# Irrigation Leader

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NEW ZEALAND EDITION

## Andrew Mockford of Opuha Water: Irrigation Water and Flood Control for South Canterbury

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**Irrigation Leader**

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**COVER PHOTO:**
Andrew Mockford, CEO, Opuha Water.
Photo courtesy of Opuha Water.

PHOTO COURTESY OF OPUHA WATER.

# Providing Irrigation and Flood Control for South Canterbury

By Kris Polly

In this month's cover story, we speak with Andrew Mockford, the CEO of Opuha Water Limited, which supports agriculture in South Canterbury with the Opuha Dam, the Opuha Power Station, and the associated local irrigation distribution systems. The region recently experienced a significant flooding event, which Opuha Water's infrastructure helped to mitigate. In our interview, Mr. Mockford tells us more about Opuha Water's services and about his vision for the future.

Next, we turn our attention back to the Colorado basin, where drought is still top of mind. We are honored to feature a cover interview with United States Senator Kyrsten Sinema of Arizona, who is increasingly recognized as one of the top water leaders in Congress's upper chamber. We also speak with representatives of two California irrigation districts that are fully supplied by the Colorado River. Water Department Manager Tina Shields of Imperial Irrigation District tells us about how her organization is conserving water, increasing operational flexibility, and increasing system and on-farm efficiency. Then, Palo Verde Irrigation District board member Jack Seiler tells us about his agency's unique fallowing and transfer agreement with the Metropolitan Water District of Southern California, which saves water and earns the district money. We also hear from Melissa Lowry, a grants and marketing coordinator at Rubicon Water, about how Rubicon is actively helping its clients, many of them in California, to apply for grants to fund system modernization.

Next, we talk to Executive Director Paul Arrington and Office and Program Manager Kathryn Scott of the Idaho Water Users Association about the Legislative Water College program it founded to help educate new legislators on water resources issues.

By carrying out confidential, anonymous interviews with an agency's employees, the Situational Awareness Institute (SAI) can help water districts and other organizations maintain a satisfied and productive workforce. SAI Cofounder and Lead Instructor Phil Ball tells us more.

Mike Mills, Reinke's director of sustainability solutions, tells us about the company's roots, its recent pivot to advanced tech, and what it has to offer producers in New Zealand and around the world.

Finally, in our Professional Focus feature, we introduce Marketing Manager Tanika Owens of Emrgy, a provider of modular hydropower units that should be of interest to any operator of open-channel conveyance infrastructure.

As Senator Sinema emphasizes, this moment requires leadership, compromise, and cooperation. Faced with serious challenges on the Colorado, it is important that the irrigation industry think creatively and be open to new solutions. IL

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**...While Assura can't provide that, we can help with productivity, efficiency and visibility. We know those things may not be all that exciting, but they'll help to create more time for you to spend somewhere on a beach.**

*"We have been delivering water for over 75 years and managing our assets had never really evolved, we had thrown more paper and more people at it but it hadn't improved. Having Assura as part of our day to day operations has enabled us to be far more effective and efficient with our Asset Management and Safety."*

**Melanie Brooks, CEO, MHV Water, New Zealand**

# Andrew Mockford of Opuha Water: Irrigation Water and Flood Control for South Canterbury

An aerial view of Opuha Dam and Power Station, winter 2022.

*Opuha Water Limited, founded in the 1980s, supports agriculture in the South Canterbury region of New Zealand with the Opuha Dam, the Opuha Power Station, and the associated local irrigation distribution systems. In this interview, Opuha Water CEO Andrew Mockford tells us more about the company's irrigation and flood control services and discusses the future water storage and supply needs of the region.*

**Irrigation Leader:** Please tell us about your background and how you came to be in your current position.

**Andrew Mockford:** I am the CEO of Opuha Water Limited. My career prior to Opuha was centered on physical asset management. I served in the Royal New Zealand Air Force for just over 15 years, initially as a technician, then as an engineering officer. I then spent some time with Trustpower, where I was responsible for its Otago and Canterbury hydropower schemes. I also worked briefly at Airways New Zealand as its South Island maintenance manager before starting as the CEO of Opuha in January 2018.

**Irrigation Leader:** Please introduce Opuha Water.

**Andrew Mockford:** Opuha Water is a progressive infrastructure and irrigation cooperative company based in South Canterbury. We own and operate the Opuha Dam, the Opuha Power Station, and the associated irrigation distribution systems. We have been part of our local community for more than 24 years and have delivered significant environmental and community benefits during this time. We work with a precious natural resource, fresh water, and we take our obligations regarding its management incredibly seriously. As a small and dedicated team, we are passionate about what we do and how it enables community and environmental prosperity.

The scheme had its genesis in the droughts of the 1980s in New Zealand, which were particularly harsh, especially in South Canterbury. The lower reaches of the Opihi River would dry up, and emergency actions such as fish salvages were required to relocate stranded fish. A group of like-minded people in the community got

PHOTOS COURTESY OF OPUHA WATER.

together and decided that a dam was the best solution to provide water resilience for the region.

The dam was commissioned in 1998. It stores about 65 million cubic meters (52,696 acre-feet) of water, which is sourced during high-inflow periods and used to augment the river during dry periods. We maintain minimum flows in the river to ensure the sustainability of the in-river ecosystems. This minimum flow varies by the month to mimic natural flows. With that stored water, we also provide 16,000 hectares (39,537 acres) of land with reliable irrigation water. We supply water to a diverse range of properties, from dairy, arable, sheep and beef, and horticultural farms right down to lifestyle blocks. The water made available by the Opuha Dam has helped the district grow and flourish, and it has also ensured that the river has not gone dry. The economic benefits flow through to the community via the industries that support the flourishing primary sector. Significant numbers of jobs have been created by the positive effects the Opuha Dam has had on this community. The lake created by the dam is also a great resource for fishing and boating.

**Irrigation Leader:** Does the dam generate power?

**Andrew Mockford:** The water that's released from the dam goes through a 7-megawatt hydroelectric power station. We produce 26 gigawatt-hours of power in an average year. Given the average New Zealand household's yearly power consumption, we're providing sustainable, green electricity for about 3,800 homes.

**Irrigation Leader:** Would you tell us about the distribution system you own as well?

**Andrew Mockford:** We have irrigation subscheme areas where shared water distribution systems are used to convey water to our customers. Some of this infrastructure predates the construction of the dam, and some has been created as a result of the dam being built. These subscheme areas are predominately open-channel systems, but there are some sections where the water is conveyed by pipeline. In addition to the subscheme areas, we also have shareholders who can draw water directly from the river system. In total, there are 92 kilometers (57 miles) of open-channel races and 15 kilometers (9 miles) of pipeline across the combined subschemes.

**Irrigation Leader:** Are your customers and your shareholders the same people?

**Andrew Mockford:** Our customers are our shareholders. We have a total of 16,000 water shares. One share will provide 1 hectare of land with 25 millimeters of irrigation water per week over a period of 22½ weeks. Our season opens on September 1 and closes on May 31, so our shareholders have a 9-month window during which they can access water for their farming systems.

**Irrigation Leader:** Other people in South Canterbury tell us about the area's gravelly, leaky soils and the close connection between the rivers and groundwater. Does your reservoir lose a lot of water through infiltration?

**Andrew Mockford:** The porosity of the soil varies greatly across the scheme, so different subschemes experience different levels of system loss. The reservoir itself does not experience any major ground losses.

Lake Opuha.

**Irrigation Leader:** Are you dealing with an increased level of regulation?

**Andrew Mockford:** Environment Canterbury, the regulatory authority here, sets rules consistent with national policy. It seems that regulation has swung too far toward centralized, prescriptive requirements, adding material costs, seemingly with little benefit. There's no arguing that we must get our environmental custodianship right; we as a company and our farmer shareholders genuinely intend to do the right thing by maintaining and improving our environment. As a region, and as a country, we must strike the right balance in this space.

