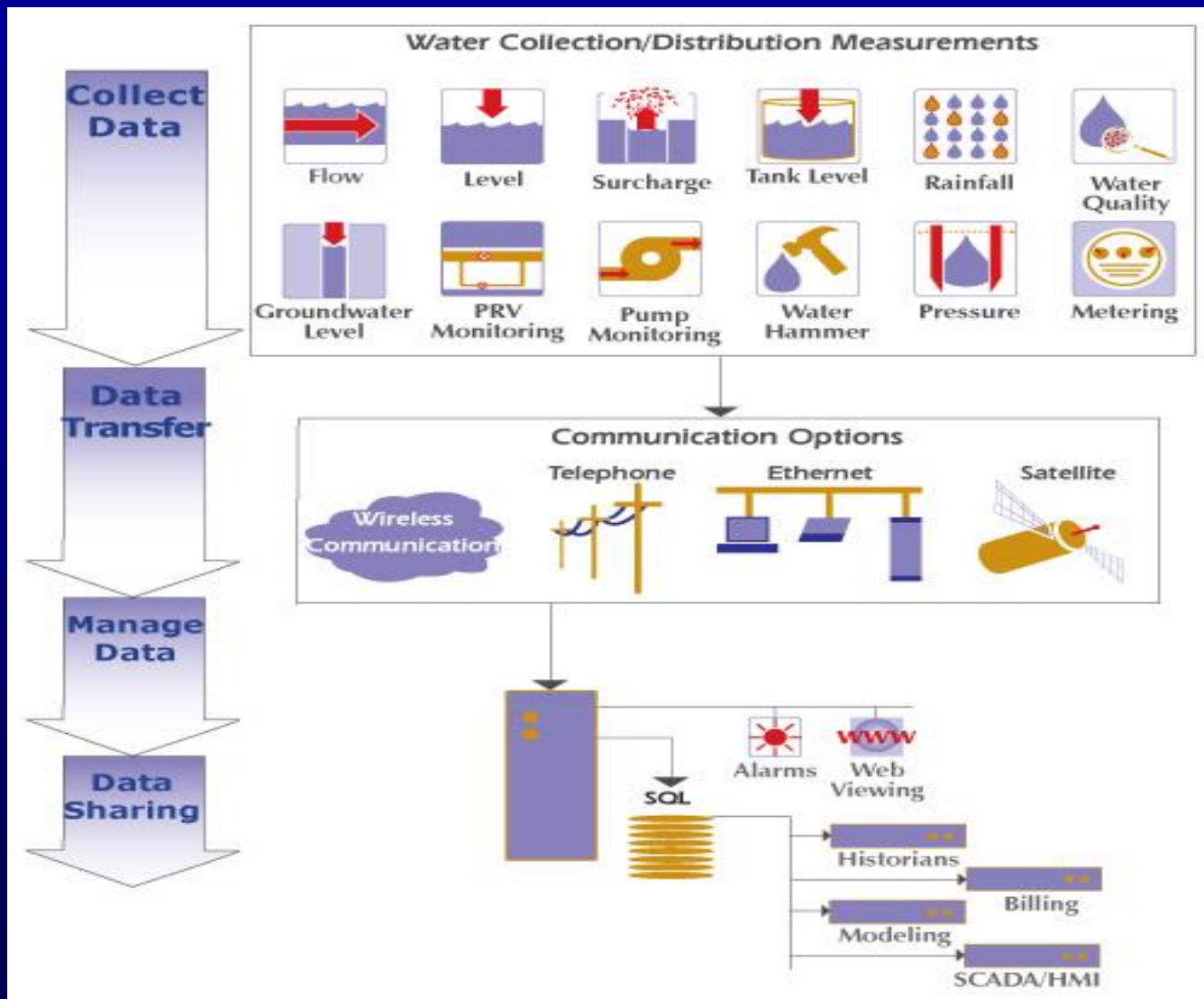
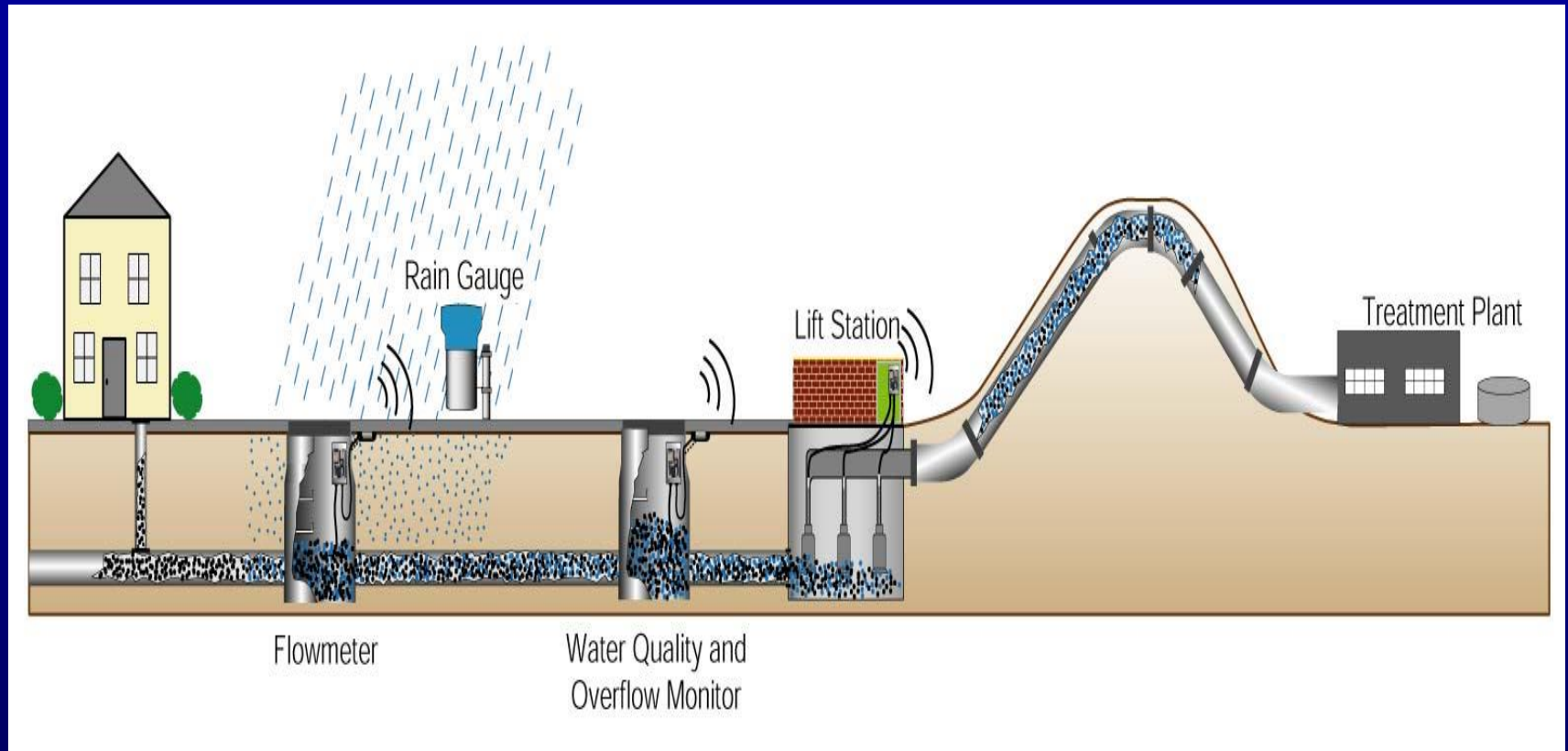


