

The Asset and Infrastructure Management (AIM) Committee, a joint committee of Michigan AWWA and MWEA, has as its first goal to provide information and training related to development of Asset Management Programs. The AIM Committee's goal is to build upon the guidance of the MDEQ with the Asset Management Guidance for Water Systems, which can be found on their website. This article provides a case study of software tools available for small to medium communities to use for development of their asset management program.

Practical and User-Friendly GIS Work Order Software is Key to the Successful Implementation and Operation of Asset Management for Michigan Communities

By Brigid Forlenza, Chairman of the Wastewater Board, Deputy Supervisor, Ontwa Township, Michigan



It is widely publicized that America's infrastructure is rapidly deteriorating and reaching the end of its useful life. In its 2013 report on the condition of America's infrastructure, the American Society of Civil Engineers (ASCE) gave America's infrastructure an overall grade of "D-plus" and reported that the nation would need to spend an additional \$3.6 trillion by 2020 to raise the national infrastructure to a state of good repair. The Trump Administration has announced that they will unveil a \$1 trillion investment plan, to be invested over 10 years to upgrade America's transportation, energy, water, and potentially the broadband and communications infrastructure.

In his 21st Century Infrastructure Commission Report, Governor Rick Snyder announced a 50-Year vision and recommendations for improving Michigan's infrastructure across water, transportation, energy and communications infrastructure. Michigan ranks in the lowest states

for infrastructure spending. Between 2002–2013, Michigan had the third largest decline in state and local infrastructure spending and Michigan's annual investment of 4% of their total budget in 2013, ranked them in the lowest spending states. The goals of the 21st Infrastructure Commission are to create infrastructure systems that are built within a culture of strategic investment through asset management, utilizing continuous improvement models and risk-based approaches to ensure that infrastructure needs are prioritized and funded.

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The Wightman GIS Work Order application is browser-based, which makes it accessible on any desktop computer and mobile device.

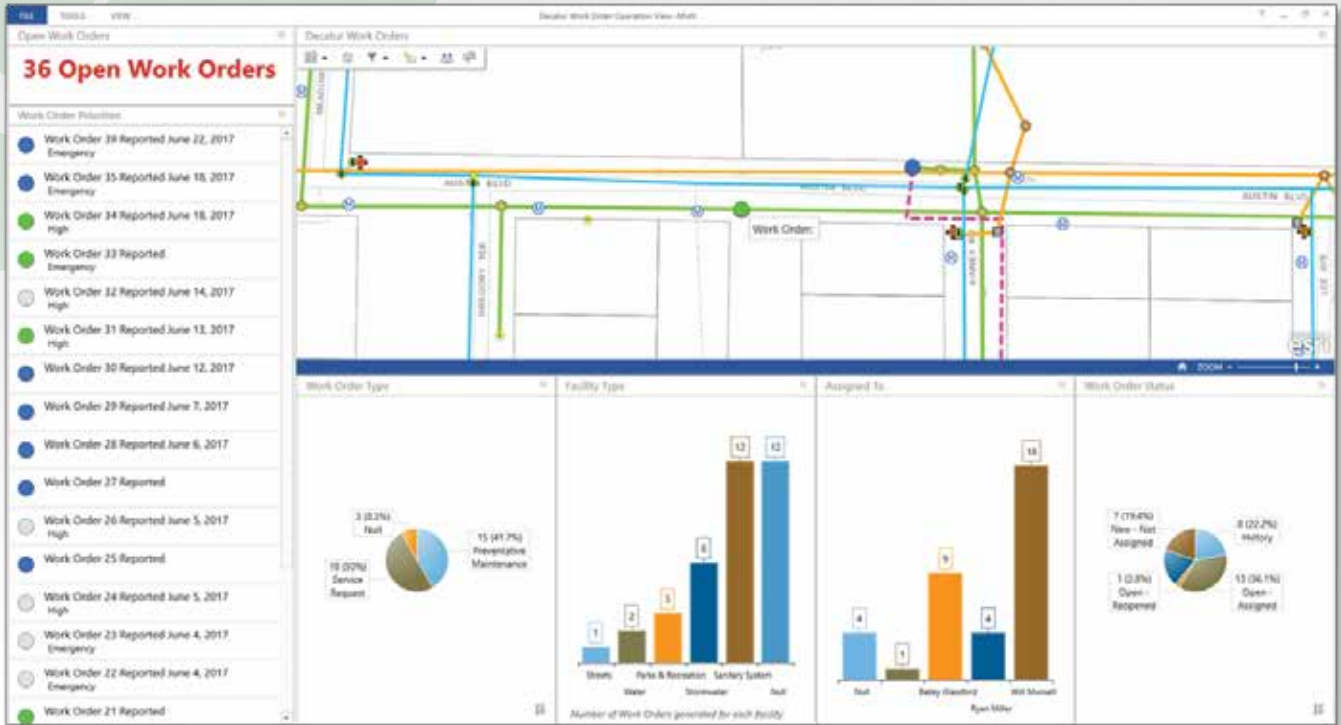
Infrastructure systems across the Nation are in need of an immediate investment to upgrade the condition of assets, along with an investment in more sophisticated systems to better manage the assets in the future. Asset management is critical for managing infrastructure spending, maintenance and repair, and for creating more predictable conditions during daily operations. The first step of basic asset management is knowing what you own and where it is located. GIS, or “Geographic Information Systems,” are rapidly becoming the backbone of asset management systems, providing the ability to accurately locate, map, and inventory a system’s assets. GIS is a tool commonly used by organizations to help collect, manage, analyze, and display geographic data. GIS helps an organization capture and pass on institutional knowledge, break down data silos, assist with communication, and allows staff to make more informed decisions.