**Irrigation Leader:** Do you think that at some point more water storage will be needed?

**Andrew Mockford:** Considering what climate change is doing, I've read that we can expect more extreme weather, with heavier rains and much longer dry periods. For both environmental and irrigation resilience, water storage will be key. During those big rainfall events and floods, we've got to be able to capture water so that we can use it to keep rivers connected during the long droughts that have been forecasted. Water storage can take several forms, including large lakes behind large dams and much smaller pumped-storage facilities at strategic locations. Certainly, water storage will provide massive opportunities in the future for reliability and environmental health and to help society cope with how the climate is changing. Infrastructure of this nature, however, is not cheap, and we will need to take a collaborative approach to ensure that the assets that are built are multifunctional (providing water storage, hydro generation, recreation, and so on) and are funded proportionally by all those benefiting.

**Irrigation Leader:** Please tell us about the recent flooding you experienced. Is flooding a fairly regular occurrence for you, or was this unusual? How did you respond?

**Andrew Mockford:** We've had two big weather events during the last 2 years. In May 2021, an atmospheric river came in from the northeast and did a lot of damage. The rivers were very high, and some breached their banks, causing a lot of damage across their floodplains. When this occurred, there hadn't been any major rain for 4–5 months, and the lake was at 15 percent capacity, so we were able to absorb the full impact of that flood. The dam held back 45 million cubic meters (36,482 acre-feet) of water over a 48-hour period from the already-flooded river system. At one point, we had about 450 cubic meters per second, or cumecs, coming into the lake (15,892 cubic feet per second, or cfs) and we were releasing just 16 cumecs (565 cfs). The river systems in the lower reaches toward the coast were experiencing a substantial flood. Had the 450 cumecs that the dam was holding back been added to the water that was flowing downstream, the damage would have been significantly greater than it was.

Boating on Lake Opuha.

Lake Opuha after the flood of May 2021.

In 2022, particularly during the midwinter period, we had three heavy rain events. Again, we were able to buffer and attenuate those floods and then release stored water from the lake before the next one came. Anecdotally, locals who have lived in the district for a very long time have said that they haven't seen winter rain like this before. The fact that we were able to get through it is a testament to the positive effect the dam has had on the community.

**Irrigation Leader:** Do you think there's also a need for increased storage for flood control?

PHOTOS COURTESY OF OPUHA WATER.

**Andrew Mockford:** Yes, potentially. Storage certainly needs to be part of the thinking about how we as a society help manage the effects of a changing climate. There won't be one silver bullet to mitigate floods, but storage can certainly be part of the solution. Other options might include working with the natural environment to try and store more water in the landscape and slow its passage downstream. While this will not prevent flooding, it could be part of a wider package to alleviate both the frequency and magnitude of major flood events. Gravel extraction from the rivers and stopbank maintenance are other ways to help manage floods.

**Irrigation Leader:** What are Opuha Water's other top issues today?

**Andrew Mockford:** First, we're implementing a gradual modernization program that will replace manually operated control gates with automated and remotely controllable systems. This will improve our efficiency in the realms of both resources and water. Dam safety is also a major focus for the company. The dam is a multigenerational community asset, and we need to make sure that we maintain it in a safe and reliable manner. Our constant focus when undertaking scheme efficiencies is to maintain or enhance our customers' water reliability while fully considering any potential environmental effects.

The second major focus area is understanding regulations, influencing them where possible, and then adapting to them. There is significant change at present in the regulations imposed by the central and local governments concerning freshwater management and on-farm environmental practices. We must stay abreast of these new rule frameworks to ensure that we remain viable and beneficial for our customers and the community. On an equal footing with complying with the formal regulations is the maintenance of our social license to operate. We must retain the trust of the community we operate in to keep doing what we do.

**Irrigation Leader:** What is your vision for the future?

**Andrew Mockford:** We can't take for granted the privilege of being able to work with fresh water. Everyone has a vested interest in healthy rivers. As we move forward, we need to be cognizant of the water quality within our scheme area and take a continuous-improvement approach to its management. We have a 20-year program underway to restore biodiversity in the corridor from the mouth of the Opihi River all the way to the Lake Opuha catchment area. We hope to partner with a number of community organizations to advance this long-term goal.

We would love to be able to see our shareholders obtain a premium for their products based on the powerful value-chain story about how they are produced locally in a sustainable manner. The water that comes into the lake is of excellent quality, enabling recreational activities such as fishing and boating. The water is then released from the lake via the hydropower station, generating green energy, and then sustains life as it flows down the river. A small percentage of that water goes to farms to produce food and fiber. These products come off the farm and go to the Washdyke area or Clandeboye to be turned into higher-value primary products. The scheme might even be able to provide sustainable green power to those primary industries. Leveraging this story will take time, but that is our vision for bringing further value to the community. IL

The Opuha Dam and Lake Opuha with mountains in the background, summer 2022.

The confluence of the Opuha and Opihi Rivers.

*Andrew Mockford is the CEO of Opuha Water Limited. For more on Opuha Water, visit opuhawater.co.nz or e-mail office@opuha.co.nz.*

# Senator Kyrsten Sinema: Inaction on the Colorado Is No Longer an Option

Senator Kyrsten Sinema listening to Gila River Indian Community Governor Stephen Roe Lewis during a meeting of her new Water Advisory Council at Hoover Dam in August 2022.

*As the senior United States Senator from Arizona, Kyrsten Sinema is acutely aware of the effects of the severe drought on the Colorado River. In response, she secured the inclusion of $4 billion of funding in the Inflation Reduction Act to address the Colorado River water crisis. In this interview, she discusses how those resources will be distributed to address the short-term crisis, including by funding water conservation in Lakes Mead and Powell and payments to farmers for voluntary water reductions. But with the significant help must come significant efforts, she says. All western water users must work together to solve the long-term problem and secure the West's water future.*

**Irrigation Leader:** What is your message to agricultural water users on the Colorado River regarding the current drought and the future outlook in the basin?

**Senator Sinema:** Agriculture is incredibly important to Arizona. Phoenix was largely settled by farmers, and our state is critical to feeding the nation. Ninety percent of our country's lettuce during the winter months comes from Yuma-area farmers. Recently, I've had the pleasure of visiting farmers across the state, seeing the importance of their work firsthand, and thanking them for their persistence and perseverance, despite the challenges facing our agricultural industry. Farmers in Arizona and across the basin states make incredible contributions to our economy. They help us lead the effort in combating historic drought conditions so that our states can continue to grow and thrive. For instance, Arizona farmers were instrumental in the passage and implementation of the 1980 Groundwater Management Act, the first long-term water management and drought response law in the country, which helped Arizona decrease its annual water usage by around 3 million acre-feet while our population increased by almost 4 million people. Farmers, ranchers, and producers across the West are key partners as we secure our water future. I'm confident that the hard work and innovation that our agricultural

PHOTOS COURTESY OF THE OFFICE OF KYRSTEN SINEMA

Senator Sinema meets with National Park Service staff during a visit to Glen Canyon Dam.

industry is well known for will be put to great use and strengthen our water supply for generations to come.

**Irrigation Leader:** Please explain your role in securing $4 billion in the Inflation Reduction Act and how you see those resources being distributed to water users.

**Senator Sinema:** In Arizona, we know that our economic growth and prosperity depend on strengthening our state's water supply. As we all know right now, historic drought conditions threaten the health and safety of Arizona communities and livelihoods. To continue fueling jobs and expanding opportunities for Arizonans, we must secure our water future. That is why I refused to move forward with the Inflation Reduction Act until significant resources for drought resiliency for Arizona and the entire American West were included. Considering that the Inflation Reduction Act has rightfully been referred to as one of the largest investments in our clean energy future in recent memory, it was shocking that the bill did not have drought funding included before I spoke up. This underscores the importance of having western voices at the table when federal policy is being written: East Coast senators do not understand the dire effects that drought has on our economic future. The investments in drought resiliency that we secured will help address short-term challenges, including the immediate issue of conservation at Lakes Mead and Powell, by providing critical funding to farmers for voluntary water reductions. The funding will also be used to invest in more efficient infrastructure and irrigation facilities to increase and improve storage capacity along the Colorado River, to complete critical ecosystem restoration to protect human health and efficiencies in the lower basin, and to improve our ability to recycle water to augment decreasing flows in the river. By addressing the immediate concerns facing states across the West, we can continue the critical work of bringing all Colorado River states together so that we can focus on a long-term water conservation and drought plan that serves the entire region.