# Telog Enterprise Overview

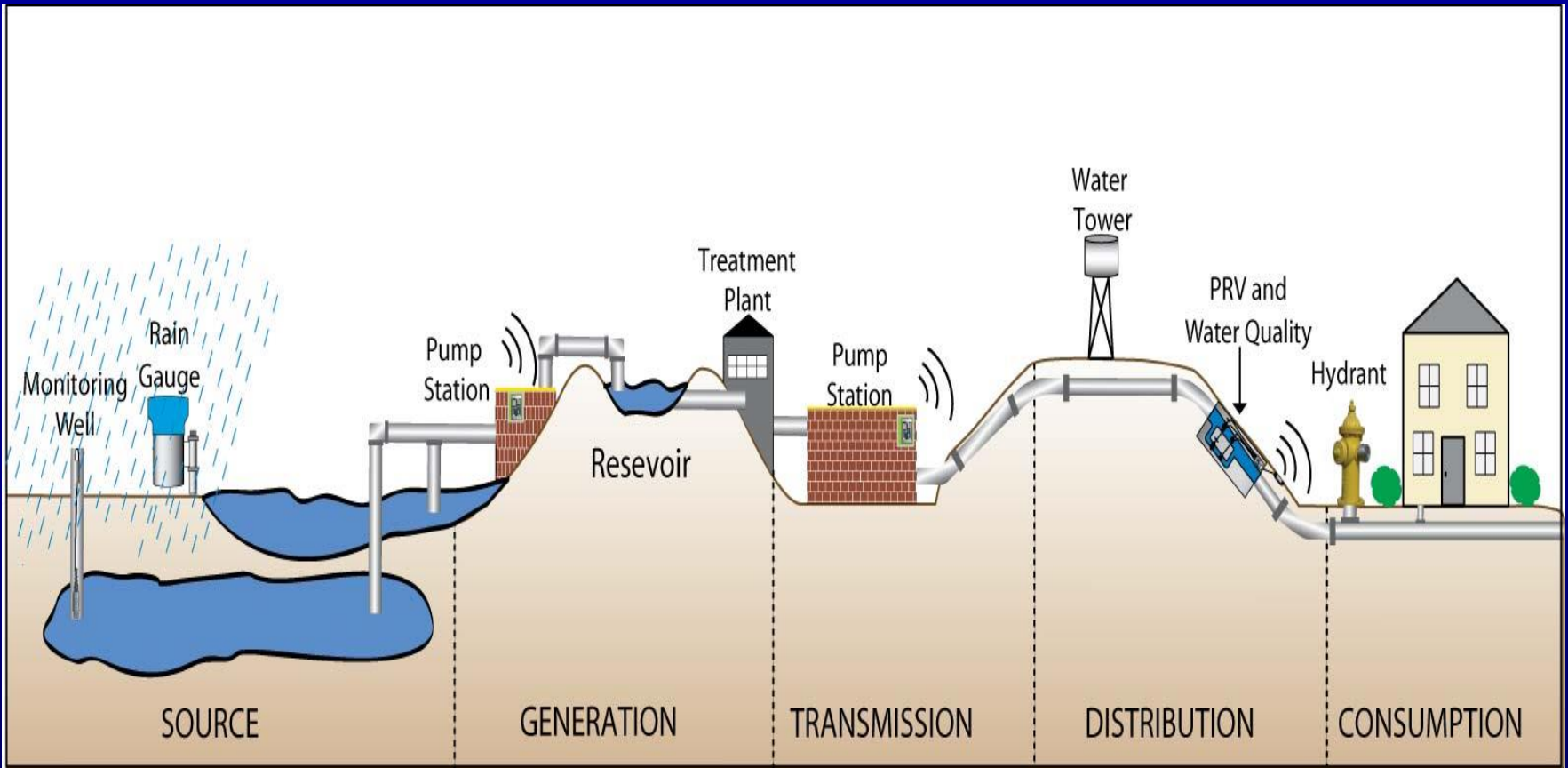


# Enterprise Data Flow Diagram



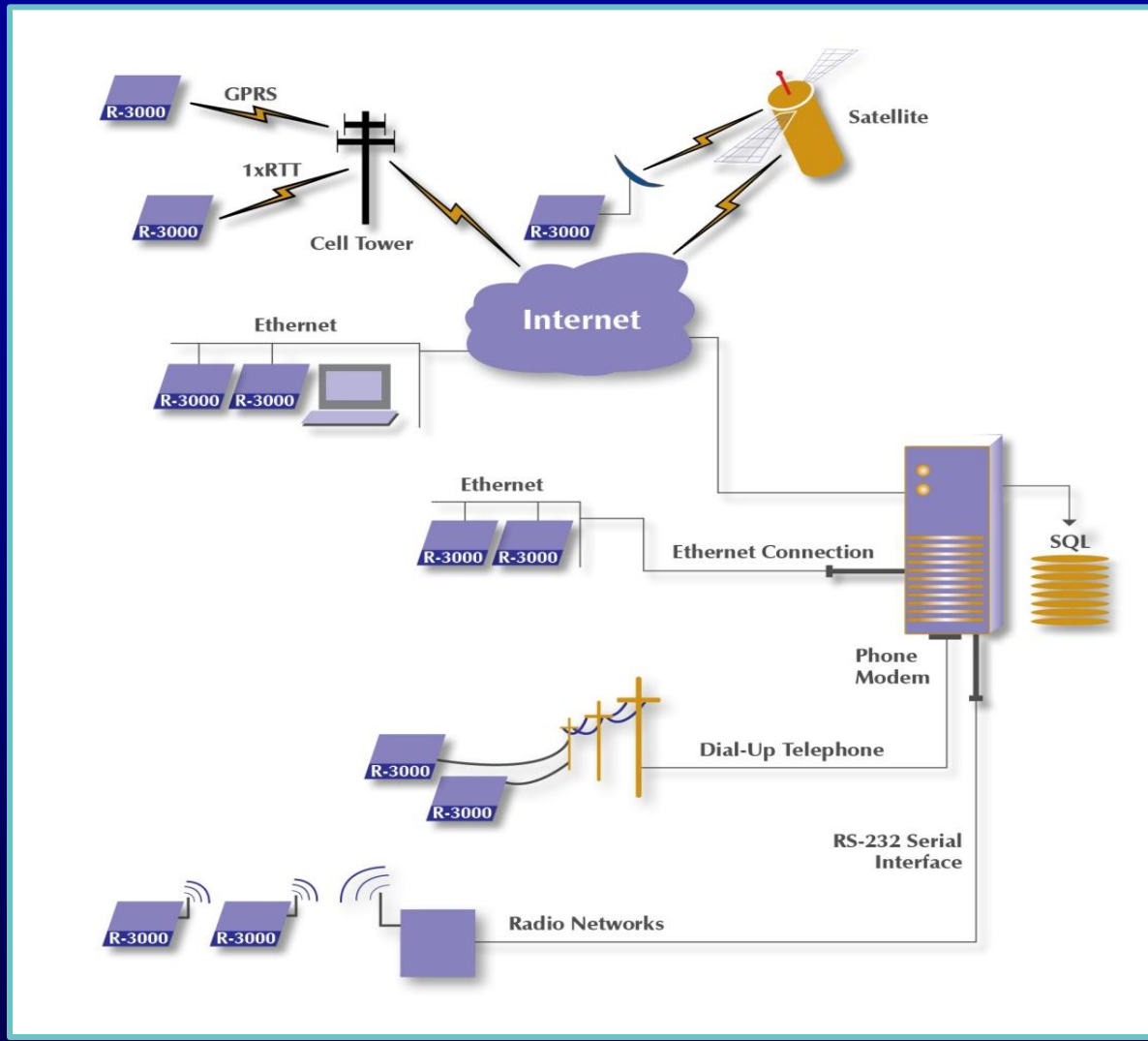


# Collection System Monitoring Applications

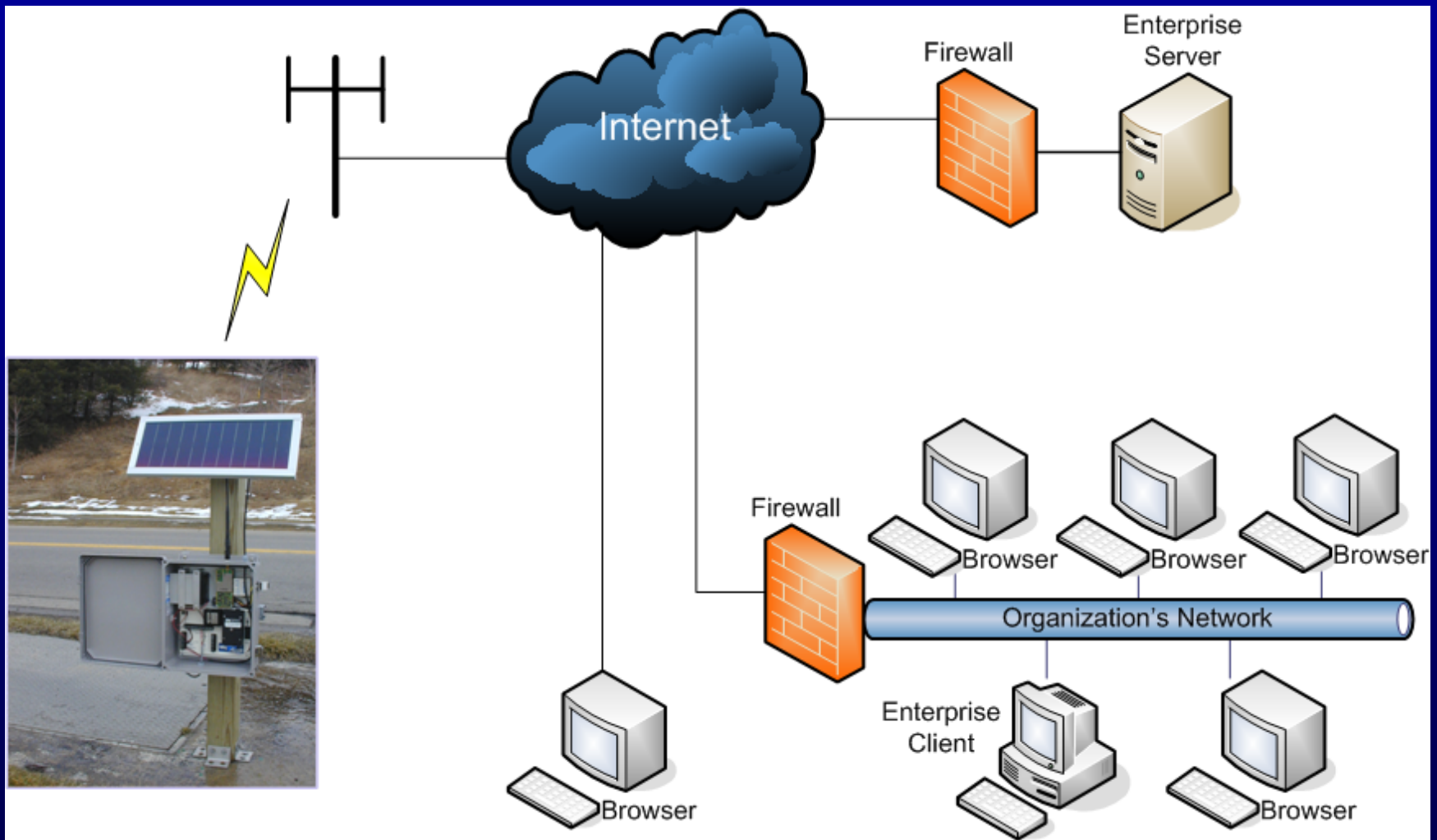


# Water Distribution System Monitoring Applications

# Communication Technologies



# Typical Enterprise Network Diagram

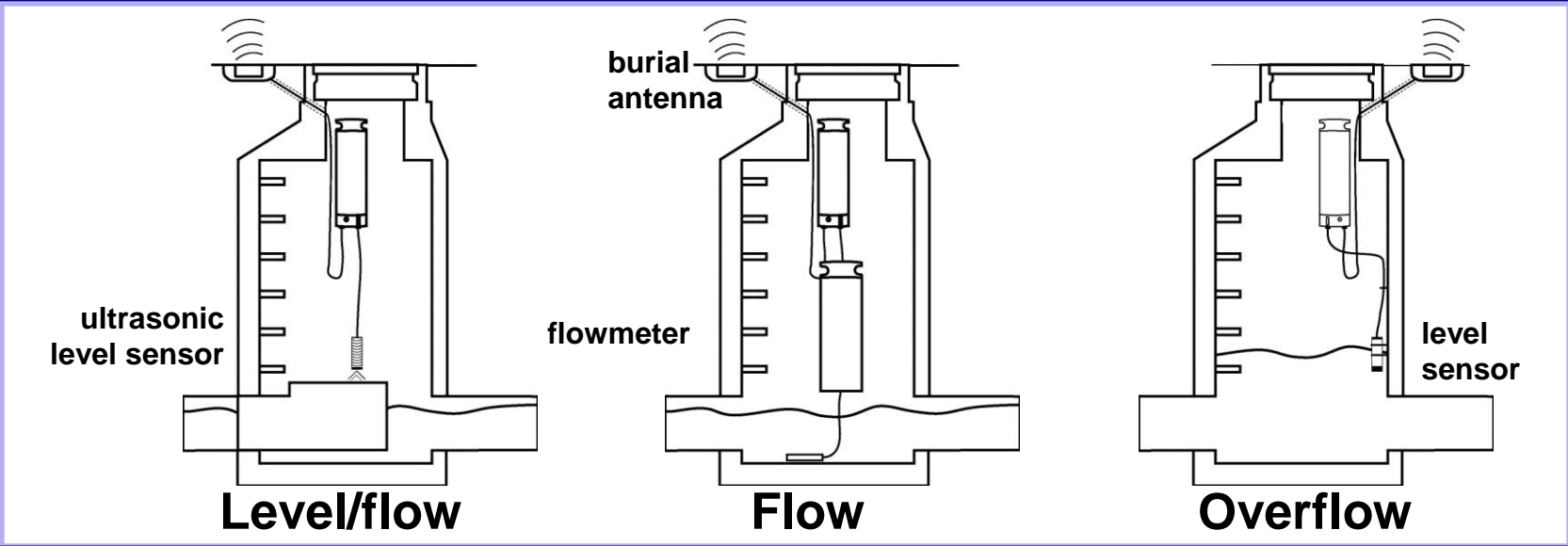




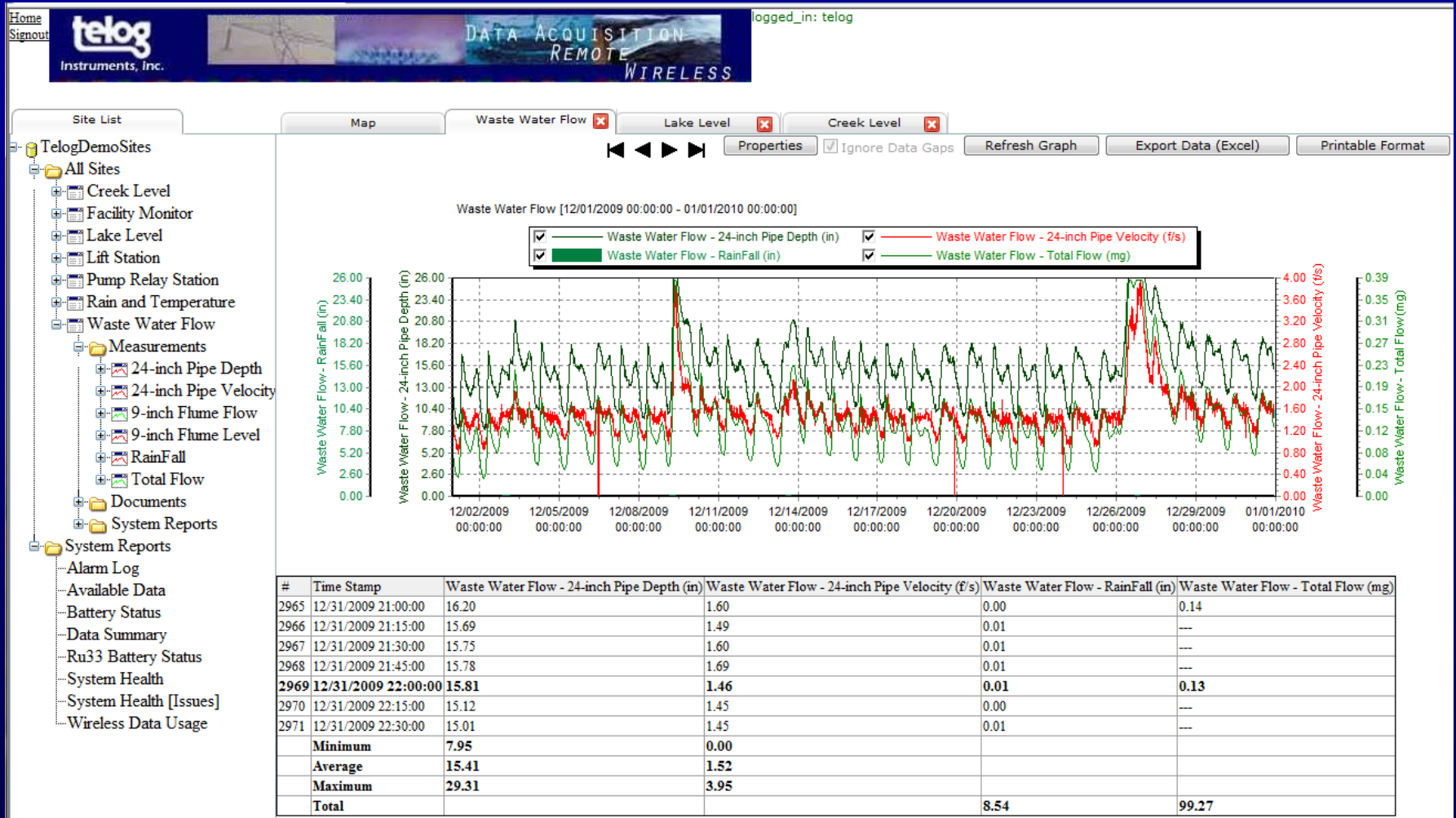


Ru-33 pictured with the Telog ultrasonic sensor

# Ru-33 Wireless RTU for underground applications

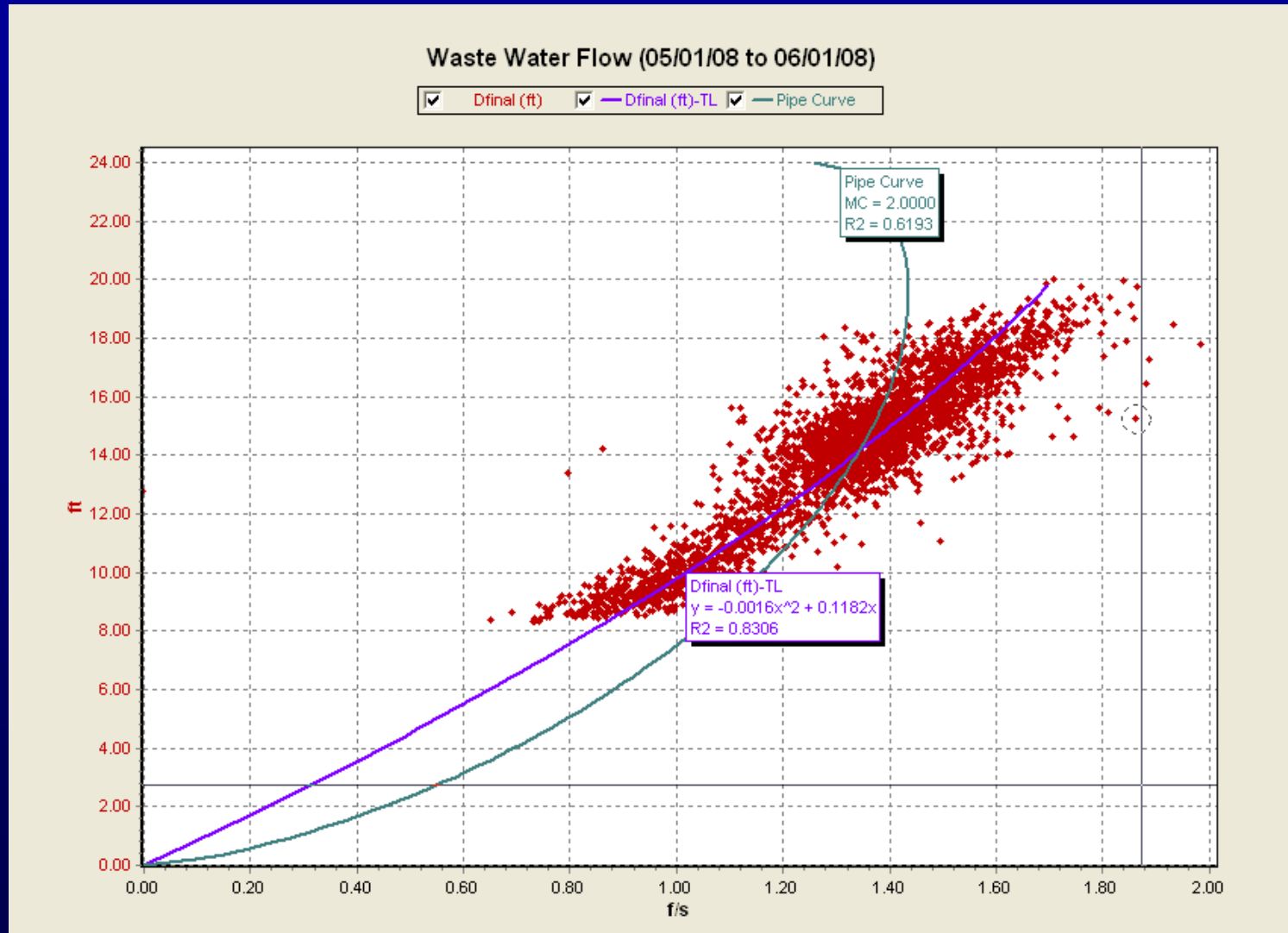


