Collaborative Cityworks Project at Eagle River Water & Sanitation District Links Maintenance Field Crews and Office Users

By Steve Kerr, Project Manager, POWER Engineers; and Kevin Aoki, IS Division Manager, Eagle River Water & Sanitation District

A seasonal influx nearly doubles the permanent population of Eagle County, Colorado, during the winter and summer months. Temporary residents come to enjoy world-class mountain resorts such as Vail and Beaver Creek. Eagle River Water and Sanitation District (the District) owns and operates the water and sewer infrastructure for the entire county. Our challenge is to provide efficient, reliable water and wastewater services at any time of year, in spite of the fluctuating population. The District encompasses approximately 54,400 acres in Eagle County and includes the towns of Vail, Minturn, Avon, and surrounding developments.

Until 2010, the District used a work order management system with no link to the GIS data maintained by the Information Systems Division. Field users in the Distribution & Collection (D&C) Division had no access to the work orders. All users worked with printed maps and work order forms. This system made it difficult to generate essential monthly and yearly reports.

The District envisioned a system that would give D&C maintenance crews up-to-date information on water and sewer assets and provide access to all work assignments while in the field. With more field users than office users, the new system needed a robust, easy-to-use field application as well as a strong in-office product. After a survey of applications in the market, the District chose the combination of Cityworks Server AMS (Asset Management System) and infraMap®, iWater's field access product. Server AMS provides in-office access to facility and work information, as well as field access to work information. InfraMap provides field access to facility information and seamless access to the Cityworks work order forms.

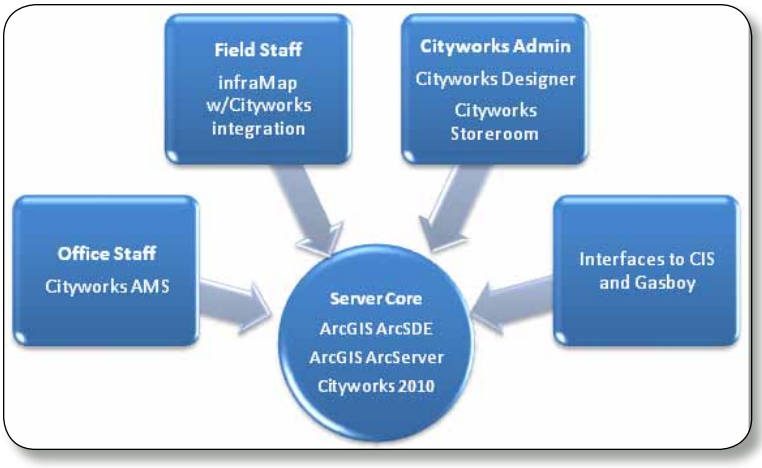
Focusing on Doing It the "Right Way"

The District realized that a successful project must focus on work processes as well as technology. The project started with an analysis of District work processes. Team members from POWER Engineers led business process workshops and together with Eagle River staff analyzed their existing workflows and revised them to incorporate the use of Server AMS and infraMap. The workshops involved demonstrations of the two products, so District employees could visualize how the system would work for them. After the work processes were approved, team members began identifying specific configuration requirements.

The District also decided to launch the new system to a small group of users to test the applications before fully implementing them. During the "soft launch," these users did an excellent job of using the system for their real work. Their efforts helped identify areas in which the applications could be reconfigured to make them easier for field crews to use. When the test group was satisfied, the District went ahead with the "hard launch" to all field users.

Delivering Data to Field and Office Users

The Server AMS deployment at the District uses multiple integrated components to deliver asset and work management information to office and field users. The system is centered around two Windows Server machines. A database server manages the Server AMS and GIS data using SQL Server and ArcSDE. A separate application server uses ArcGIS Server and the Server AMS application to deliver map services to end users. These core servers provide the data and tools for both field and office users. Cityworks administrators use the Designer and Storeroom applications to prepare and maintain the Cityworks database. Office staff use Server AMS to initiate, review, update, and close work orders along with required reports.



Capturing and Integrating Field Data

A key component to this solution is the use of infraMap with Cityworks integration. InfraMap provides a robust easy-to-use interface for field staff to capture their daily work. In 2002, iWater created infraMap to help its own crews work more efficiently. Designed to reduce overtime and eliminate paperwork, the program has been perfected through daily use by iWater field personnel.

Due to the mountainous terrain of the District's service area, wireless connectivity was not possible, so a sync-and-go approach was implemented. At the District, field users begin their day by synchronizing their GIS and Cityworks data right from infraMap. InfraMap integrates the Cityworks DataPump application and ArcGIS replication technology to ensure each field computer has the most current GIS, asset, and work order information. Within infraMap, the current list of work orders is presented and organized for the user. Selecting a work order automatically zooms the map to the

work order location and opens the Cityworks work order form. At the end of the day, all completed work is synchronized with the master database and available for final review by office users.

Kyle Higgins, System Maintenance Technician at the District, stated, "The implementation of the Cityworks and iWater programs has enabled the District to not only be more efficient, but increase productivity as well. The dedication of POWER, iWater, and District employees to customize the programs to fit our needs was paramount in its development. The ease of use combined with the ability to track every action performed on an asset has already had a positive impact in our preventive maintenance programs. The more we acclimate to the program, the more we discover we can't live without it!"