**Irrigation Leader:** How do you plan to work with the Bureau of Reclamation and other federal agencies to address the issues in your state and other states along the Colorado River?

**Senator Sinema:** Since I came to the Senate, I've had a productive relationship with Reclamation, and I worked side by side with leaders from the bureau as we finalized

A water intake at Hoover Dam in October 2021, when water levels were approximately 20 feet higher than they were a year later.

the Drought Contingency Plan in 2019. I look forward to continuing to work hand in hand with Reclamation, and specifically with Commissioner Touton. Through our conversations, I've been consistently impressed with the progress she and her team have made under some tough conditions. And while I appreciate our partnership with Reclamation, I will not hesitate to hold the bureau accountable, and I will continue to insist it take bold action to meet the conservation goals expressed by the commissioner in the Energy and National Resources Committee hearing in June. Arizona has long led the way in conserving water, and the West's drought crisis has reached the point at which inaction is no longer an option. Everyone has to do their part.

**Irrigation Leader:** What is your message to Congress regarding the western drought, and how do you engage with your colleagues across the country who may believe that this does not affect them?

**Senator Sinema:** My message to my colleagues is simple: The Colorado River system cannot fail. Americans all across the country enjoy food produced by farmers who rely on the Colorado River, and major cities and their economies are powered by the electricity from Colorado River dams. I recently visited both Lake Mead and Lake Powell, and the effects of the drought are shocking. I would encourage my friends from the East Coast and the Midwest to come to Arizona and see firsthand what we're facing and how important solving this crisis is to all of us. That's why senators across the West are working together to solve this problem. When we wrote the Infrastructure Investment and Jobs Act last year, Senators Mark Kelly of Arizona and Mitt Romney of Utah were key partners in securing historic water management funds. And when we negotiated the Inflation Reduction Act this year, Senators Catherine Cortez Masto of Nevada and Michael Bennet of Colorado were able to help drive home the importance of drought funding. We know that ultimately, a thriving West means a thriving America.

Senator Kyrsten Sinema talks with a National Park Service employee during a visit to Glen Canyon Dam.

Senator Kyrsten Sinema visits a livestock barn during a Pinal County Ag Roundtable in August 2022.

**Irrigation Leader:** How do you plan on ensuring that all Colorado River basin states continue to contribute to conservation efforts?

**Senator Sinema:** This is a critical part of our long-term solution. The situation on the river is at the point at which we cannot keep on with business as usual. Everyone has to make sacrifices to ensure that the system remains healthy and viable. That's why I launched a new Water Advisory Council in August. Our council is made up of Arizona water users, including farmers, city and tribal leaders, environmental groups, and state officials. My goal is to get feedback on Arizona's priorities and bring in groups and officials from other states to help bridge divides and build understanding. I'm also meeting with other key stakeholders and irrigation districts from across the basin to better inform my work going forward. The current drought and the levels in the Colorado River reservoirs represent historic challenges for Arizona and the entire West. Solving them requires doing the hard work of building coalitions and finding consensus, but that's exactly the kind of work I'm committed to doing as Arizona's senior senator. I've said it already, but it's worth repeating: We must all work together, focusing on our shared values and our common goals instead of our divisions, to secure our water future. The current moment in the management of the Colorado River demands real leadership, and most importantly, compromise, so that the entire West can continue to grow and thrive into the future. I stand ready to work for just that. IL

Senator Kyrsten Sinema tours a facility at Hoover Dam.

*Kyrsten Sinema is the senior United States senator from Arizona. She can be contacted at (602) 598-7327 and at www.sinema.senate.gov/contact-kyrsten.*

PHOTOS COURTESY OF THE OFFICE OF KYRSTEN SINEMA.

# Tina Shields on Imperial Irrigation District's Efficiency and Conservation Efforts

Sprinkler irrigation in a field along an IID canal.

*The Imperial Irrigation District (IID) is a senior water rights holder on the Colorado River with an annual entitlement of 3.1 million acre-feet, or around 70 percent of California's total allotment of Colorado River water. Having a secure water supply does not mean, however, that IID is resting on its laurels—the district is working on significant water conservation and efficiency efforts. In this interview, Water Department Manager Tina Shields tells us about these important initiatives.*

**Irrigation Leader:** Please tell us about your background and what you do for IID.

**Tina Shields:** I am one of two water managers at IID, and I have worked here in varying capacities for 30 years. I'm a registered civil engineer by training but have spent most of my professional career at IID working on water resources planning and management issues. In particular, I have been involved in the development, implementation, and management of large-scale agricultural water conservation and transfer programs and related efforts, including environmental analyses and mitigation programs. My focus has been largely on Colorado River management and policy issues, Salton Sea mitigation and restoration efforts, work with state and federal entities on planning and restoration partnerships, and myriad regional and local water supply and resource issues related to integrated water management planning and water quality.

**Irrigation Leader:** Please tell us about IID.

**Tina Shields:** IID is the nation's largest irrigation district, with an annual entitlement of 3.1 million acre-feet of Colorado River water, which accounts for about 70 percent of California's share of Colorado River supplies. The Colorado is the district's only water source, so the ongoing drought challenges and declining reservoir elevations in both Lakes Powell and Mead are very concerning. IID has more than 110 years of rich agricultural history in the Imperial Valley, the southernmost portion of California, and holds senior agricultural water rights that include 2.6 million acre-feet of present perfected rights that were established before the signing of the Colorado River Compact. The district's service area encompasses more than a million acres, though the irrigated acreage is about half a million acres. IID's water users put that water supply to great use year round, since we are in a

PHOTOS COURTESY OF IID.

desert area. Ninety-seven percent of IID's water deliveries go to highly productive agricultural acreage; the balance goes to a small but vital municipal and industrial component within our community. The IID water service area is wedged between the Salton Sea and the U.S.-Mexico border, with fertile soils that were deposited by historical runoff from the Grand Canyon, so our lands and climate are ideal for agricultural production. Making use of the IID water supply, our producers, along with producers in the Yuma, Arizona, area, grow most of this nation's winter lettuce and vegetables. Our growers farm a little bit of everything, except for certain stone fruit crops, but their bread-and-butter crops are forage crops. Nearly 70 percent of IID's farmed acreage is alfalfa, Bermuda grass, kleingrass, Sudan grass, and wheat, but in the winter, we grow a lot of vegetables, such as broccoli, carrots, lettuce, and spinach. We have a significant cattle production business in our area as well.

**Irrigation Leader:** What are the primary methods of irrigation used in your service area?

**Tina Shields:** We used to be largely a flood-irrigation district, but over the last 9 years, we have been implementing large-scale agricultural conservation and transfer programs and providing funding to growers for the implementation of on-farm efficiency conservation measures. Those efforts have saved over 1.15 million acre-feet of water. The on-farm programs fund irrigation innovation and conservation investments, including sprinklers, drip irrigation systems, land leveling, and tailwater return systems. Combined with IID's system conservation improvements and historical conservation programs, IID and its growers will have conserved over 7.2 million acre-feet of water from 2003 through the end of 2022. Our conservation programs generate about half a million acre-feet of conservation annually. Since 2014, IID has provided over $232 million in funding to growers to implement conservation measures through its on-farm conservation program, with an additional amount of more than $83 million set aside for the 2021 and 2022 calendar years, amounting to a total in excess of $310 million. That program is now generating about 170,000 acre-feet a year in conserved water.

**Irrigation Leader:** You mentioned sprinklers. Do producers in your area use sprinklers on pivots?

**Tina Shields:** There are not a lot of center pivots within IID's service area. There are a few growers who use those, but for the most part, we are talking about traditional sprinkler systems.