# Enterprise Web Module View





# Manning Function vs. Polynomial Trend Line



# Rain Gauge RTU

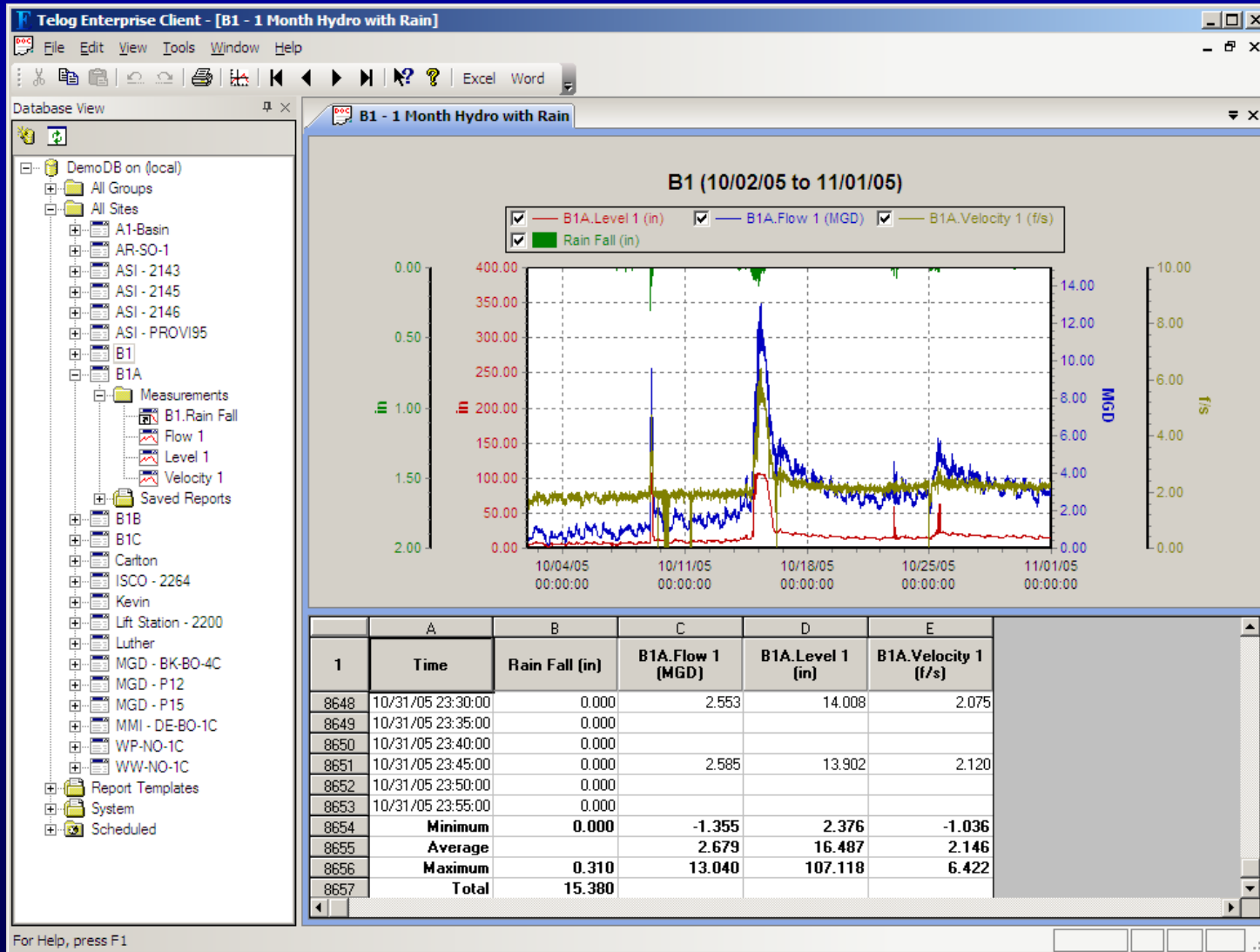
Cellular communications

Internal antenna

5 year battery life

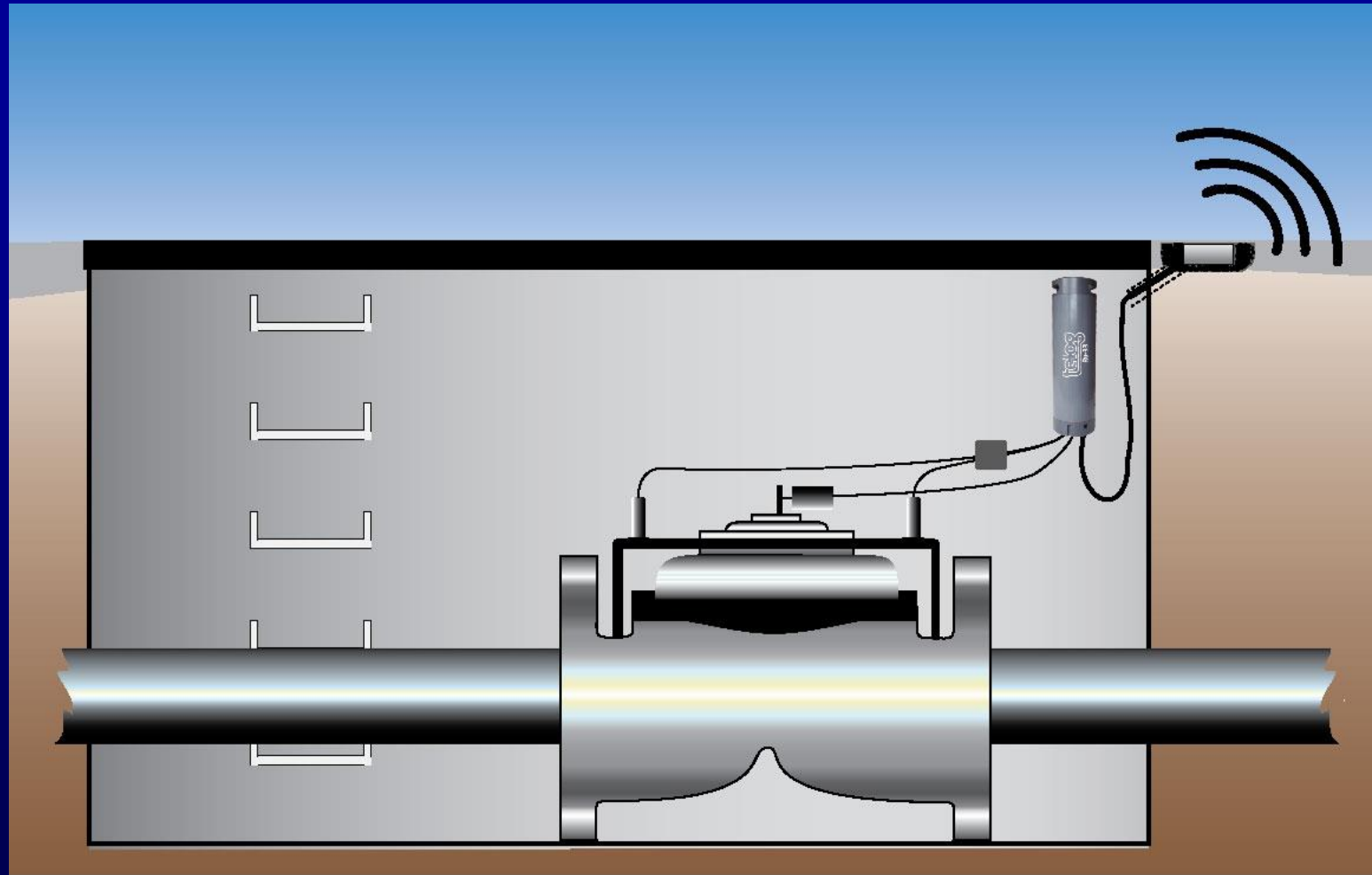
Works with all Rain Gauges



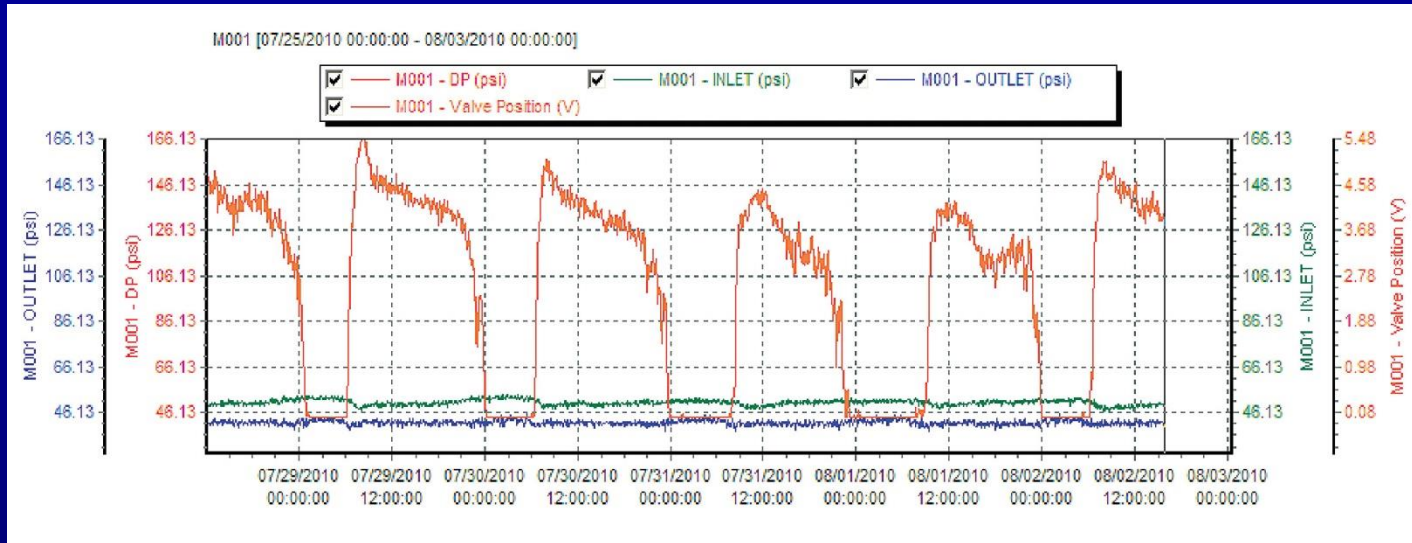


# Enterprise Client software

# PRV Monitor



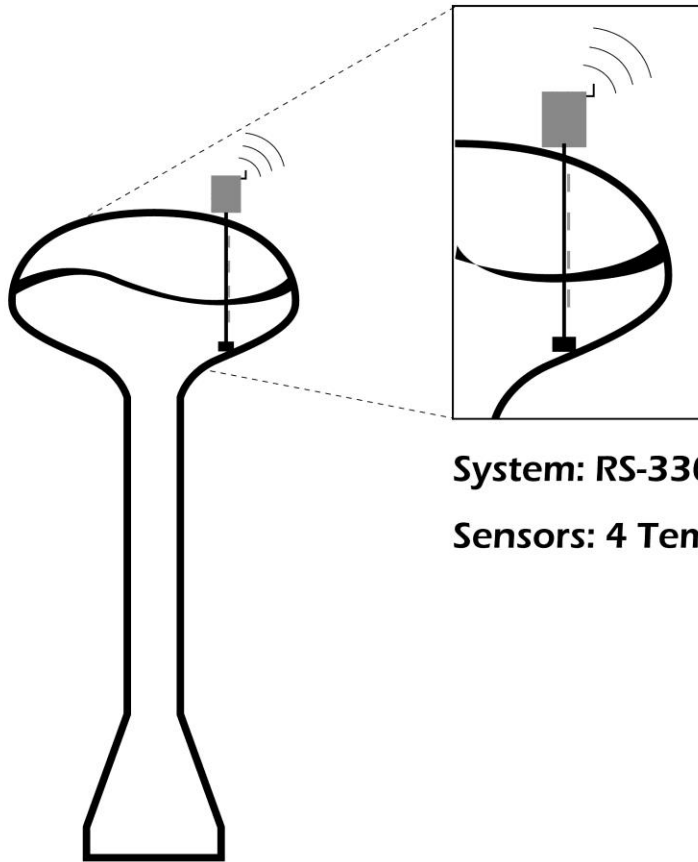
# PRV Data



#	Time Stamp	M001 - DP (psi)	M001 - INLET (psi)	M001 - OUTLET (psi)	M001 - Valve Position (V)
2450	08/02/2010 12:30:00	7.13	49.13	42.00	4.25
2451	08/02/2010 12:35:00	7.30	50.06	42.76	3.99
2452	08/02/2010 12:40:00	8.60	48.89	40.29	3.96
2453	08/02/2010 12:45:00	8.55	51.23	42.69	4.02
<b>2454</b>	<b>08/02/2010 12:50:00</b>	<b>8.21</b>	<b>50.45</b>	<b>42.25</b>	<b>3.95</b>
2455	08/02/2010 12:55:00	9.23	49.62	40.39	4.16
2456	08/02/2010 13:00:00	7.67	49.67	42.00	4.32
	<b>Minimum</b>	<b>4.93</b>	<b>46.69</b>	<b>37.95</b>	<b>-0.01</b>
	<b>Average</b>	<b>8.55</b>	<b>50.55</b>	<b>42.00</b>	<b>2.60</b>
	<b>Maximum</b>	<b>13.92</b>	<b>53.82</b>	<b>45.76</b>	<b>5.72</b>
	<b>Total</b>				