Asset management software is a critical platform for managing infrastructure and making data-based decisions. Many platforms provide technology and processes for making decisions based on long-term financial goals, strategic planning and operations, life cycle costs of system assets, and ongoing repair and maintenance. Core to the success and efficiency of leveraging such a platform, is investing in a package that will meet the needs of your organization. Public utilities are rapidly adopting GIS and work order software to manage their infrastructure. They are quickly moving from hardcopy, paper-based systems to software-based systems for asset tracking and maintenance.

In order to implement a successful asset management system, it is very important to find a solution that combines a flexible and user-friendly interface with the ability to leverage GIS. This combination provides a tool that allows users to visualize problem areas spatially on a map versus a conventional spreadsheet.

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GIS provides the ability to analyze complex spatial relationships and form predictive solutions for infrastructure assets. The recent Storm Water, Asset Management and Waste Water (SAW) Grant program, managed by the MDEQ, provided the ability for its funded municipalities to invest in GIS and asset management software to help municipalities move from a “fix it when it breaks” mentality into more preventative and predictive maintenance and management.



Supervisors using the Operations Dashboard for ArcGIS app can view the current status of work orders and quickly address issues.

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There are many GIS and asset management products on the market today. However, often times these systems are very robust and complex to operate. Their target clients are often very large municipalities who have dedicated staff to program and manage the software. Even with dedicated GIS and IT staff, end users often find these solutions difficult to operate. Software packages on the market today are missing the mark on providing a solution for small to medium-sized communities.

Infrastructure Alternatives, Inc. (“IAI”) of Rockford, Michigan, a leading Michigan operational services provider, manages the wastewater systems of Ontwa and Porter Townships and has been using a custom GIS and work order software platform developed by Wightman & Associates, Inc. provided through the State of Michigan

SAW program. The software provides a full range of operational processes that are focused on the core basics of asset management. With the small to medium-sized community in mind, the software development focused on scalability, ease-of-use, and cost effectiveness.

Ray Galovich, Project Manager for IAI explains, “We were very happy to work with Ryan Miller and Frank LaPierre at Wightman as they were building this user-friendly software. It not only provides the maps and data of our clients’ wastewater system, it also provides an easy-to-use, preventative maintenance program. What we are really excited about is the ability to schedule, track and monitor routine, preventative maintenance programs, with a complete reporting support system.”