**Irrigation Leader:** Is the topography of IID's service area largely flat?

**Tina Shields:** Yes. Not only is it flat, but we are also at sea level, which is one of our little claims to fame. Another distinctive feature of IID is that we're about 85–90 miles away from the Colorado River and we have a single gravity-flow canal, the All-American Canal, that brings the water into the valley. IID has no other water source; it is 100 percent reliant on the Colorado River. Our system includes over 1,600 miles of laterals and open-channel canals and a similar number of drains that serve our district as an open-channel gravity flow system. We have very little pumping, other than a few isolated areas on the fringe of IID's service area.

**Irrigation Leader:** What is IID doing to conserve and stretch its water supplies?


A gate in IID's Dogwood Canal.

IID's on-farm programs fund grower irrigation innovation and conservation investments, including sprinklers, drip irrigation systems, land leveling, and tailwater return systems.

Automation has helped IID gather information and improve efficiency.

**Tina Shields:** IID has worked water district partners in urban parts of Southern California to implement a water transfer program that moves conserved water to urban areas. IID receives funding from those agencies for the temporary, but long-term, use of that conserved water. As I mentioned earlier, IID and its growers are conserving about half a million acre-feet a year through IID's on-farm efficiency conservation program, system efficiency improvements, and canal lining projects. The district is also working to develop a new, larger reservoir at the top of its conveyance system, with over 2,000 acre-feet of capacity, to provide operational flexibility to our agricultural water users. IID has plans to construct a network of smaller, mid-lateral reservoirs, too, as it works to improve its delivery system to respond to the changes in growers' irrigation methods and provide them with the additional flexibility they need to adapt to their new, lower-water-use irrigation methods and transition away from flood irrigation. If a field is irrigated with sprinklers, the farmer no longer wants a 24-hour water order, which is how IID has historically delivered water. IID piloted a 12-hour water delivery run 20 years ago as a part of its first water transfer program, but now growers are interested in water delivery increments of 8 hours or less. IID's conveyance system was built over 100 years ago and was not designed for irrigation events with larger heads and shorter duration, but its water department is trying to flex this old but efficient system as much as possible to accommodate the growers' changing needs and to facilitate their on-farm conservation efforts.

IID's implementation of conservation programs, whether independently through infrastructure improvements and technology or through the funding of on-farm grower programs, has become a primary focus of the water department, second only to the water delivery and drainage functions that are at IID's core. IID and this community consider *fallowing* to be the F-word and have historically only agreed to generate conserved water by that method for specific, limited purposes and for limited durations, as required by certain contractual obligations. Fallowing-based conservation programs take ground out of production, which has a ripple effect on other jobs in the community. The district, its growers, and their communities are centered on agriculture, and we all want to keep the ground in production as much as possible for as long as possible, although that may become increasingly challenging as climate change takes its toll on water supplies. Our community and economy are agrarian; we are a rural community in which one of every six jobs is directly related to agriculture, so it's a critical industry that IID will strive to support and maintain as much as possible.

**Irrigation Leader:** What percentage of your canals are lined right now, and how much canal are you trying to line each year?

**Tina Shields:** Our 1989 conservation agreement with the Metropolitan Water District of Southern California and subsequent agreements with the San Diego County Water Authority have funded hundreds of miles of canal-lining projects on top of those funded by IID, as well as other system improvements. IID has over 1,100 miles of concrete-lined or piped canals and laterals, amounting to about two-thirds of its irrigation conveyance system. There are very few remaining unlined segments of our canal system that would be cost effective to concrete-line now—either the clay soils aren't conducive to seepage or there are operational or mitigation complexities that make the idea infeasible.

Looking ahead, canal lining really isn't our focus for additional water conservation opportunities, although there may be a few more conservation opportunities if the appropriate resources become available. At this time, we are focusing on operational flexibility and improvements throughout our system. For example, additional operational reservoirs can serve as temporary

PHOTOS COURTESY OF IID.

parking lots for water at night, when irrigation pumps turn off but water continues to move through IID's gravity-flow system. Mid-lateral and other operational reservoirs will help prevent returned water from flowing into a drain and allow it to be routed to other water users when demand picks up the next day. We have also implemented technology, such as computers in field-staff vehicles and additional operational monitoring and real-time flow data, to help our zanjeros and water operators as they deliver water to the fields. This allows them to make flow adjustments, in some cases controlling automated gates from their trucks, and to identify areas of concern that need more immediate operational attention.

**Irrigation Leader:** Are you doing additional automation as well?

**Tina Shields:** Yes, although at times we have a love-hate relationship with technology! Every time there is a problem with something new, it causes frustration and difficulties for both staff and our growers. Overall, however, automation has improved the accuracy and timeliness of our information and has been helpful in making these operational changes and efficiency improvements.

**Irrigation Leader:** What is your message to other folks on the Colorado River about your efforts?

**Tina Shields:** I think it's really important for everyone to understand how much IID and its water users are already doing. The district is currently conserving, on an annual basis, 16 percent of its annual entitlement to provide water supply resilience to urban areas in Southern California and to the rest of the basin by ensuring that California lives within its 4.4 million acre-foot entitlement. That's not a simple task, and the easy conservation measures have already been implemented, so everything else will be progressively more complicated and exponentially more expensive moving forward.

IID is also focused on protecting our rural community and agricultural economy. The district is trying to focus on programs that support farming and crop yields while using less water. That is important to our community, our growers, and our farm service providers.

IID also has another challenge. When the district and its growers are more efficient, it exacerbates problems at the Salton Sea. Every acre-foot of water conserved on our farms is an acre-foot of agricultural return flow to the Salton Sea that no longer exists. That body of water is highly saline and is becoming more so as inflows decrease. Further, more than 25,000 acres of exposed playa—land that used to be underwater—must be monitored for potential dust emissions and targeted with mitigation or restoration projects to protect the public health of adjacent communities. These mitigation and restoration projects are challenging and expensive, and they take longer to implement than we would like because of planning and permitting constraints. IID is working with the State of California and federal partners (the Bureau of Reclamation and related federal entities are the largest landowners at the Salton Sea) on those public health projects and the various other complex challenges at the Salton Sea. There may also be future opportunities at the sea, which has been identified as a potentially huge source of lithium if it can be developed in conjunction with the geothermal resources in the area. These proposed projects might be able to provide ground cover as well as funding to help the state address some of the air quality problems and meet its restoration obligations. These new opportunities could also help diversify Imperial County's economic base, but IID will need to work with these industries and IID's existing water users to ensure that the new water demands of these projects are handled appropriately. That may prove more challenging than previously anticipated, given the current drought and Colorado River water supply challenges.

**Irrigation Leader:** What are your thoughts on Palo Verde Irrigation District's long-standing fallowing program with Metropolitan?

**Tina Shields:** As I mentioned, we are trying to avoid fallowing. Palo Verde has different water rights. Our board has opted for a different path forward, and we prefer to find ways to use less water and continue farming. However, fallowing may be unavoidable in the future. If necessary, IID will work with its water users to promote efficiency and conservation first and foremost, and then will identify options to develop seasonal or rotational fallowing programs that minimize effects on tenants, third-party farm service providers, and our community.

**Irrigation Leader:** What is your message to Congress? What should its members know about your efforts?

**Tina Shields:** They need to be reminded of where their food supply comes from and to be careful not to turn a near-term water crisis into a longer-term food crisis. We appreciate that they have stepped up to provide significant funding to support our farmers and rural communities for 4 years. We hope that that funding can make its way to IID to make our system more efficient and to provide opportunities for our growers to invest in additional on-farm conservation methods so that they can continue to provide a safe and reliable food supply. However, longer-term investments need to be made to address and augment the hydrology we are seeing on the Colorado River system, so I would encourage them to take that into consideration. IL

*Tina Shields is the water department manager at the Imperial Irrigation District. She can be contacted at tlshields@iid.com. For more on IID, visit www.iid.com.*

# DEBRIS CONTROL FOR IRRIGATION CANALS AND HYDRO

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# A Closer Look at Palo Verde Irrigation District's Fallowing Program

Cotton fields in PVID's service area.

Jack Seiler's granddaughter Arden in one of his alfalfa fields.

