Leveraging the 4.9 GHz wireless spectrum to give your municipal water/wastewater network a makeover.

Abstract:

As the demands on network infrastructure for water/wastewater (W/WW) operations continue to escalate, it is clear that new solutions must be explored which are scalable, secure, and reliable. This educational brief takes a look at an alternative wireless technology standard that solves many current challenges and may be uniquely available to this market.
WiMAX technology is based upon the IEEE 802.16e standard enabling the delivery of wireless broadband services anytime, anywhere.

In a W/WW application using 4.9 GHz, WiMAX can provide an attractive solution. There are many benefits to this standards-based approach:

1. Higher aggregate bandwidth than 900 MHz solutions
2. Protection from RF interference vs. unlicensed solutions in 900 MHz, 2.4 GHz, 5.8 GHz band
3. Quality of Service (QoS) capabilities to prioritize multiple applications or user types over the link
4. NLOS potential with MIMO features that maximize throughput in semi-LOS situations
5. Layer 2 connectivity with AAA security, supporting both Ethernet and legacy serial interfaces
6. Ranges of up to 10 miles, and repeater capabilities to extend further

Siemens Secure Wireless Communications for Water/Wastewater Networks

Siemens’ RUGGEDCOM WIN is a high-performance, long range, and secure family of wireless products, fully compliant with the WiMAX 802.16e Wave2 (MIMO) mobile broadband wireless standard. Among other frequencies, RUGGEDCOM WIN offers a solution in the aforementioned 4.9 GHz spectrum.

RUGGEDCOM WIN is designed to extend IP networks over long distances to fixed and mobile users in a point-to-multipoint topology. RUGGEDCOM WIN scales easily to add applications as the network grows. The WiMAX IEEE 802.16e wireless communications standard ensures a long product lifecycle and 3rd party interoperability. With its all-outdoor and compact form factor and flexible configuration support, RUGGEDCOM WIN is a cost effective system ideally suited to building mission-critical private networks for the most challenging applications and environments.
Example Water/Wastewater Network Topology using WiMAX and WiFi

Network Topology Summary
- Corporate Network extended via Microwave or Fiber backbone
- Water Tower locations accommodated via backbone
- Multi-Mile end point locations via RUGGEDCOM WIN WiMAX 4.9GHz Point to Multipoint
- Local end point locations via SCALANCE W WiFi
- Backbone constructed in ring topology for redundancy/availability
Siemens Can Help

Siemens has already deployed several communication infrastructure retrofits for municipality water/wastewater operations resulting in increased performance, enhanced security, and significant cost savings for our customers.

In addition to our comprehensive RUGGEDCOM WIN portfolio for “next to last mile” applications, Siemens also offers a just as impressive industrial WiFi solution set (SCALANCE) for local wireless applications. Both technologies can be combined to provide a complete end to end wireless solution. We can also provide design assistance, spectrum coordination, license application consulting, and installation services for your 4G WiMAX and/or WiFi network.

Be sure to check out our case study on the City of Georgetown for a great testimonial on the benefits of a Siemens based 4.9GHz WiMAX wireless network using RUGGEDCOM WIN.

For additional information and assistance, please contact Siemens subject matter experts at the following addresses

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Siemens wireless solutions for WiMAX (RUGGEDCOM WIN) and WiFi (SCALANCE), as well as PoE injectors.