By using this integrated system, the District has been able to track and capture maintenance activities on all water (hydrants, mains, valves) and sewer (manholes, mains, lift stations) assets. In addition, the District is beginning to use Cityworks to track inspections during construction of new District water and sewer assets.

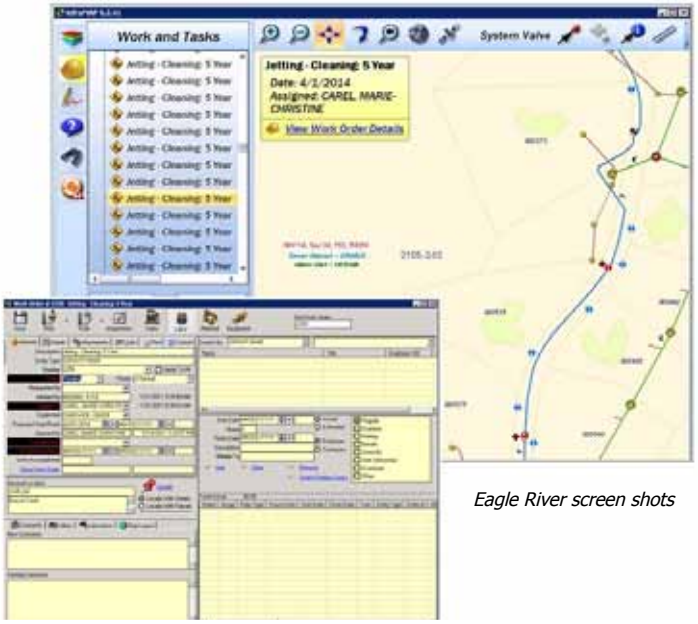
Server AMS also integrates with two other key systems: the Customer Information System (CIS) and the Gasboy® fueling system. The interface with CIS pulls customer data to the Cityworks CustomerAcct table, providing the D&C team with up-to-date customer information for service requests. The interface to Gasboy, which is currently under development, will pull over vehicle fuel usage and mileage data to generate work orders for fuel tank refills and vehicle replacement. D&C now performs routine maintenance on their own vehicles and utilizes Server AMS to track work orders on these vehicles. In the near future, the Gasboy interface will be used to generate vehicle maintenance work orders.

Besides information about assets, the old work order system had a lot of valuable information on asset maintenance history. The IT staff will migrate pertinent work order information from the old system to Cityworks, thus providing access to this important historical information.

Collaborating Makes GIS-Centric Cityworks More Valuable

During the implementation process, it became apparent the list of assets in the old work management system did not match the list of assets found in the GIS. Work orders existed for assets that were missing from the GIS. Together, the D&C group and the IT GIS team worked closely to reconcile the two asset data sources. This resulted in a much more accurate and valuable GIS-centric AMS.

Working as a team, the D&C division, IT Department, Cityworks, POWER Engineers, and iWater delivered a system that end users have gladly accepted. Kevin Aoki, IT Division Manager, said "The level of collaboration between the District, POWER Engineers, iWater, and Cityworks for this project was outstanding. Throughout the project, all parties remained in constant communication and maintained a common vision of deploying a product that was designed for Distribution & Collections by Distribution & Collections. Much time was invested documenting our business processes as well as understanding the unique challenges of our systems and the Vail Valley. The result was an end product that is powerful enough for Distribution & Collections administrative staff, easy to use in the field, and is supportable by the District's IT staff."



Eagle River screen shots

Steve Kerr, Project Manager at POWER Engineers, stated, "We really enjoyed working with the Eagle River team to help them deliver the Cityworks/infraMap solution. Their commitment to doing things the "right way," with an emphasis on full buy-in from the end user group and IT, upfront business process modeling, and a great release strategy, ensured the implementation of a top quality solution that meets the needs of their end users."

One huge benefit was creating a single location for field users to enter work data. In the previous system, the users would fill out the hard copy work report, which would be entered into the legacy work management system, but they would also record work in a "Daily Log" spreadsheet. Cityworks now serves as the official log for all work performed. Extensive use of Crystal Reports has made month-end accounting much easier and less time-consuming.

Extending Benefits into the Future

The District has already seen great results from using Cityworks and infraMap as a single, integrated system for tracking and managing utility infrastructure. A possible future extension to the system is work and asset management for water and wastewater treatment plants.

About POWER Engineers

POWER Engineers is a consulting engineering firm specializing in energy, facilities, communications, and environmental services. Founded in 1976, POWER Engineers is an employee-owned company with offices throughout the United States and abroad. POWER's GIS and Asset Management Solutions group brings over 600 years of combined experience in serving the GIS industry.

About the District

Eagle River Water & Sanitation District is a local government responsible for regional water and wastewater operations that serve the mountain resorts of Vail and Beaver Creek as well as surrounding communities. The District is a quasi-municipal corporation and a political subdivision of the state with a service area encompassing approximately 54,400 acres in Eagle County, Colorado. Included within its boundaries are the towns of Vail, Minturn, and Avon as well as the Arrowhead, Beaver Creek, Berry Creek, EagleVail, Edwards, Bachelor Gulch, and Cordillera mixed-use developments. The District's current system serves 24,778 water and 25,155 wastewater single-family equivalent units. While the District's permanent population is approximately 20,000, during peak season population exceeds 45,000, due to the influx of visitors and part-time residents for recreation and tourism purposes.