*In 2005, the Palo Verde Irrigation District (PVID), which celebrates its centennial anniversary next year, entered into a pioneering fallowing agreement with the Metropolitan Water District of Southern California. Through the program, Metropolitan pays PVID farmers to fallow up to 28 percent of their land and uses the water conserved to supply cities in Southern California. In this interview, we speak with farmer and PVID board member Jack Seiler to learn more about the origins of the program and how it is working today.*

**Irrigation Leader:** Please tell us about your background and how you came to be in your current position.

**Jack Seiler:** My family came to the Palo Verde Valley in 1967 and farmed in Arizona for 25 years. I hold a degree in plant protection and crop science from California Polytechnic State University, San Luis Obispo. Eventually, we moved our farming operation to the Blythe area, within PVID. In 2004, I was approached to serve on PVID's district board. I continue to dedicate my time as a board member. The district is a great institution.

**Irrigation Leader:** Please introduce PVID.

**Jack Seiler:** PVID occupies approximately 92,000 acres in Riverside and Imperial Counties in California. We deliver water to 37 customers. We are also in charge of drainage: We have a series of drainage ditches that return water back to the main stem of the river for downstream users. We get credit for those returns, so our consumptive use is equivalent to what we divert minus what we return.

This is an intensely farmed area with high fixed costs, equipment, and manpower to support. Speaking as a farmer myself, it would be a difficult business decision to essentially shut down half the ranch and let equipment and employees sit idle. I have employees who have worked with me for over 25 years, and now their kids are working for me, so we have a legacy that I am not going to give up on. These are valuable, excellent employees, and we all grew up together. We have had a rewarding relationship with the people that we employ.

**Irrigation Leader:** What are the main crops that are grown in the district?

**Jack Seiler:** The farmers in the Palo Verde Valley grow alfalfa, broccoli, cotton, and a variety of melons. We also grow some Bermuda hay for horses and durum wheat for pasta.

**Irrigation Leader:** What's the main source of the district's water, and have you been affected by the drought?

**Jack Seiler:** PVID's supply is 100 percent Colorado River water. We contract with the Bureau of Reclamation to take water out of the river and deliver it to our customers. We are affected by drought. We have not been curtailed yet, but we are preparing for that possibility. We will do whatever we can to oblige Reclamation and the U.S. Department of the Interior, provided we can agree on terms.

**Irrigation Leader:** Would you explain the situation that originally led the district to establish its fallowing program with Metropolitan?

PHOTOS COURTESY OF JACK SEILER.

**Jack Seiler:** Metropolitan needed to secure more water so that it would have enough to send to cities in Southern California, even in dry years. Metropolitan came to us with an offer to pay farmers to fallow a portion of their land so that it could transfer the saved water. In 2005, PVID and Metropolitan approved a 35-year program that allows Metropolitan to ask for 7–28 percent of our land's water rights each year. Metropolitan is required to give us 1 year's advance notice so that we can plan our future crops. Given current drought conditions, Metropolitan will be putting in a full call for the next 2 years, meaning that it will be allocated the full 28 percent of our water.

**Irrigation Leader:** Has that program changed over the years?

**Jack Seiler:** Not really. We have run into a couple of bumps in the road that we are working through. There was no other program like this to model it after, so we had to formulate one on our own. In addition to paying individual farmers, Metropolitan offered the community $6 million, which we used to start a community improvement fund that provides loans and grants to businesses for qualifying projects. It has been very successful within the community. The thought was that fallowing so much ground might result in job losses; however, none of us have had to lay off employees due to lack of work. In fact, farmers were able to invest in better, more efficient equipment.

**Irrigation Leader:** You talked about how this was a first-of-its-kind agreement. Has it provided a model for fallowing programs in other districts?

**Jack Seiler:** Several state agencies and city departments have come out to learn about the program. They want to know what has worked well and what we would have done differently. Whether anyone has actually modeled a program after ours, I do not know.

**Irrigation Leader:** What advice do you have today for other districts that are considering a similar program?

**Jack Seiler:** I would welcome them to come visit and learn about our program.

**Irrigation Leader:** What is your vision for the future of the district?

**Jack Seiler:** As long as we have water, nothing will change. My son is the third generation on our ranch, and other farms in the district are fourth- and fifth-generation operations. We are all passionate about what we do and want to keep doing it. If we must be curtailed or if some acres have to be set aside, hopefully there will be some compensation from the federal government. IL

Alfalfa bales in one of Jack Seiler's barns for winter takeout to supply horse customers.

Cotton being picked in one of Jack Seiler's fields in early December.

*Jack Seiler is a board member of the Palo Verde Irrigation District and the owner of Jack Seiler Farms. He can be contacted at jackseilerfarms@hotmail.com.*

# How Rubicon Water Helps Districts Apply for Grant Funding

A Rubicon Flumegate installed at an irrigation district in California's Central Valley.

*Rubicon Water provides irrigation automation solutions that enable farmers and irrigation districts to manage water resources more efficiently and improve agricultural productivity. Using sensors, software, and accurate measurement and remote-control technology, its systems can optimize the precision and efficiency of irrigation systems. Now, Rubicon offers a free service to help districts apply for grant funding. In this interview, Grants and Marketing Coordinator Melissa Lowry tells* Irrigation Leader *about how she can help customers find the right funding source and even help them write the application.*

**Irrigation Leader:** Please tell us about your background and how you came to be in your current position.

**Melissa Lowry:** I am originally from Sacramento. I went to Southern Oregon University in Ashland, Oregon, and stayed there because it's a beautiful part of the world. I have a degree in environmental science. I ended up working as a transportation planner, writing grants for a public transit authority. Then, I decided to take that skill to water resource management. I came to Rubicon a year ago and have helped the company develop a program to help districts obtain grant funding.

**Irrigation Leader:** Do you have a background in agriculture?

**Melissa Lowry:** Yes. My family grows almonds, cherries, and walnuts in central California. My father is from the Modesto area, and my grandmother still lives in Modesto. Our family has been farming in central California for five generations, so it runs thick in my blood.

**Irrigation Leader:** What was your job on the family farm?

**Melissa Lowry:** I was the taste tester. I was too young to be working in the fields, so I was just there to eat!

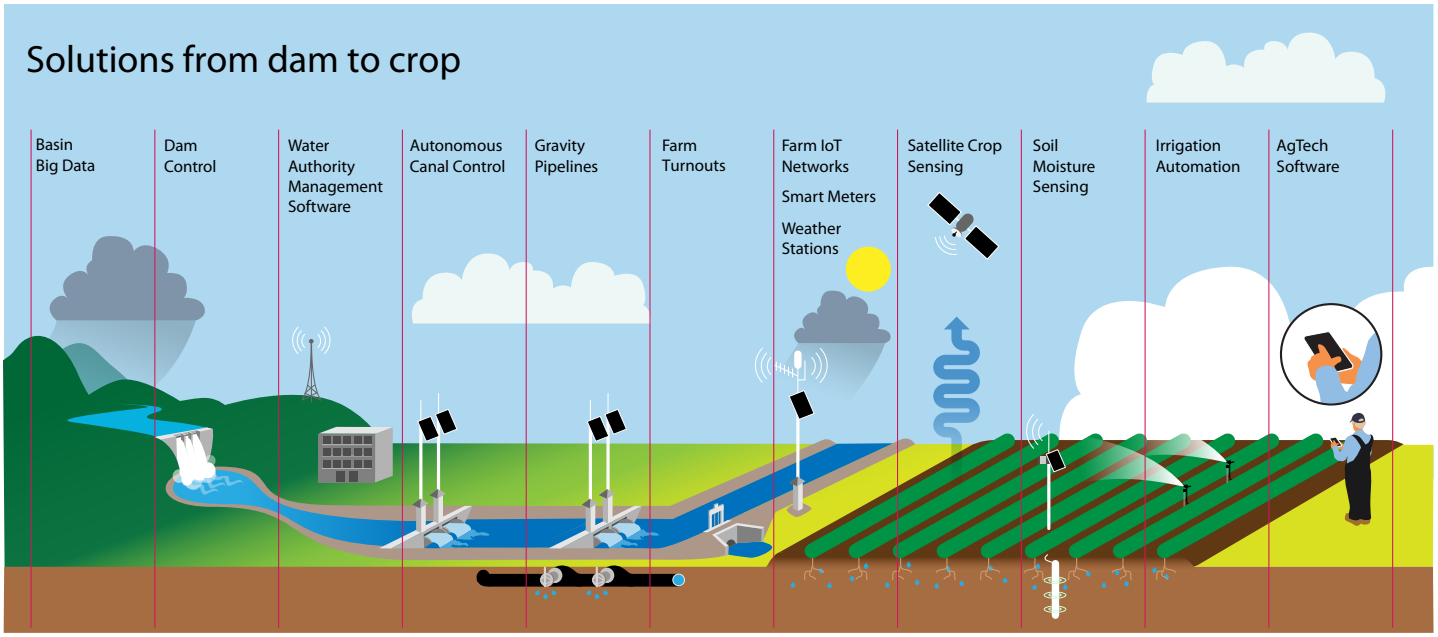
**Irrigation Leader:** Please tell us about Rubicon.

