

In October 2018, Ohio began requiring public water utilities to maintain a detailed asset management system. One nonprofit is helping rural utilities comply, but doing so meant finding a way to capture asset locations with high accuracy deep within the Appalachian Mountain region, where satellite signals were obstructed.

Customer
Great Lakes RCAP

Location
Fremont, Ohio

Industry
Water, Wastewater

Partner(s)
Esri

Challenge
Ohio Senate Bill 2 mandated that all public water systems maintain a detailed asset management system. GIS services company Great Lakes RCAP wanted to meet rising demand by replacing legacy handheld mapping devices.

Solution
Eos Arrow Gold GNSS receiver, Esri Collector for ArcGIS®

Results
Great Lakes RCAP replaced its legacy technology with a real-time, streamlined, highly accurate GNSS/GIS field solution that was easy for its customers to adopt after the initial field-mapping project.

GREAT LAKES RCAP STREAMLINES ASSET MANAGEMENT COMPLIANCE WITH ARROW GOLD AND COLLECTOR FOR ARCGIS®

In October 2018, Ohio Senate Bill 2 mandated that public water utilities maintain a detailed asset management system. One nonprofit decided to make compliance easier for rural water utilities by simplifying field-data collection of assets and attributes.

THE CUSTOMER: GREAT LAKES RURAL COMMUNITY ASSISTANCE PROGRAM (RCAP)

Nearly 50 years ago, the national Rural Community Assistance Program (RCAP) started as a local project in Virginia. Since then, the nonprofit has expanded to cover all 50 states and Puerto Rico.

The Ohio-based Great Lakes RCAP chapter serves seven states (KY, IL, IN, MI, OH, WI, WV). This includes providing project development and ongoing technical and managerial assistance to small utilities. In several of these states, it also includes Esri ArcGIS services.

Services include asset mapping as well as data hosting, web app building, and GIS training. Most of Great Lakes RCAP's customers are small and rural, with fewer than 15,000 connections. "We give them access to a GIS team," GIS Analyst Laura Schuch said. "Basically, we help our customers locate anything that might need to be inventoried."

Great Lakes RCAP passes on cost savings, such as from grants, to its clients (e.g., utilities). "If they were to hire a small consulting firm, it would be a lot more expensive," Schuch said.

“There are a lot of hills in southeastern Ohio, so you can’t get to the RTK network because there is no cellular coverage. Atlas® gets a lot of use in the Appalachian territory”

Laura Schuch, *GIS Analyst,*
Great Lakes RCAP

THE CHALLENGE: OHIO EPA REQUIRES DETAILED ASSET MANAGEMENT INVENTORY

With increasing demand for field mapping services, Great Lakes RCAP looked for a replacement for its legacy fieldmapping technology. In the past, they used GPS handhelds that required manually exporting data into Esri ArcGIS. The manual data export to a GIS could take up to a week. So Great Lakes RCAP looked for a modern real-time field mapping solution.

THE SOLUTION: ACCURACY IN APPALACHIA

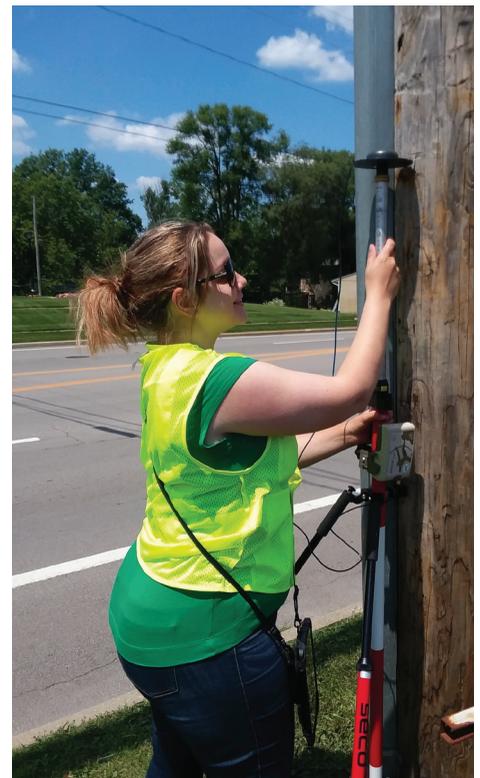
The most important factor in Great Lakes RCAP considered was accuracy. They wanted to offer customers accuracy down to the centimeter.

“That was our first filter in considering all GPS units,” Schuch said.

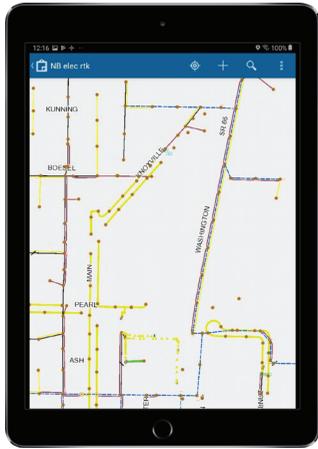
Second came affordability. Great Lakes RCAP determined that the Arrow Gold GNSS receiver was both affordable and of survey-grade accuracy. In RTK-connected areas, it provided centimeter locations, and in disconnected environments, it utilized a paid Atlas® satellite-based differential correction service for an accuracy within a few inches.

“There are a lot of hills in southeastern Ohio, so you can’t get to the RTK network because there is no cellular coverage,” Schuch said. “Atlas® gets a lot of use in the Appalachian territory.”

The Arrow Gold was also easy to use, and since Great Lakes RCAP’s customers often purchased their own GPS units after their initial field-mapping project, Great Lakes RCAP wanted to make sure the technology it picked was easy to learn.



Great Lakes RCAP GIS Technician Amanda Preslicka captures asset locations directly in Esri Collector. With Arrow Gold, she gets on average an accuracy of 1-2 centimeters. All the relevant attributes are captured too!



