AIMS Coordinators Meeting - WaterOne

January 14, 2016

Hydrant & Valve Audit Tool – Steve Voelker

Steve presented on the auditing tool that is used by their field crews to track and perform audits on their hydrants and valves. The tool is an integration between their GIS and SAP applications that they have been using for around 10 years. The web based user interface is called CyberServe and was originally built using Flex technology but was recently migrated to HTML5 and can now be used on a variety of devices, including iPads. Work crews connect to the application via cellular network and VPN access.

They perform approximately 18,000 hydrant audits each year in an effort to capture each hydrant they maintain. These audits are completed by summer interns and can often be finalized by August when the student interns return to school. They also perform another 28,000 valve audits. Because there are so many, these are conducted on a 3-year cycle by normal field crews. Steve mentioned that they try to fix any problems requiring repair within a 24 hour window which is much better than other water utilities across the metro. The application also includes mapped locations of dialysis centers so that extra care is taken if they need to shut off service for those facilities.

Using GIS and SAP has helped take their hydrant and valve auditing process from a cumbersome paper process that used to take many man hours to a more streamlined and near real-time process that can be completed with a much quicker turnaround.

GIS/GPS Redesign RFP – Jeff Simons

Jeff explained that WaterOne intends to overhaul the process they use to collect points. Historically, they have used Trimble 6000 series GPS units to collect hundreds of thousands of data points going back at least 10 years. The 12 Trimble devices they use work in conjunction with other software packages like TerraSync, Pathfinder Office, and MobiControl to help them download the GPS data they collect. Unfortunately, this process is often conducted by field crews and they encounter all sorts of issues. Some of the problems they have encountered include; unreliable equipment, poor cell signal/coverage, and dense tree canopy interfering with signal reception.

That is why WaterOne has decided to rethink how they collect points. Their goals are to increase the total number of units to 25 and be able to have real (or near real) time data updates that integrate with tablets and/or phones. One example they cited used pole mounted GNSS receivers paired with off the shelf tablets/phones. They also desire for the person collecting data to have access to their database and aerial imagery so they can see how the new data points will overlap with other data.

The end result was an RFP that was sent out to 12 different vendors. They are hoping to get at least 6 responses with 3-4 concepts they can test in the field. Deadline to respond to RFP is 1-22-16. They also desire to have decimeter or less accuracy but 1 centimeter preferred (1 decimeter = 3.94 inches).

Editing Workflow Using LGIM – Jason Beyer (and Kirk Eidson)

Jason explained that they have about 24 different feature classes they edit on a daily basis and that 8 of those participate in a geometric network. He also explained that they have over 2,600 miles of water mains which translates to over 66,000 line segments. They have another 50,000 valves, 92,000 fittings, 150,000 service connections and 172,000 lateral lines. Some of the other feature classes they maintain include; main breaks, abandoned mains, CIP polygons, encumbrances (easements), pressure zones, curb stop valves, and facility points.

All of the layers described above are maintained by 5-6 editors in the Mapping and Drafting division of WaterOne each using their own version of the data. Those individuals perform up to 500 edits in each day on average. The types of edits they perform include; GPS moves, posting as-builts, water service connections, miscellaneous work orders, main breaks, and QC work (related to infrastructure planning and asset management).

Kirk explained their 'Packet Track-It' system in SharePoint which allows them to follow the entire history of a project from conception, through engineering to GIS all the way to completion. The system includes all as-builts for the entirety of each project so that they can always look back to see how the project was designed 20+ years ago.

Jason concluded with some statistics on 2015 in which they added over 228,000 feet of water mains. He also explained that their daily workflow was somewhat broken at ArcMap 10.1 so they had to come up with a revised process. Some of the tools they used to overcome their workflow interruption are Connection Checker, Verify Connectivity, Repair Connectivity, and Find and Repair Features In Geometric Network. Their nightly process includes steps to delete versions, compress database, backup, run Impress (GIS/SAP integration tool), and create current view of QC data.

Geomentoring – Dan Rose

Dan gave a short presentation on the subject of becoming a geomentor. A geomentor can be any GIS professional that is willing to help educators and students to learn about GIS and GPS. Geomentoring is a volunteer network that is intended to help educators learn more about geography and help their students learn more about the field and how to think spatially.

The need for geomentors is because teachers are not trained properly and don't have the right geospatial skills. A lot of geographers and cartographers are leaving the workforce due to retirement and taking that knowledge with them. They are needed across the nation but even more so in Kansas.

To become a geomentor you must be willing to make a commitment and host workshops for GIS. You also need to have four basic skills/traits; a vision, commitment, excitement and willingness to share your knowledge.

The idea of geomentoring came out of a 2012 white house initiative to teach more people about GIS and how to think spatially. To learn more about becoming a geomentor, you can visit either the Esri website here or check out the interactive map journal here.

Drone Demo – Jerry Koukol and Kirk Eidson

Jerry provided some details regarding a drone (UAS) they purchased for communication purposes (aerial flyover of WaterOne facilities). The drone they purchased weighs less than 25 pounds and can fly up to 35mph. The battery life will last approximately 20 minutes per charge. The DJI drone also comes equipped with a high resolution camera which can capture 12 megapixel images or high definition (1080p) video. It also has a 3-axis gimbal stabilizer which makes for some extremely smooth videos (several were played during the demonstration). The total cost for their unit was around $800.

The device can also be flown in manual mode or the operator can pre-program in specific waypoints for the done to follow via an iPad connected to the controller. Data are collected in lat/long but can easily be converted to state plane. Jerry did advise that Adobe Photoshop did not work well for trying to stitch together various images. They tested a few different software programs like Pix4D Mapper and Agisoft PhotoScan that seemed to work much better. They are still awaiting further direction from the FAA this year on how they might be able to use the drone for commercial purposes.