# Water Tower Level & Thermal Stratification

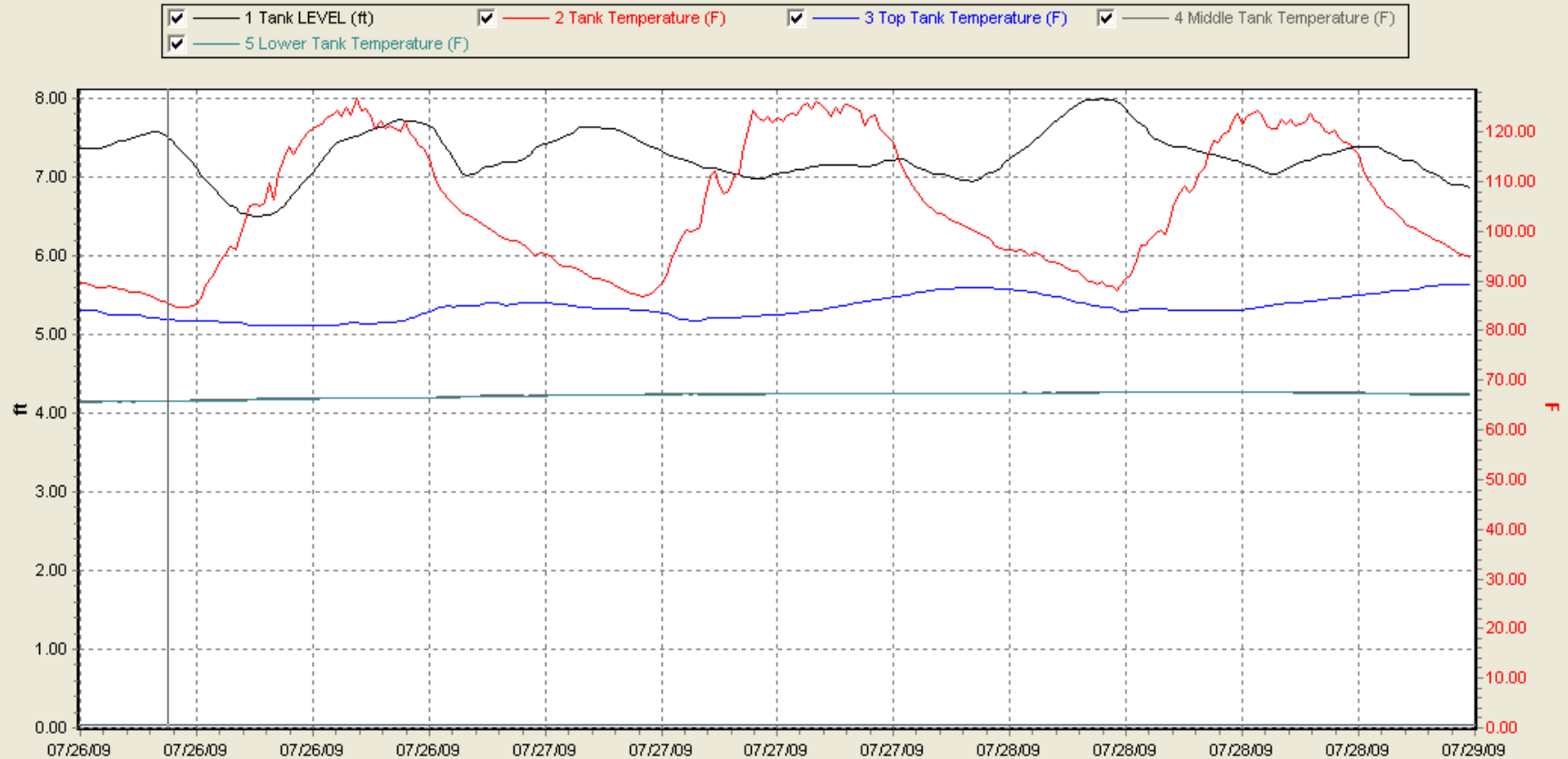


System: RS-3308-1x

Sensors: 4 Temperature, 1 Pressure

# Water Tower Thermal Stratification Example

Arizona (07/26/09 to 07/29/09)



# Liftstation RTU Installation



# Liftstation RTU Installation

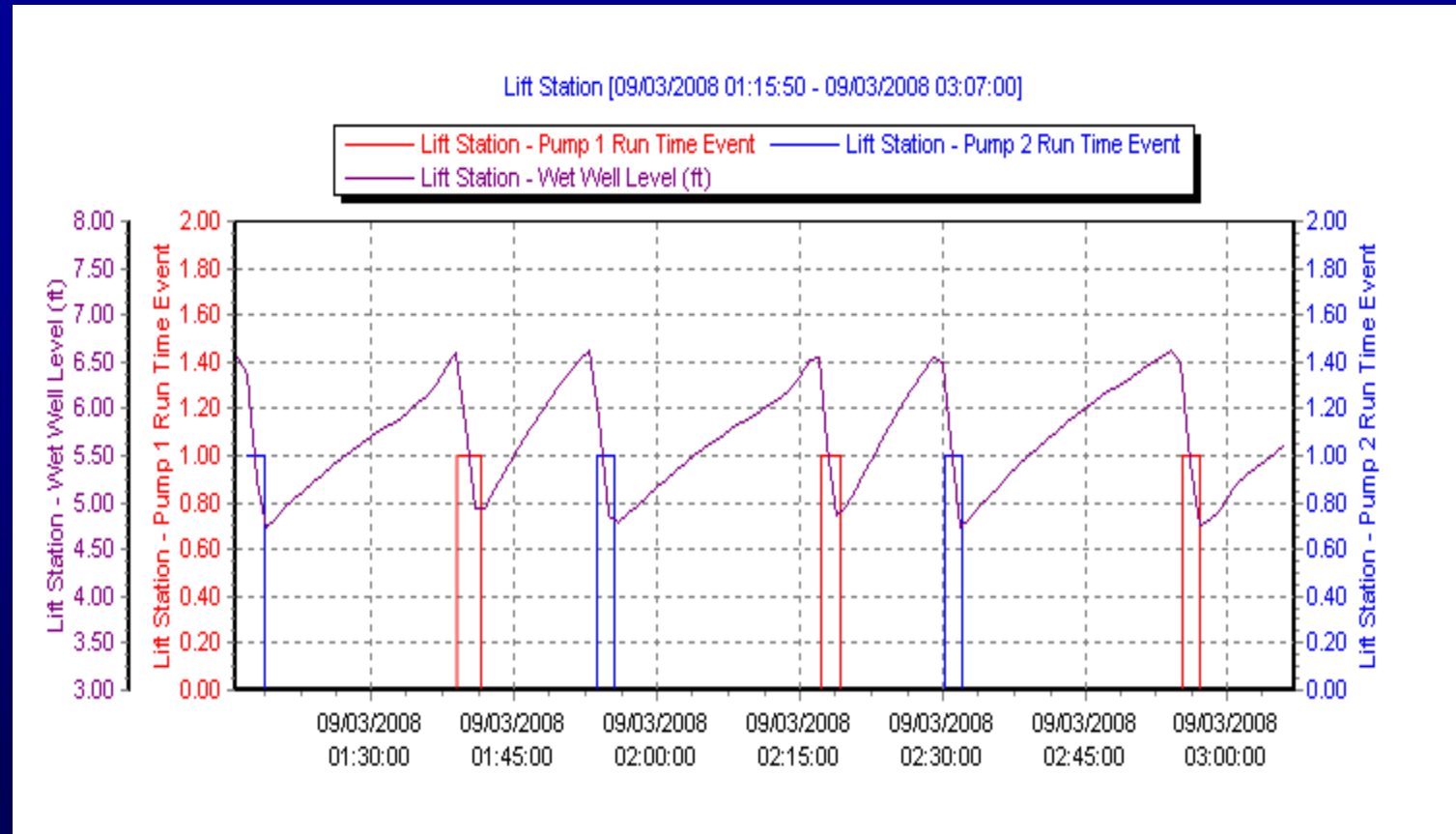


# Lift Station Application

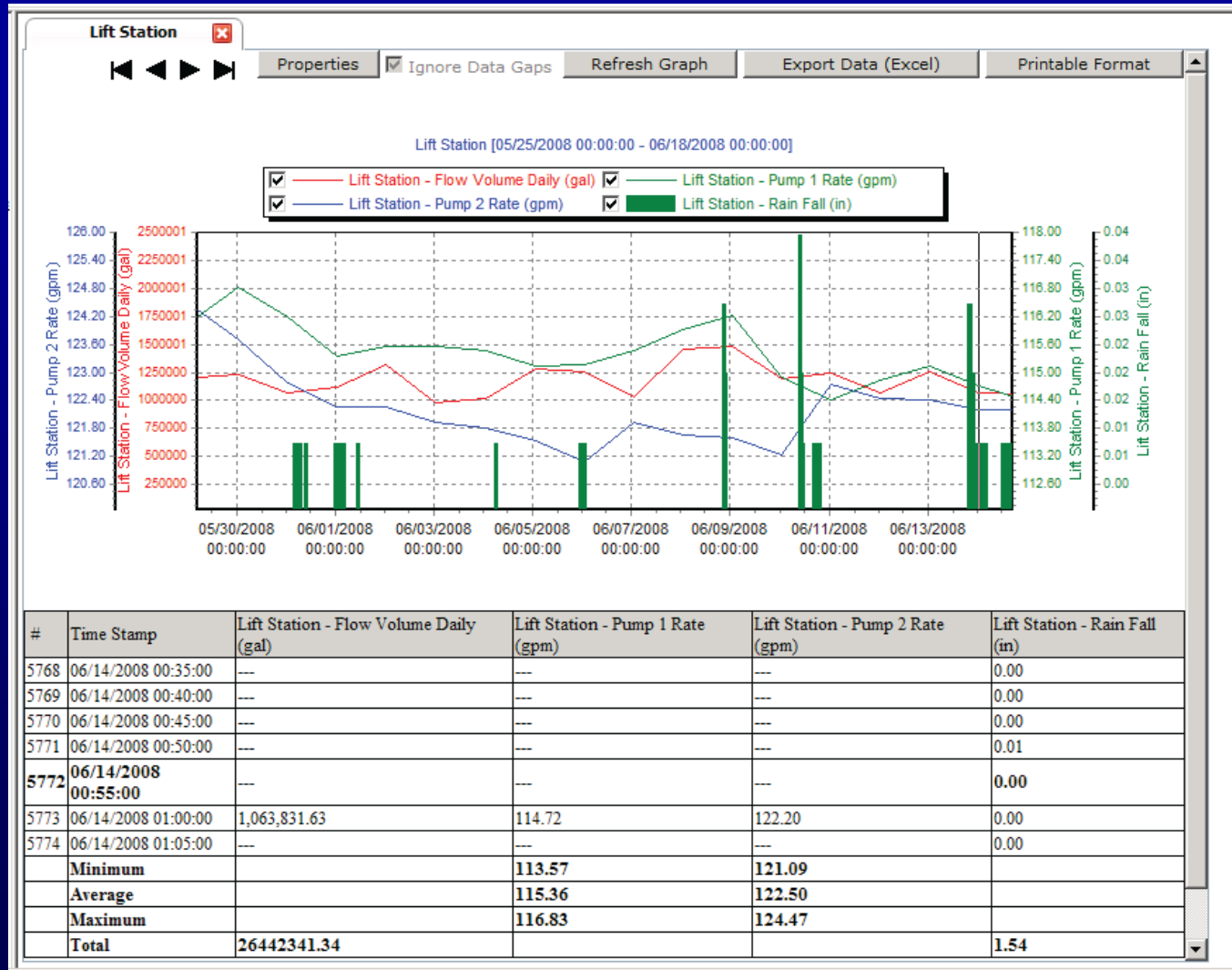
- Record and report every pump cycle
  - Pump on/off time stamps
  - Sump level
  - Energy consumption
  - Options for pump temp, vibration, pressure etc.
- Computes flow through the station
- Computes daily pumping rate of each pump
- Low cost relative to SCADA RTUs



# Lift Station Activity



# Lift Station Flow with Rainfall



# Lift Station Daily Report

## Daily Rollup: 2 - Pump Lift Station



Printed On: 7/24/2008

Date	Pump 1					
	Rate (gpm)	Count	Avg On Time (mins)	Max On Time (mins)	Total Run Time (hours)	Duty Cycle
04/01/2007	115.37	72	3.18	23.77	3.84	16.0%
04/02/2007	115.80	75	2.63	7.83	3.31	13.8%
04/03/2007	115.20	74	3.25	8.73	4.02	16.8%
04/04/2007	115.26	69	2.95	12.75	3.40	14.2%
04/05/2007	115.41	67	3.08	10.55	3.46	14.4%
04/06/2007	114.52	66	3.00	11.68	3.30	13.8%
04/07/2007	115.35	66	3.18	11.23	3.52	14.7%
04/08/2007	116.00	65	2.97	13.85	3.22	13.4%
04/09/2007	116.44	62	2.55	8.10	2.65	11.0%
04/10/2007	117.30	64	2.97	7.52	3.17	13.2%
04/11/2007	118.72	58	2.12	2.38	2.05	8.6%
04/12/2007	120.32	77	2.43	3.02	3.13	13.0%
04/13/2007	122.61	86	2.55	3.68	3.66	15.3%
04/14/2007	122.75	82	2.73	4.58	3.76	15.6%
04/15/2007	122.64	78	2.35	2.75	3.07	12.8%
04/16/2007	121.73	95	3.33	22.27	5.30	22.1%
04/17/2007	120.58	98	5.82	66.90	9.52	39.7%
04/18/2007	120.32	103	4.75	69.13	8.16	34.0%
04/19/2007	120.39	104	3.32	9.95	5.76	24.0%
04/20/2007	120.36	90	2.95	7.05	4.43	18.4%
04/21/2007	120.34	86	2.98	7.10	4.28	17.8%
04/22/2007	120.08	80	3.02	7.32	4.04	16.8%
04/23/2007	121.90	61	2.07	2.60	2.11	8.8%
06/01/2007	125.42	50	1.72	11.28	1.44	6.0%
06/02/2007	122.46	90	2.47	3.48	3.71	15.5%
06/03/2007	122.12	71	2.42	3.48	2.88	12.0%
06/04/2007	121.78	89	2.63	3.62	3.91	16.3%
06/05/2007	117.70	71	2.40	3.65	2.85	11.9%
06/06/2007	115.55	83	2.58	3.95	3.59	15.0%
06/07/2007	122.67	75	2.37	3.92	2.96	12.3%
06/08/2007	121.15	77	2.33	3.07	3.01	12.5%
06/09/2007	123.12	84	2.77	6.33	3.88	16.2%
06/10/2007	120.58	76	2.37	3.45	3.02	12.6%

