



Say Hello (and Welcome Back) to Our Newest Team Members

By Jaclyn Nye

JAMES FARRELL

Water and Wastewater Programs Manager

James Farrell joined the North Dakota Rural Water Systems Association (NDRWSA) in April as the Water and Wastewater Programs Manager. Prior to working at NDRWSA, he spent 10 years as a Distribution Operator with Southwest Water Authority, where he earned his Class III Water Distribution License and Backflow Tester Certification. He is passionate about supporting small communities across North Dakota and improving their water systems.

In his role as Water and Wastewater Programs Manager, James provides on-site training as well as technical, managerial, and financial assistance to drinking water and wastewater systems throughout the state. He also helps oversee program staff and administer federal and state grant and contract programs, ensuring all requirements and deliverables are met. Collaboration across program staff is a key part of his role, along with maintaining compliance with program procedures and expectations.

James and his family enjoy a rural life near Lake Tschida, where they value hard work, faith, and time together.



JULIE HEIN

Project Finance Specialist

Julie Hein is a dedicated professional whose career reflects a commitment to excellence and a passion for making a meaningful impact in the field. She taught high school science and math for 25 years in Wing, ND. Throughout her career, Julie has held various roles that allowed her to showcase her talents and expand her expertise. Julie's work is characterized by her attention to detail, creative problem-solving abilities, and dedication to achieving results.

Julie has worked for NDRWSA since 2019 as a source water protection specialist, water and wastewater technical assistant, training specialist, and project finance specialist. As the project finance specialist, she provides assistance to small, rural, and Tribal wastewater systems in planning, developing, and securing infrastructure financing through various funding programs. Her role works closely with state agencies and local decision-makers to build financial, technical, and managerial capacity, guide systems through compliance requirements, and support long-term sustainability of wastewater infrastructure investments.

Beyond her professional responsibilities, Julie is actively involved in her community. She dedicates time to volunteer work and supports causes that align with her values. Her commitment to giving back underscores her belief in making a positive difference both inside and outside the workplace.



Drones in the Water and Wastewater Industry

By Jeremy Aasen

Unmanned aircraft systems (UAS), commonly known as drones, have slowly made their way into various parts of society, including the water and wastewater industry. They offer a more accessible and affordable way for water system operators to survey their infrastructure. They also offer operators and system managers the ability to collect detailed information about the status of their system through aerial photos and videos.

Most drones are battery powered, but gas-powered engines, like what weed eaters or chainsaws use, have started to appear in the ag sector where drones are being used for the aerial application of herbicides. With early drones, batteries would give about 15 minutes of flight time, but as technology has advanced, some batteries can power a small drone anywhere from 30 to 45 minutes.

The Federal Aviation Administration (FAA) has rules and regulations which govern the operation of small UAS in the U.S., requiring pilot certification, drone registration, and adherence to specific operational limitations.

North Dakota Rural Water Systems Association (NDRWSA) has two staff members who hold remote pilot certifications. NDRWSA has been looking into the purchase of drones equipped with infrared capabilities to complement the other services already offered to water and wastewater systems across the state. However, with implementation of the National Defense Authorization Act (NDAA) the cost to procure drones meeting the NDAA requirements could become quite costly to the association.

These drones could be flown over areas with suspected water leaks; the infrared camera technology can decipher temperature differences which appear on the screen of the drone's remote-control screen. Typically, the ground appears in colors consistent with temperature of its surroundings—such as browns or reds. When the camera detects a cooler area, it displays a bluish tone, potentially indicating a water leak. Warmer objects, like a car out in the hot sun, would appear bright red or white, depending on intensity.

The drones could also be used to survey water towers. If an operator of a system is questioning the operation of



mixing equipment during cold weather conditions, a drone could be flown around the tower and with the use of the infrared camera, the temperature differences would be viewed on the remote-control screen indicating whether the tank and standpipe are properly circulating or not. Another use that is slowly gaining popularity is the use of drones to pressure wash the outsides of water towers.

Drones can also be used in the wastewater arena; the infrared technology can be used to detect a possible force main leak in the same manner as in a water line leak or get a bird's eye view of the lagoon whether it be weed issues, dike seepage or stagnant areas in a pond.

One of the greatest advantages of drones is that they are highly efficient while still being relatively inexpensive and offer safer and more cost-effective alternatives to operators compared to climbing towers or spending hours walking suspected areas searching for water leaks. Drones can be used to collect data ranging from updating processes to design additions, as well as building changes, maintenance, and demolition.

The possibilities are truly unlimited.