Great Lakes RCAP collects a variety of data. Shown here is electric data that Amanda Preslicka collected in Esri Collector for ArcGIS with subfoot accuracy using Arrow Gold.

“With the Web GIS, we can provide an incredibly up-to-date look at the assets. The difference between paper drawings and an updated web viewer is as powerful as it comes.”

Laura Schuch, GIS Analyst,
Great Lakes RCAP

THE WORKFLOW: USING ARROW GOLD WITH ESRI COLLECTOR FOR ARCGIS

The Arrow Gold uses Bluetooth® to connect to Great Lake RCAP’s Samsung Galaxy Tab Active2 devices. The tablets are loaded with Esri Collector for ArcGIS, which enables real-time data collection via Esri’s server-based Web GIS.

“Collecting directly in Collector makes it really easy,” Schuch said. “That was something our communities were really interested in.”

Next, a Great Lakes RCAP field technician will walk the area (e.g., a potable water system) alongside an Operator from the customer utility. The technician captures locations, while the customer ensures all the relevant attributes are captured. With RTK, they averaged 1-2 cm, and with Atlas they averaged 10 centimeters, which meets state requirements.

Thanks to the web GIS, manual data entry was completely eliminated.

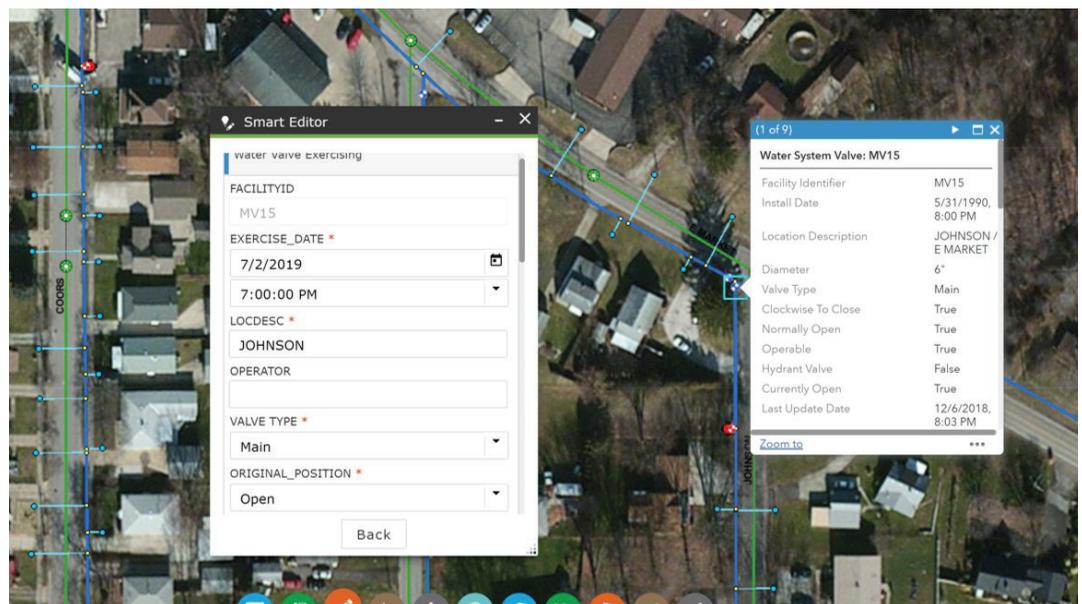
THE RESULTS: CUTTING-EDGE TECHNOLOGY FOR RURAL UTILITIES

Great Lakes RCAP has enabled its customers not only to meet the requirements of Ohio Senate Bill 2. But they have also empowered smaller utilities to do more. For instance, clients are using their GIS to record historical assets (e.g., hydrant flushes) and perform routine work (e.g., valve exercising), and streamline reporting requirements.

Great Lakes RCAP has also been building ArcGIS web viewers for customers, so that they can share their data with third-party entities in a safe and controlled way.

“The web viewer is great, because we can provide view-only access,” Schuch said. “So a utility working with an engineering firm has no need to send paper maps or old paper plan sets.” Finally, the real-time location of water lines, measurements, and integration with engineering data has allowed Great Lakes RCAP’s customers to improve communication, project management, and proactive asset management.

“With the web GIS, we can provide an incredibly up-to-date look at the assets,” Schuch said. “The difference between paper drawings and an updated web viewer is as powerful as it comes.”



Shown here: A valve exercising form from Great Lakes RCAP. It's shown in their GIS Web Viewer, using Esri Web App Builder (Developer Edition).

About Eos Positioning Systems®

Eos Positioning Systems® designs and manufactures the world's leading high-accuracy GNSS receivers for mobile data collection. In 2014, a technical team with more than two decades of GNSS experience founded Eos near Montreal. The team is credited with creating the world's first submeter Bluetooth GPS receiver (2001) and also the world's first RTK GNSS receiver for any device (e.g., iOS, Android). Today, the Eos Arrow Series™ GNSS receivers provide submeter and centimeter accuracy directly into any mobile app, including popular data-collection software such as Esri's Collector for ArcGIS®.

About the Arrow Series™

The Eos Arrow Series™ of GNSS receivers offer a unique balance of accuracy, affordability, flexibility, and simplicity not seen elsewhere on the market. Arrow receivers are flexible (any device, any app) and future-proof (support all new GNSS frequencies and all four global GNSS constellations). They are known for their superior tracking capability and accuracy under dense canopy, thanks to both patented technologies and the ability to maintain lock with free SBAS signals like WAAS, EGNOS, MSAS and GAGAN. In addition, the Arrow Gold RTK receiver can be turned into a base station when private RTK networks are not available or too onerous.



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