Date	Pump 2					
	Rate (gpm)	Count	Avg On Time (mins)	Max On Time (mins)	Total Run Time (hours)	Duty Cycle
04/01/2007	113.42	72	3.52	23.65	4.22	17.6%
04/02/2007	113.43	75	2.62	8.00	3.28	13.6%
04/03/2007	114.23	75	3.38	10.42	4.23	17.6%
04/04/2007	114.23	68	2.97	8.95	3.38	14.1%
04/05/2007	113.76	68	3.07	9.63	3.48	14.5%
04/06/2007	114.29	66	3.02	11.22	3.32	13.8%
04/07/2007	114.13	65	3.18	10.85	3.45	14.4%
04/08/2007	114.59	65	3.02	12.00	3.28	13.7%
04/09/2007	115.04	63	2.67	7.58	2.81	11.7%
04/10/2007	115.37	64	3.00	7.93	3.21	13.4%
04/11/2007	115.41	57	2.15	2.42	2.05	8.5%
04/12/2007	116.46	77	2.47	3.05	3.19	13.3%
04/13/2007	116.99	86	2.62	3.97	3.76	15.7%
04/14/2007	117.46	82	2.82	4.47	3.86	16.1%
04/15/2007	118.59	78	2.40	2.82	3.12	13.0%
04/16/2007	121.20	95	3.30	12.83	5.24	21.8%
04/17/2007	125.95	96	5.20	18.63	8.33	34.7%
04/18/2007	124.25	99	4.78	49.80	7.92	33.0%
04/19/2007	119.42	104	3.33	9.65	5.78	24.1%
04/20/2007	119.49	91	2.98	6.93	4.53	18.9%
04/21/2007	118.18	86	3.00	7.53	4.32	18.0%
04/22/2007	117.39	80	3.05	6.97	4.08	17.0%
04/23/2007	118.10	67	2.05	2.68	2.29	9.5%
06/01/2007	118.46	154	2.65	3.88	6.83	28.5%
06/02/2007	116.50	90	2.72	3.63	4.10	17.1%
06/03/2007	115.18	71	2.65	3.90	3.15	13.1%
06/04/2007	113.57	89	2.87	4.08	4.26	17.7%
06/05/2007	113.12	71	2.65	4.55	3.14	13.1%
06/06/2007	111.90	83	2.85	4.03	3.97	16.5%
06/07/2007	113.68	73	2.62	4.38	3.20	13.3%
06/08/2007	114.59	78	2.53	3.38	3.30	13.8%
06/09/2007	114.86	83	3.07	5.68	4.26	17.7%
06/10/2007	113.68	77	2.60	3.97	3.36	14.0%

# Enterprise Web Module Map View

Home  
Signout

telog  
Instruments, Inc.

DATA ACQUISITION  
REMOTE  
WIRELESS

logged\_in: tes

Site List

- vpctest
  - All Groups
    - New Group
      - 291003
      - 291049
      - 291073
    - System Reports
      - Firmware Info
      - Pipe Summary
      - System Health
    - System Reports

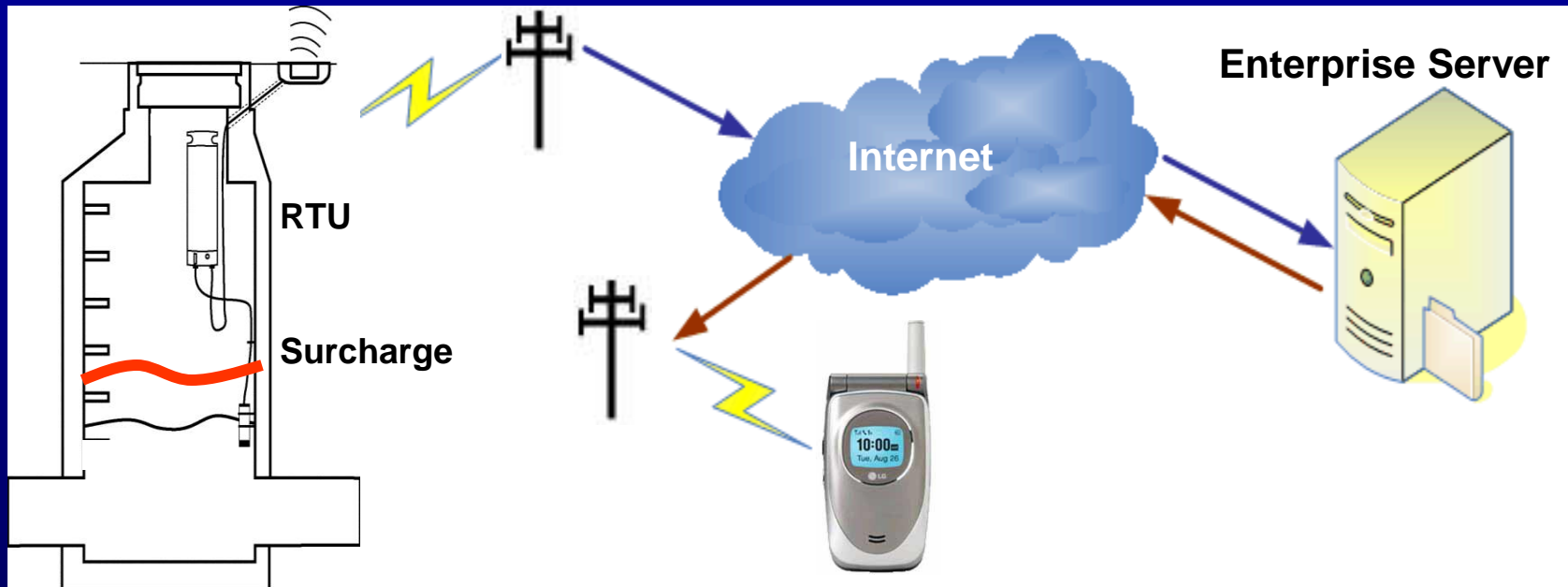
Map

a push pin.

● operating ● non operating ● alarmed ● offline ● not available

Site Name:	291003
Call Status:	N/A
Alarm Status:	Active
Battery Status:	OK
View Data:	<a href="#">Chart</a>

# Alarms



## Alarm Management Flowchart



# Enterprise Muni Customers (partial list)

Mass Water Resource Authority

Boston Water & Sewer

Baltimore County

Philadelphia Water

Hampton Roads Sewer District

Austin Wastewater

London, Ontario

Narragansett Bay Commission

Delcora

Cincinnati Metro Sewer

St. Louis Metro Sewer

Baltimore City

LA County

Louisville, KY

DeKalb County, GA

Bergen Co., NJ

Ft. Worth

Des Moines

# Enterprise Data Management Service Providers

RJN

ADS

Hydromax

CSL

GBA

Stantec

CH2M Hill

Kerr Wood Leidal

SFE Global

AECOM

Hach (DDS)

MGD/Teledyne

Flow Assessment

Can Am

Telog DMS

GSWW

# MWRA Project

## *(Massachusetts Water Resources Authority)*

Teamed with RJN, Marsh McBirney & MGD

- Telog provided RTUs, communication, and information management via Enterprise
- 200 Open Channel Flowmeters
- 25 CSO surcharge monitoring sites
- 15 flume flow sites
- 24 facility monitoring stations
- Website data sharing

MWRA also employs on the water side

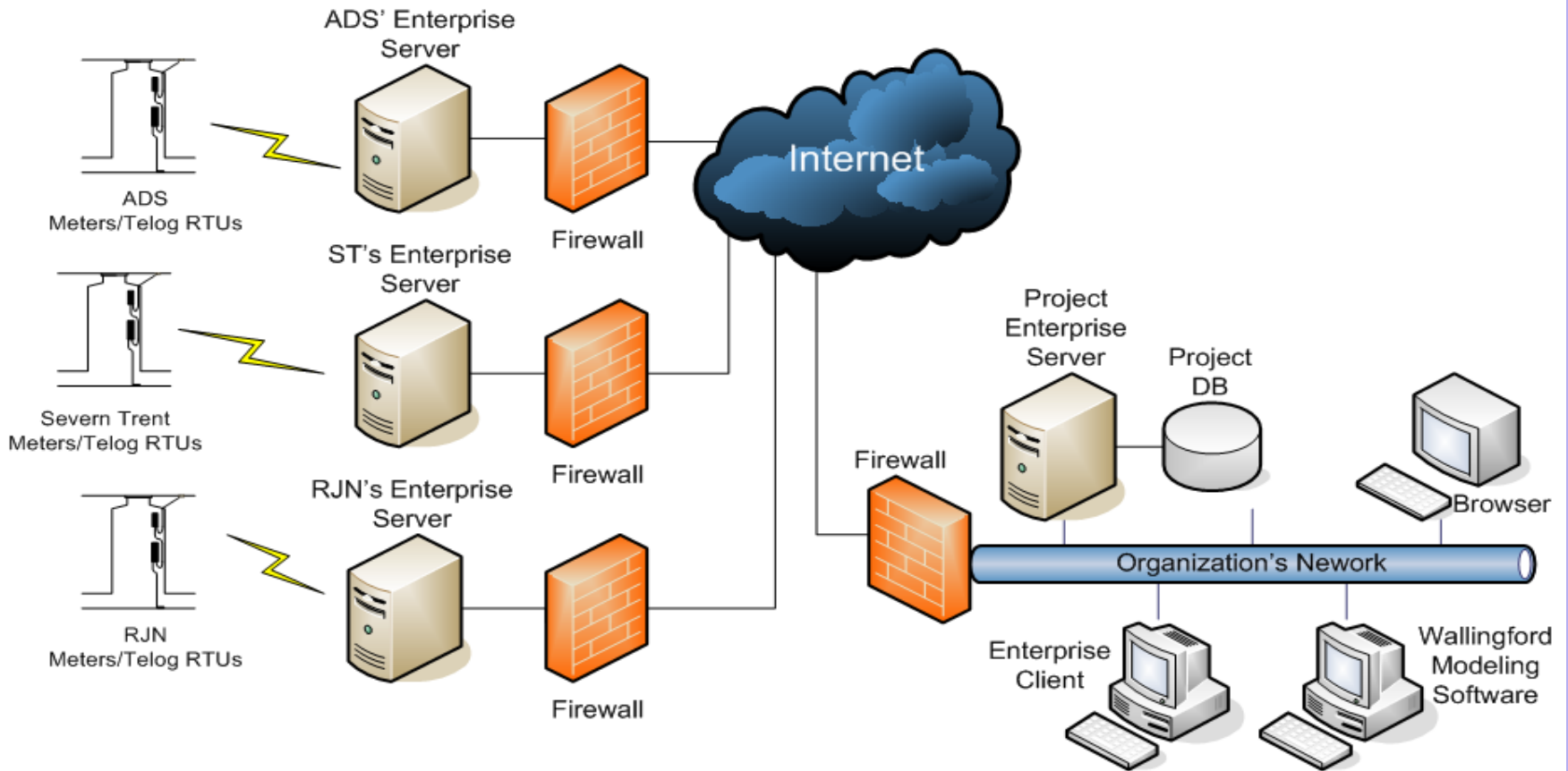
- 280 water system flow and pressure sites
- 30 rain gauges