**Melissa Lowry:** Rubicon helps irrigation districts manage their water more efficiently through automation. We also have a suite of products to increase the application efficiency of surface irrigation.

**Irrigation Leader:** What types of grants do you pursue on behalf of Rubicon's customers?

**Melissa Lowry:** As a free service that Rubicon offers, I help customers seek funding, including by helping them write grant applications for projects that involve our products. Recently, I've

PHOTOS COURTESY OF RUBICON.



An outline of Rubicon's many solutions for irrigated agriculture.

been applying for federal grants, especially through programs bolstered by Bipartisan Infrastructure Law funding. Other times, districts have approached us for help in looking for state funding. If a customer comes to me with a project and says, "Hey, we're looking for funding for this," I add them to my pipeline of grant applications and projects and keep an eye out for funding in their state. I can help match projects with the correct pot of funding, which isn't always federal.

**Irrigation Leader:** What is the approximate range of sizes of the grants that you pursue?

**Melissa Lowry:** I work with all levels of grant funding opportunities. We worked on small-scale water efficiency programs earlier in the year, and those grant awards ranged from $50,000 to $100,000. With the water and energy efficiency grant that just closed, we had projects that cost more than $3 million.

**Irrigation Leader:** How can an irrigation district get started in requesting assistance?

**Melissa Lowry:** A district can just contact me. I am happy to get e-mails and phone calls. Once we make that connection, the district's regional account manager will set up a meeting so that all of us can have a conversation and get on the same page about what the district is looking for. We typically send our account manager to visit the district so that we can assess which products need to be installed to achieve the desired level of efficiency. Then, I have a discussion with the district to assess its needs—whether it is looking for me to do the whole application or if it only needs a little help or technical language expertise. I can even help teach district employees how to write grants so that they can search for and apply for grants on their own.

**Irrigation Leader:** Is there anything else that irrigation district managers and board members should know about the process?

**Melissa Lowry:** I think that one of the big things to remember is that we need data to apply for grants. Those data are typically produced by the districts themselves—they are generally not things I can gather. To put together a competitive grant application, districts usually need to measure their losses, the flow through their canals, and things like that.

**Irrigation Leader:** What is your message to irrigation districts that are interested in pursuing grants?

**Melissa Lowry:** Talk to me, please. Just send me an e-mail or give me a call. I am happy to just discuss the possibility of connecting you with funding, and if it doesn't work out, it's no skin off anyone's back. Giving districts the skill set and the knowledge so they know where to look for funding is probably the biggest thing that I can offer.

**Irrigation Leader:** How many grants have you written?

**Melissa Lowry:** I think we are up to 16 this year already. It's been a hefty application season. We've got more in the pipeline, and there are districts ready to go for the next applicable funding cycle. IL

*Melissa Lowry is grants and marketing coordinator for Rubicon Water. She can be contacted at melissa.lowry@rubiconwater.com.*

# The Idaho Water Users Association's Legislative Water College: Preserving and Promoting Institutional Knowledge of Water Management


The south-central Legislative Water College stopped at Burley Irrigation District's Second Lift Station to discuss recharge and mitigation efforts.

*When the Idaho Legislature convenes for its next regular session in January 2023, it will look very different, thanks to a nearly 50 percent turnover in membership. Wondering how it could help overcome the subsequent loss in institutional knowledge about water issues and the relationships that had been built over time, the Idaho Water Users Association (IWUA) launched an idea that had long been on the drawing board: the Legislative Water College. In this interview, IWUA Executive Director Paul Arrington and Office and Program Manager Kathryn Scott give a report card for the class of 2022.*

**Irrigation Leader:** Please tell us about your backgrounds and how you came to be in your current positions.

**Paul Arrington:** I grew up in Twin Falls in southern Idaho. I ended up going to law school at Gonzaga University in Spokane, Washington, and found my way back home to practice with Barker Rosholt & Simpson, a water law firm, where I practiced for about 13 years. I was looking for a change, something outside the traditional billable-hour practice of law, so when the position of executive director of IWUA opened, I applied, and the organization hired me. Now, I'm IWUA's executive director and general counsel.

**Kathryn Scott:** I grew up on a row-crop farm in Parma, Idaho, and as such have always been interested in agriculture. After graduating from college, I held various agricultural, finance, and logistics coordination positions.

PHOTOS COURTESY OF IWUA

Upon my predecessor's retirement, I was hired as IWUA's office and program manager, allowing me to wrap all my skills into one position.

**Irrigation Leader:** Please introduce IWUA.

**Kathryn Scott:** IWUA is a nonprofit organization that aids and assists irrigation and canal companies throughout the state. Our membership consists of general, business, and individual members, all of which have an interest in Idaho's water resources. Paul assists members and lobbies on their behalf, and I run the office and coordinate and plan events for our members. Paul and I work together closely to execute educational programs, including our annual convention, our summer seminar, our workshops, and our continuing education courses.

**Irrigation Leader:** Please tell us about the origins of the Legislative Water College program.

**Paul Arrington:** I'll begin with a bit of background. The water user community in Idaho is extremely fortunate to have state legislative and executive branches that understand its needs. We can get a lot done in the legislature when it comes to protecting Idaho's water resources and making sure that we can manage them in the future. We've enjoyed this relationship for a long time, and it's something that we have never taken for granted.

Idaho is growing rapidly. For many years, in fact, Idaho was one of the fastest-growing states in the nation. We've found that as our state grows, people's connection to water is becoming more tenuous. Less of our population has a direct connection to agriculture or water delivery. Over time, we've asked ourselves, "How do we instill a continuing appreciation and understanding of these water issues in our legislators?"

This year, 2022, is unprecedented in terms of legislative turnover. There are three reasons for this. First, along with several other states, Idaho went through a redistricting process. As a result, we lost a lot of incumbent legislators who were advocates for water and knew about water issues. In one district, there were five incumbent legislators running for three seats. Second, several long-serving legislators, including the chairs of the resources committees in both the Idaho House and the Senate, retired. The speaker of the house retired to run for lieutenant governor. Finally, some incumbents lost in the primary. Because of all this, Idaho's legislature is going to see a turnover in membership of nearly 50 percent.

We saw this as an opportunity to start the Legislative Water College process. We held Water College sessions in four areas around the State. In each location, we invited area candidates and water users to tour water infrastructure and to discuss pressing issues in the water community. Topics of discussion included aging infrastructure, the effects of drought, the maintenance and upgrading of community water and wastewater systems, and collaboration between agricultural water providers and cities to address water needs. In total, 100 legislative candidates participated, as well as candidates for statewide offices, including lieutenant governor, attorney general, and governor. It started with the need to do our best to make sure that our elected officials'

Participants gather at the Ridenbaugh headworks in southwestern Idaho to discuss the modernization of aging water infrastructure.

appreciation of and respect for Idaho's water resources continues, despite the ever-changing face of our legislature.

