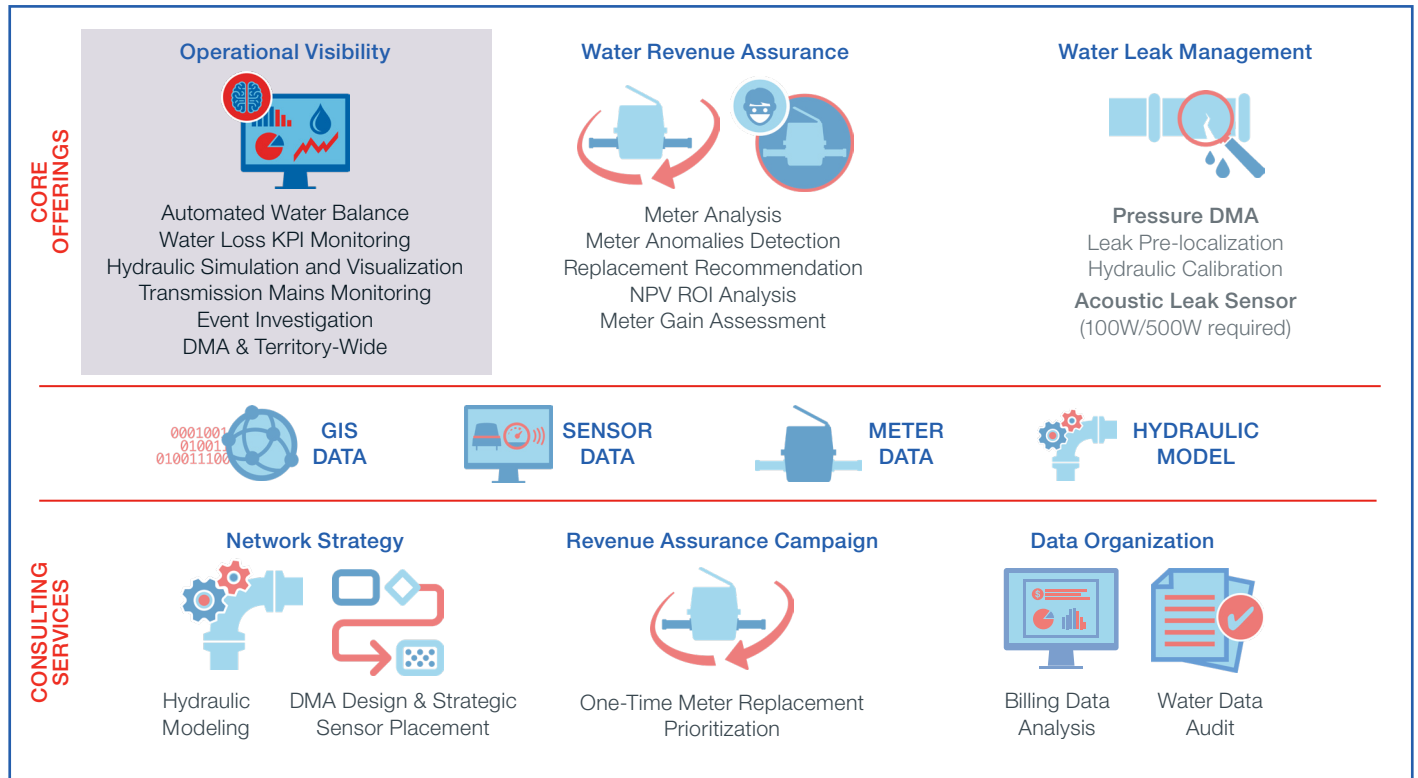
<sup>2</sup>Requires hourly pressure sensor data

<sup>3</sup>Requires hourly consumption data

<sup>4</sup>Evaluated based upon size of the DMA or territory and quality of data

<sup>5</sup>KPIs: Infrastructure Leakage Index (ILI), Unavoidable Annual Real Losses (UARL), Current Annual Real Losses (CARL), ALI (Apparent Loss Index), Real Loss Cost Rate (RLCR), Apparent Loss Cost Rate (ALCR), Data Quality

## TEMETRA ANALYSIS OFFERINGS



ITRON and TEMETRA are trademarks of Itron, Inc., registered in the U.S. and other countries and regions.



Join us in creating a more **resourceful world**.  
To learn more visit **itron.com**

**CORPORATE HQ**  
2111 North Molter Road  
Liberty Lake, WA 99019 USA

**Phone:** 1.800.635.5461  
**Fax:** 1.509.891.3355

While Itron strives to make the content of its marketing materials as timely and accurate as possible, Itron makes no claims, promises, or guarantees about the accuracy, completeness, or adequacy of, and expressly disclaims liability for errors and omissions in, such materials. No warranty of any kind, implied, expressed, or statutory, including but not limited to the warranties of non-infringement of third party rights, title, merchantability, and fitness for a particular purpose, is given with respect to the content of these marketing materials. © Copyright 2023 Itron. All rights reserved. **102024BR-02 9/23**