Ryan Miller, GIS Manager at Wightman, who led the development of the software, shares his vision. “Wightman felt that we needed to provide a complete GIS software platform to support the SAW program for our clients that was focused on usability after the lifecycle of the SAW grant. Our GIS team has been working with key strategic partners such as IAI, to build a solution that would meet their needs on a day to day basis. The beauty of the application is that the use of it can be integrated into other departments of each municipality such as stormwater, water, facility management, transportation, compliance, among others.

Custom tools (widgets) were built on top of an online GIS platform. The GIS-based approach provides the user a simple interface to log work performed

on assets, assign tasks to other users, schedule and receive notifications for preventative maintenance tasks, and create reports for developing metrics and summarizing data. Users have access to many out-of-the-box GIS tools along with the custom ones. The image at left shows a screenshot of the GIS-based application, which can be used on any device from a desktop PC to any mobile device.

Some key solutions that are included in the application include the ability to create and assign work orders to users in your organization. A notification email and text is sent to the assignee containing pertinent information, along with a link to the location of the work order on the map. Users have the ability to attach pictures and other important documentation to work orders as well. A dialog containing all open and closed work orders is easily accessible through a table in the application. Preventative maintenance tasks can be easily scheduled, reminding the user to proactively maintain assets. Finally, among other tools, the user can export custom reports, providing a summary of activities over a pre-defined time period. Calculations can be performed on how much time is being spent on certain tasks or how often certain equipment is being used, which is highly beneficial to supervisors looking to make informed decisions.

Initially, the target audience for the application were communities that received SAW grants, who are focused on sewer and stormwater infrastructure. The application can be utilized with other assets that an organization manages (i.e. water systems, roads, trees, zoning compliance, etc.). The GIS-based approach provides extreme flexibility and customization potential. In other words, anything that can be mapped on the earth has the ability to leverage and benefit from the tools in the application. Another useful solution, when combined with the GIS application, is Operations Dashboard for ArcGIS. The image at

left shows how a supervisor can utilize the dashboard to view the current status of work orders in a community. Operations Dashboard for ArcGIS is also a highly configurable solution that can be setup to meet individual client needs.

M. John Bossler, Waste Water Board Of Directors member, Ontwa Township, also likes the software. "Through the training program provided by Wightman, we can now track our emergency response activity along with our ongoing, preventative maintenance. We meet every Tuesday to review the past weeks maintenance and to plan the upcoming weeks schedule. Dashboard tools in the software provide us with an efficient way to track and monitor our system condition and maintenance activities.

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Eventually, we would like to integrate Wightman's work order software with our SCADA system."

The use of GIS and asset management software is growing rapidly by public and private entities of all sizes in order to effectively and sustainably manage their assets. While there are many emerging software solutions available on the market today, the more user and operator-friendly products are gaining momentum and increased acceptance by users across the country.

The Author

Brigid Forlenza is Chairman of the Wastewater Board and the Deputy Supervisor of Ontwa Township, Edwardsburg, MI.

Mr. Ray Galovich is the Project Manager for Infrastructure Alternatives, Inc., a Wastewater and Water Operations Service provider headquartered in Rockford, MI. Ray is responsible for managing the Wastewater system and plant for Porter Township and Ontwa Township, in Southwestern Michigan.

Mr. John Bossler is a member of the Waste Water Board for Ontwa Township. He provides consulting services on the day to day wastewater operations of the Township that implemented their SAW Grant with completion in 2017.

Ryan Miller is the GIS Manager for Wightman & Associates. He is a certified GIS professional (GISP) with extensive experience in project management, data analysis, problem solving, creativity and presentation. Ryan has 8 years of prior municipal experience in GIS-related projects with the Van Buren County.

Frank LaPierre is Infrastructure Manager for Wightman & Associates. He manages the Stormwater, Asset Management and Wastewater programs for Wightman and is a member of the Asset Infrastructure Management committee of the Michigan Chapter of the Water Environment Association. 💧

If you are interested in joining the AIM committee, please contact committee Co-Chairs Sally Duffy at sduffy@hrc-engr.com or Jennifer Drinan at Jennifer.drinan@ohm-advisors.com, or committee Secretary Deann Falkowski at defalkowski@ftch.com. If you have any questions regarding this article, please contact AIM committee member Frank LaPierre, at flapierre@wightman-assoc.com.