**Irrigation Leader:** What level of knowledge did your participants generally start with?

**Paul Arrington:** The baseline knowledge varied from 0 to 100. Some participants were learning things for the first time or had only a rudimentary understanding of the water world. We tailored our program to provide that basic knowledge, but we also provided opportunities for more advanced participants. Our goal was twofold. In addition to educating these legislative candidates and future legislators, we wanted to get them in front of our members, so that they could meet them, put faces to names, and become familiar with whom to talk to when questions arise.

**Irrigation Leader:** When you created this program, were you building on models you had previously seen or heard about?

**Paul Arrington:** Yes. We knew of many different types of water tours and had been on many of them. We learned the best practices, which we used to create our curriculum and agenda.

**Irrigation Leader:** Please tell us more about the program.

**Kathryn Scott:** We held four regional tours throughout Idaho. On each tour, we spent some time discussing the overarching topic of water in Idaho. However, each stop on the tour showcased local water facilities, with content and presentations provided by local water users. Water issues vary greatly in each area of the state, so the tour content was never the same from one day to the next.

**Irrigation Leader:** What was the sign-up process for the program?

**Kathryn Scott:** We invited all the Idaho general election candidates to participate. We sent save-the-date cards, then formal letters, and then we opened the online registration. Thanks to the support of our board and our sponsors, we were able to provide this experience to candidates free of charge. We also invited water users in the area to participate and get face time with legislators. Because elected officials are our primary target audience, they were mailed a formal invitation to sign up online. On the registration site, participants were able to select the tour they wanted to attend. Although candidates were specifically invited to the Water College in their region, some participants joined multiple tours.

**Irrigation Leader:** While you created the program in response to a moment of high turnover in the legislature, do you plan to repeat it in the future?

**Paul Arrington:** Yes, we've talked about doing something like this for a while, and we finally pulled the trigger this year. Moving forward, we will hold a Water College every year, but the format will rotate. In Idaho, every legislator's term is 2 years long. During election years, we will hold a Water College in August, before the general election, on the same format we used this year. During the other years, our Water College will be held in one location, and we'll invite all the legislators and executive officers from across the state to join us. We'll do a 2½-day tour and learn about issues in that area.

**Irrigation Leader:** Were you able to get a sense of whether your objective of educating participants had been met?

The group stopped at the New York Canal in Boise to discuss the efforts and expense that went into lining the canal and the effects of urbanization on water infrastructure.

PHOTOS COURTESY OF IWUA


Justin Temple from A&B Irrigation District shows the south-central Idaho group the district's pump station during a discussion of the modernization of irrigation infrastructure.

**Kathryn Scott:** When we created this program, our objective was to keep the content welcoming and easily accessible to all. We knew that some participants would have an extensive background in water, and some a very limited one. We wanted to meet folks where they were and leave the discussion open to give people opportunities to expand their knowledge bases, whatever they were. We would dive into an agenda topic, and often somebody would have an *aha* moment, which would then spark a side conversation or another question. It was evident from these aha moments that we had met our objective.

**Paul Arrington:** What's interesting is that when those aha moments happen, a 5-minute conversation turns into an hour-long one. A participant's knowledge starts to build, and they start to see why it's important to protect ditch easements or water right priorities, to develop new infrastructure, or to maintain the infrastructure we have.

**Kathryn Scott:** We received a lot of kudos after the event. Legislative candidates were grateful for the opportunity to get out there and learn about water, and our members appreciated the opportunity to get out there and show off what they do every day.

**Irrigation Leader:** Are there any changes you intend to make in the program based on your experiences this year?

**Paul Arrington:** Our goal this year was to have a simple, low-key event, and I think we succeeded in that. I won't say it was perfect, but we were very pleased with the outcome.

Our goal moving forward, whether we cover the same topics or different ones, is to continue to hold a simple event that is not overproduced. We think this approach offers a better experience and provides more opportunities for organic conversations.

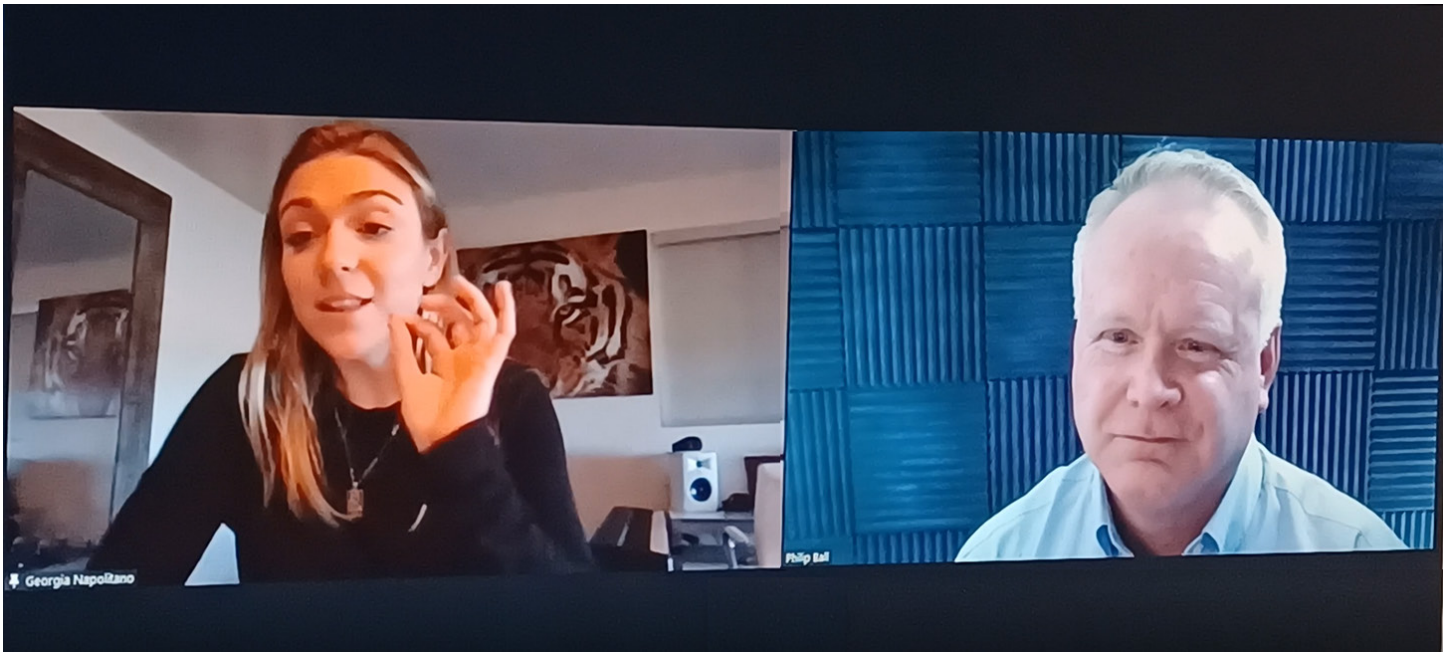
**Irrigation Leader:** What advice do you have for other state water organizations that might be considering holding a program like this?

**Kathryn Scott:** I'd say open the floodgates and let it happen! Going in, we were nervous about inviting such a broad group of participants. It's always a gamble when people from different backgrounds come together in a casual setting. Our experience was very positive. Everyone was respectful, interactive, and ready to learn. IL

*Paul Arrington is the executive director and general counsel of the Idaho Water Users Association. He can be contacted at paul@iwua.org.*

*Kathryn Scott is the office and program manager of the Idaho Water Users Association. She can be contacted at iwua@iwua.org.*

# How the Situational Awareness Institute's Strategic Planning Interviews Can Help Agencies With Employee Retention




This screenshot of a Zoom call between SAI Associate Instructor Georgia Napolitano and Phil Ball demonstrates the same format and facility that is used during the strategic planning interview process. The room that Mr. Ball is pictured in is lined with soundproof acoustic foam to ensure privacy.