# Baltimore Water and Sewer Project

Comprehensive sewer system study – 450 meter sites

- Three flow service providers (ADS, RJN & Severn Trent) with 150 sites each
- 34 rain gauges and 30 groundwater gauge
- 9 Sewer Shed consultants for modeling (Inforworks) & RDII analysis
- All sites using wireless telemetry data downloads four times/daily
- QC/QA data transferred at BWAS program manager's server monthly

# Baltimore Water and Sewer Project



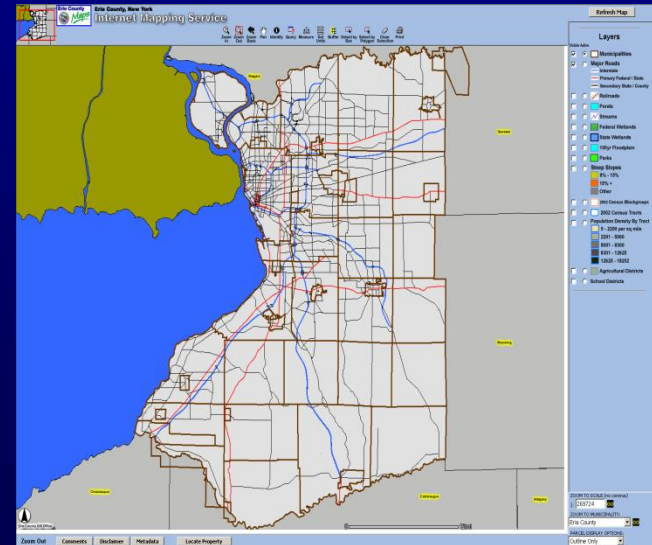
## System Network

# Erie County, New York

- Real time, web based wireless flow monitoring and on-line flow model
- Project web site with real time flow & rain fall data
- Direct link to server application for access to full suite of flow monitoring results, graphs and updates
- Overlay of calibrated hydraulic models

Erie County collection system will be modeled to provide predictive forecasts of collection system response and surcharging as well as real time alerts. Additionally, making web based GIS, modeling and field data available to the county, it's consultants and sewer districts as needed.

GIS ARC View Mapping and PCSWMM Model uses Telog Enterprise Data to source data interfaces developed by CRA



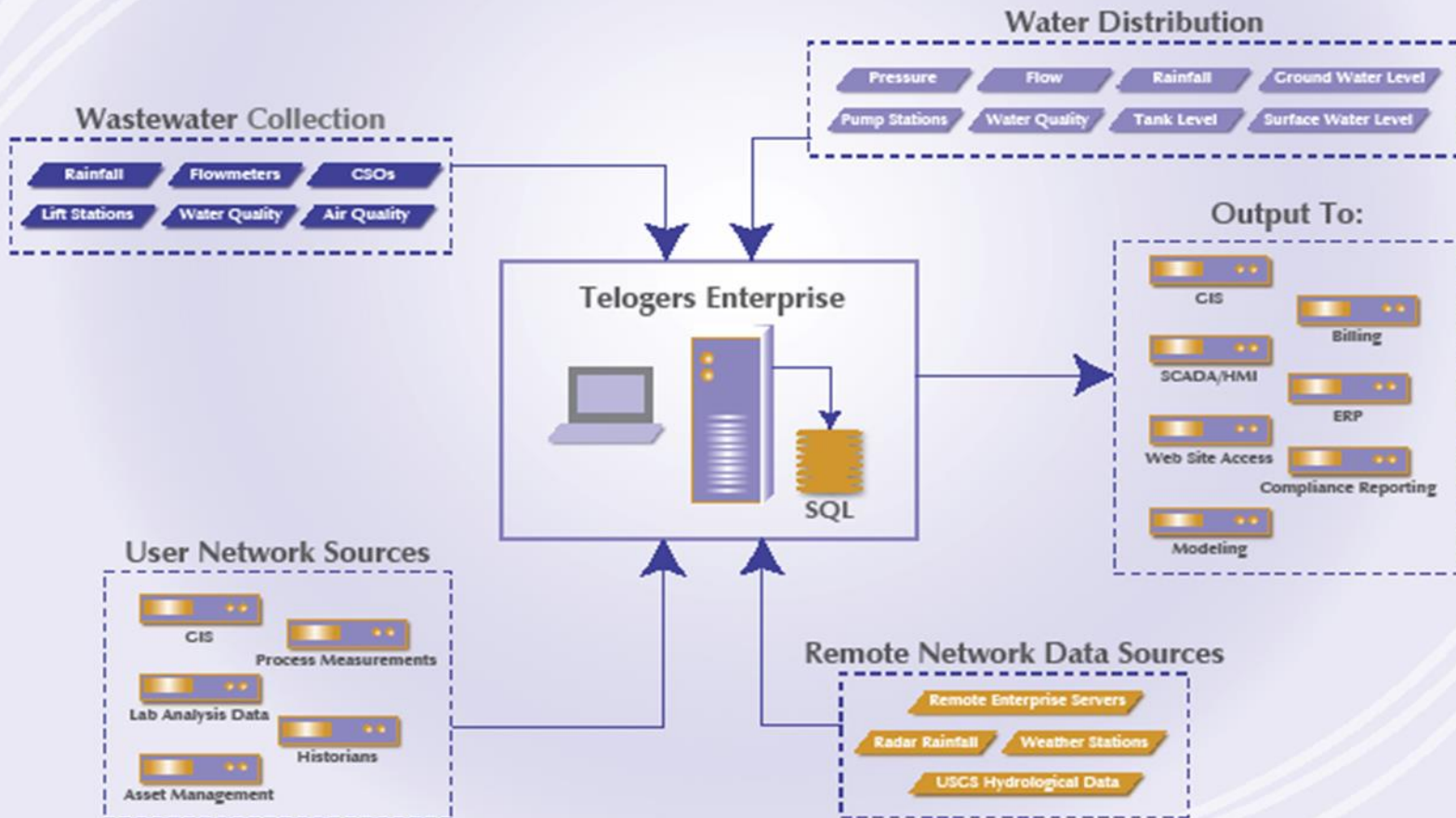




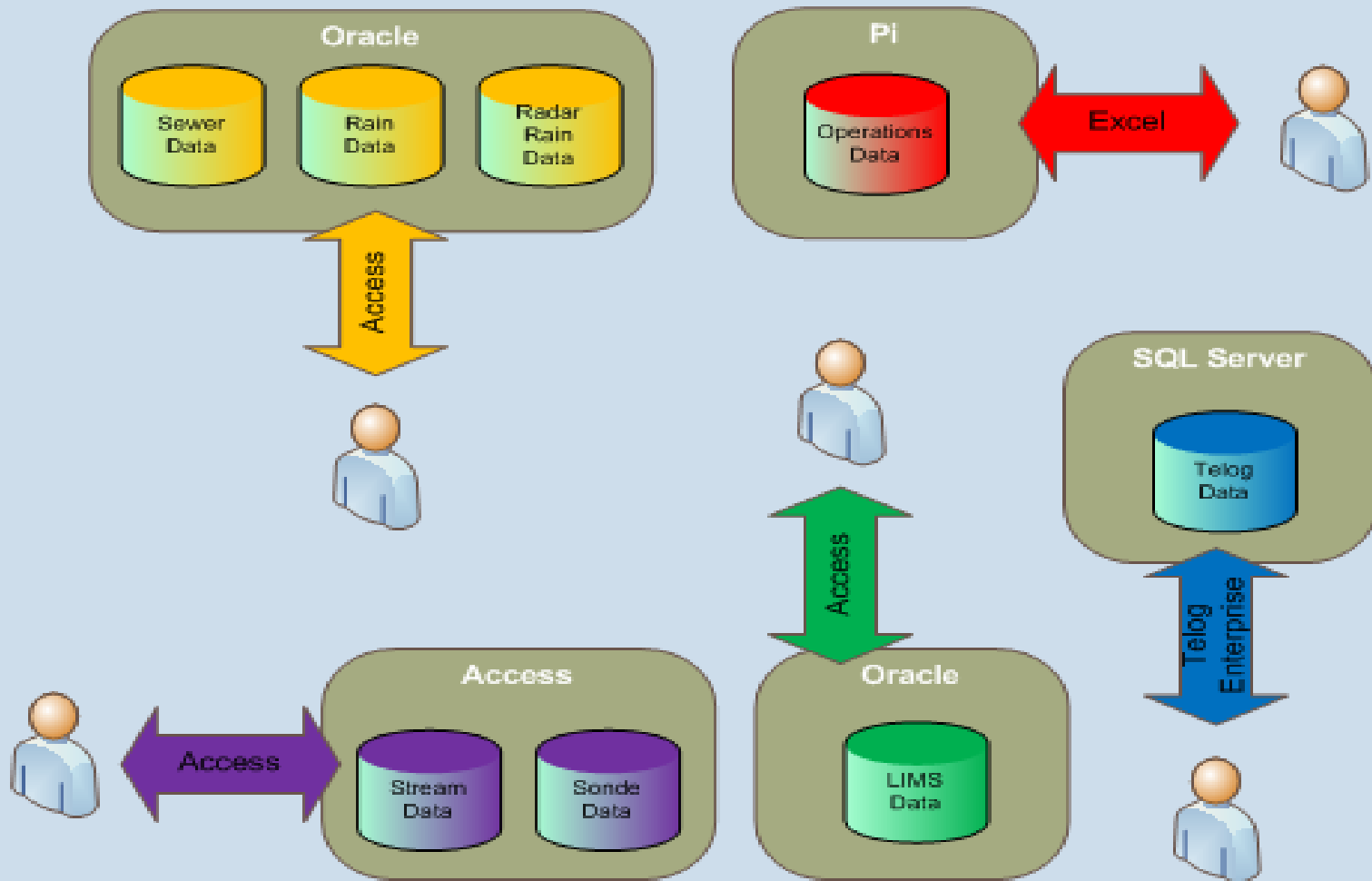
## CINCINNATI MSD PROGRAM

- 350 Flowmeters (Various vendors) with Telog RU-33s
- Multiple FSPs (Severn Trent, Zande, XCG)
- Server Leasing Telog Enterprise
- Shared Data Management with several MSD Consultants
- 150 CSO Monitoring RTUs
- Auto import of Vieux radar rainfall data
- Future plans for Web based GIS Model interface

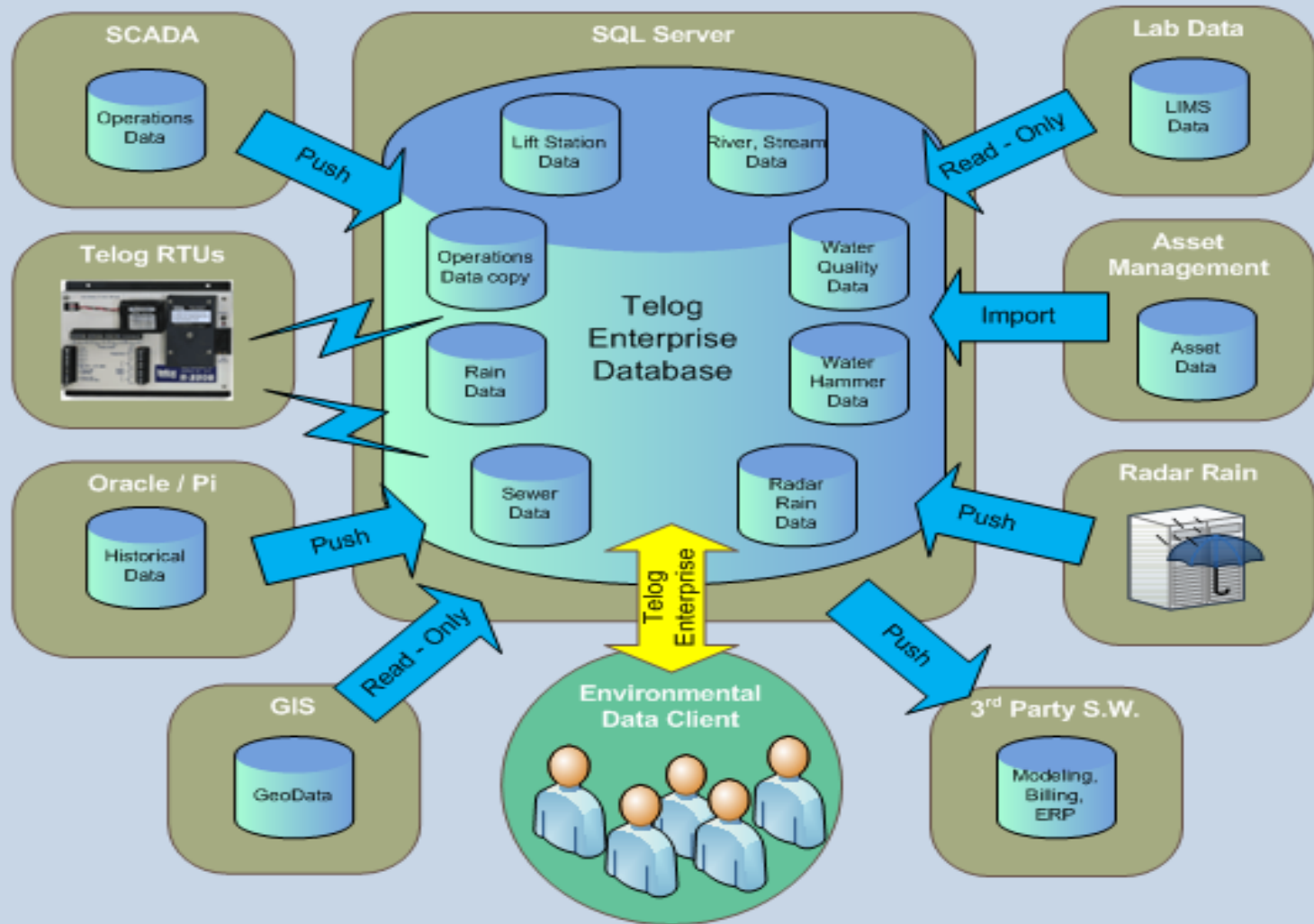
# Telogs Enterprise Environmental Information Management System



# Existing Configuration



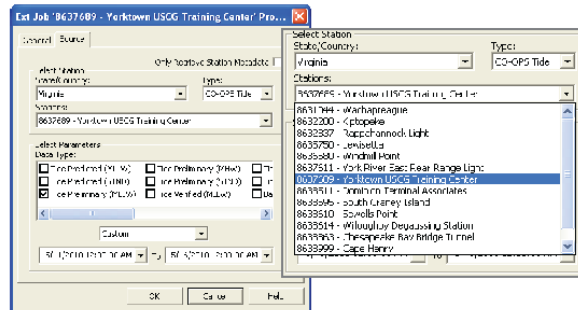
# Telog Environmental Information Management System







## NOAA Data Retrieval Module



Telog Instruments is pleased to announce the launch of this new feature which can be purchased as an add-on to your Telogers Enterprise Software.

The National Oceanic and Atmospheric Administration (NOAA) provides daily weather observations as well as current and historical tidal data through the Center for Operational Oceanographic Products and Services (CO-OPS). Through our new feature, you can retrieve this data and store it within the Enterprise database. You can then incorporate this information into reports to detect correlations between changes in their data and changes in the surrounding environment.

Though NOAA data is available to the public, this new module streamlines the entire process of retrieving the data. Instead of manually querying NOAA's web server and storing the data, Enterprise provides you with

a complete list of stations and the measurements currently available for each station. Simply choose a station and the desired measurements, and Enterprise will retrieve that data and store it automatically in the user's Enterprise database.

To display this information, the Telog module stores the metadata for each of the sites, including the station identification code, station name, site location, as well as the currently available measurements for each station. The location includes the state and county in which the station resides, as well as latitude and longitude coordinates when provided. This metadata can be automatically updated using a scheduled Enterprise job. This means that instead of taking time to search through weather and tide data, you can let Enterprise do the work for you and have NOAA data readily available for any daily, weekly, or monthly timestamp you choose.

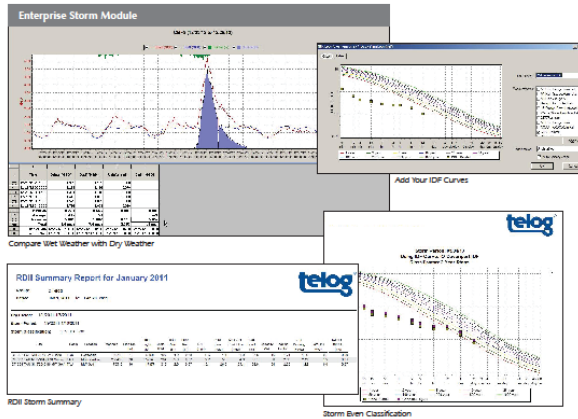
The module also provides the ability to select the date range of the data you want to retrieve. You will have the option of retrieving predetermined or custom date ranges or restrict the retrieval to new data only. This is done by determining the most recent data point in the Enterprise database and retrieving any missing data between that data point and the current time. This allows you to create an automated job that will consistently retrieve up-to-date information while minimizing any missing data due to system downtime.

With all of this information in one location, Enterprise makes it easier for you to make informed decisions based on the interaction of environmental conditions and your own systems. The ability to have up-to-date weather and tidal data on hand at any time will not only assist you in keeping your system running efficiently, but will also help you plan for the future.





## Telog Storm Module



**Telog Instruments Presents its Newest Enterprise Analysis Tool: Storms Module.** Telog's Enterprise Storms Module is available as an add-on module to your Enterprise software. This module makes it easy to report on flow resulting from storm activity. You can now save time creating reports that analyze storm events by using this powerful module.

**Easily Compare Wet Weather Periods with Dry Weather Periods.** Telog Instruments' Storms Module allows you to easily define storm periods using your rain data and flow resulting from those storm periods. You can also define dry periods to compare with storm event periods. Both Storm and Dry periods can be defined for up to a 7 day range (any 7 days, at any time).

The Storms module lets you define the storm period by using the graphical interface. This makes it easy to see the start and end time of a storm event. Create storm templates that show Rainfall, Derived Infiltration and Inflow (RDII) as an area graph. The average flow and minimum and maximum flow measurements are displayed, along with times recorded for the minimum and maximum flow measurements.

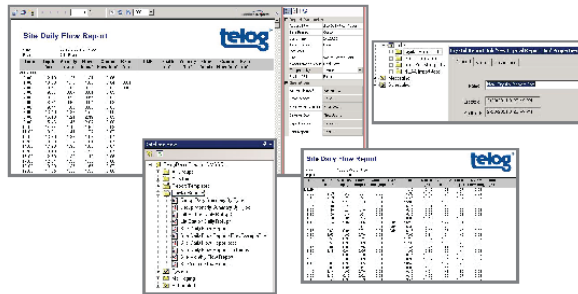
**Add Your Own IDF Curves to Telog's Storms Module.** Telog's Storms Module allows you to import your own IDF curves to use for storm classification. Apply various rain events to IDF curves. Storms can be displayed on a graph with the IDF curves and can be classified as 1, 2, 5 year, all the way to 1000 year storms.

Included with the Storms module are two ready-made Crystal Reports: **Storm Event Classification** and **RDII Storm Summary**. The Storm Event Classification report shows IDF curves and rainfall graphics for storm classification along with tabular data. The RDII Storm Summary report will include measurements such as Total Rain, Peak Rain, Average Dry Flow, Average Storm Flow and Maximum Storm Flow. These reports can be setup to run automatically or on-demand and will give you quick access to important historical information.

Telog's Storms Module is an efficient tool that will allow you to create detailed reports and graphs of storm activity. The addition of this module to your Telog Enterprise software will give you a more complete software package to manage your data from one location.



## Crystal Reports in Enterprise



Several Telog customers have requested more advanced report generation for Telogers Enterprise. In response to this request, Enterprise v. 5 includes a runtime copy of Crystal Reports® application software. Telog Enterprise users are able to run Crystal Reports' .rpt files natively from within the Telog Enterprise Client (TEC), whether the files are created by Telog or by users with their own copy of Crystal Reports®. When users create a new report, they can add it to the new Crystal Reports folder in the TEC.

**Existing Report Templates.** Telogers Enterprise Software version 5.0 adds the Crystal Reports folder to the standard database view. This folder is where you can choose one of our predetermined report templates, such as Site Daily Flow and Group Monthly Summary among others. These options give you the power to literally choose a report template, select the desired site, fill in pertinent information (time spans, recording interval, etc.) and refresh the report to view. Creating reports can be just that easy.

If you own the full version of Crystal Reports you are able to create custom reports to your specifications and import those reports into Enterprise.

Contract Telog to create custom reports to use with your Crystal Reports program. Our experts will work with you to generate custom reports to the exact specifications you need. Custom reports from Telog can also be imported directly into Enterprise. This service will become extremely valuable as customers find the need to provide specialized reports to various stakeholders in a clean and concise format.

Regardless of whether you are working with predefined templates or using custom reports directly from Telog, you can also establish specific report generation as an

Enterprise job. The job feature will allow our software to automatically complete several different types of tasks such as:

- Uploading reports as site documents in .pdf format
- Saving a report as a .pdf on a daily/weekly/monthly basis
- Emailing reports to shareholders
- Printing reports on a user defined timetable

Creating jobs in Enterprise is designed to save you time by eliminating the need to repeat tasks. Implementing Crystal Reports jobs provides the flexibility to produce reports to any specified group of people in a clean format, all done automatically. The power of Telogers Enterprise combined with the functionality of Crystal Reports will translate into saved time, ease of use, and ultimately increased productivity.

# Telog Enterprise Overview