*Phil Ball's Situational Awareness Institute (SAI) provides a wide variety of security-related trainings and services. Recently, responding to the tight labor market and the challenges many organizations are facing in trying to attract and retain skilled employees, SAI has retooled its strategic planning interview service to focus on employee satisfaction and attitudes. By carrying out confidential, anonymous interviews and summarizing its findings in a report, SAI can help entities identify problem points and grievances before they lead to resignations and unhappiness. In this interview, Mr. Ball tells us more.*

**Irrigation Leader:** Please tell us about yourself and your company, Situational Awareness Institute.

**Phil Ball:** I am coming up on 30 years in law enforcement. I'm certified as a police officer in four states. I have many certifications as a law enforcement officer, and I am a certified firearms instructor with the FBI, the U.S. Department of State, and law enforcement in Georgia and Florida. I am also a tactical movement and general instructor for the State Department. I'm recognized as a subject-matter expert in preventing and responding to active shooter situations. Keeping people safe and lowering the liability of companies is a passion of mine.

Years ago, when I was on the active shooter task force in Broward County, Florida, and worked as a crisis intervention instructor for a law enforcement agency and for the board of health, the demand for the kind of training I provided started to increase nationwide. I had written a book called *The Active Shooter Survival Manual*, and it started selling around the world. I got calls from organizations as far away as Israel asking whether they could teach my system in schools. Around that time, I started SAI. SAI's employees are veteran law enforcement and military professionals with relevant expertise.

**Irrigation Leader:** What are the basic services SAI provides?

**Phil Ball:** The flagship program that got everything started was active shooter prevention, survival, and countermeasures. First, we teach the ways that people behave before committing mass violence so that their coworkers, fellow students, or supervisors can recognize those indicators and help those people before they act out. Second, we teach people the key behaviors that can increase their chances of survival during an active shooter event. I've gone to the scenes of many of these events and interviewed survivors and investigating officers about how people

PHOTOS COURTESY OF SAI.

were able to survive or not. Third, we teach people how to develop a stronghold or improvise weapons to respond to an attack.

In terms of our other services, I do penetration testing for several tribal casinos and government agencies. I play a bad guy and see if I can infiltrate their security. Then, I write a report on their organization's vulnerabilities from the position of an advocate. In one case, I was able to pull up a very famous person's filming schedule, which listed what they were doing and exactly where they were going to be every day. It was easy to access. Thankfully, I found it, and somebody else didn't. In another example, I was able to access a government agency's homeland security documents and other things that should not have been accessible. If an advocate like me alerts an organization about vulnerabilities of that type, it can tighten its practices up and reduce its risk of liability. We also do something called a site assessment in which we assess the physical security, cybersecurity, and operational safety of a facility—a casino, a government agency, an office building, or a school—and write a report with recommendations.

We also provide personal self-defense classes on easy ways you can defend yourself, increase your situational awareness, and lower your attractiveness to bad guys. We can teach firearms, and I am a driving instructor. I am also one of Taser's national instructors: I can teach law enforcement and private citizens and provide them with a certificate of training. I am also a Taser dealer, and in September, I flew to Taser headquarters to be certified as a master instructor, which means that I can now train instructors.

**Irrigation Leader:** Please tell us about your strategic planning interview service.

**Phil Ball:** I started doing strategic planning interviews 10 years ago for law enforcement agencies, and now I do them for private agencies, too. We use the Incident Command System that is used by agencies such as the Federal Emergency Management Agency. A lot of businesses have us come in and teach them that system, which will allow them to guarantee business continuity during a traumatic event. If your office were to be hit by a cyberattack or a hurricane, do you have computers you could get fired up tomorrow? Do you have a temporary enclosure where you could set up the office and continue the business? You need to be able to continue to offer your services to your clients, or they will migrate to your competitors. While the Incident Command System is designed to respond to actual disasters, our strategic planning services are designed to prevent or reverse a staffing disaster that could also prevent you from delivering your services to your clients.

**Irrigation Leader:** How has your interview service changed recently?

Phil Ball teaches a class at Kennewick Irrigation District.

**Phil Ball:** Right now, companies are having a hard time attracting and retaining qualified employees, so we've revamped our strategic planning interviews to focus on that need. Harmony is key to productivity. Some legal estimates say that one problem with an employee costs a company an average of $100,000 in lost productivity and the alienation of clients and other employees. If you cater to a bad employee, the good employees will get frustrated and leave. Sometimes, employers experience a mass exodus and have no idea why. When employers want to know the brutal truth, they can call me to come in for strategic planning. I've provided this service to all kinds of agencies, including casinos, government agencies, and law enforcement agencies.

We go in and ask employees, "What is management doing right? What is management doing wrong? Are you thinking about leaving? Why would you leave? And how can we keep you?" The interviews are conducted by Zoom or in person, and they are completely confidential and anonymous. No names are taken. The participants are advised of the anonymity and of my mandated-reporter status, meaning that everything is confidential except for threats to hurt themselves or others, which I am legally obliged to report.

Everyone is asked the same questions, such as "How long have you been employed here? What are your duties? Have you been provided adequate training?" That last question is important, because if people aren't trained properly, their stress levels go through the roof. "What is management doing right? What is management doing wrong? What is your biggest challenge?" Sometimes the challenge is insufficient training or an unpleasant or lazy coworker or supervisor. We then ask, "How can management help you improve your job performance to your satisfaction? What


can it do to retain you?" At the end, I ask, "Is there anything that you'd like to add?"

Throughout the whole interview process, I come in as a friend, and I use all my tools and training to develop rapport and trust. I use that trust to acquire truthful information. I'm always watching for nonverbal cues. Sometimes, somebody says something but behaves in an incongruent manner. I say, "Look, I noticed that you do a physical tell. We're not gambling here, but it's one of your tells, and it's a common sign of stress. What about this bothers you? I can help you, but I can only help you if you tell me the truth." When the employees see that I'm giving them focused attention and I care, they tell me things.

**Irrigation Leader:** How long does the overall interview process generally take, and how long are the individual interviews?

**Phil Ball:** To give an example, for one casino, I interviewed about 100 employees over the course of 1 week via Zoom. I interviewed each employee for about 20 minutes. The first 5 minutes is warmup, during which we find common ground; the next 5 minutes is rapport-building; then, we talk about the issues. Sometimes, it goes over 20 minutes.

**Irrigation Leader:** What is the end product that the agency receives?

**Phil Ball:** After completing the interviews, I usually spend a day or two correlating an executive summary, which is a two- to four-paragraph paper presenting a synopsis of my findings. I also include the raw data. I've had organizations tell me that this has helped them attract and retain good people. Often, they call me back the next year to repeat the process. They realize it is worth the time, money, and effort. In those cases, the employees trust me even more, because they have seen that being truthful and candid during the process has positive results.

**Irrigation Leader:** What are some of the insights that you're able to reveal through this process that organizations least expect?

**Phil Ball:** Two things come to mind. The biggest thing lately is that we see a lot of electronic addiction. Employees see their supervisors playing games or watching videos on YouTube while ordering employees to do their work, but of course, the employees are reluctant to complain to those supervisors. They keep those frustrations private, which leads to resentment against the agency. Another thing we often hear about is violations of policy, including safety and ethics violations.

Then, as you might expect, we often hear, "I can go up the street and make $10 more an hour while working fewer hours." I explain to companies that they need to remember that jobs should support their employees' families, not cost them their families. It's incumbent on the agency to make the work more attractive and not to look at people as disposable. It comes down to loyalty. According to statistics, most people don't leave jobs because of money; they leave because of a person at the agency.

If you want to be a true leader, getting to know the employees on a personal level will allow you to get them to buy into your vision. They need to know that you see them as people, not as robots. One of the courses we teach is on servant leadership. In my opinion, when you get promoted, you shouldn't think "I'm in command of more people"; you should think, "I serve more people." A true leader wants to lift people up, empower them, and create other leaders.

**Irrigation Leader:** Where can our readers find more information about this program?

**Phil Ball:** They can find further information at situationalawarenessexperts.com. IL

*Phil Ball is the cofounder and lead instructor of the Situational Awareness Institute. He can be contacted at saitactical@gmail.com.*

PHOTOS COURTESY OF SAI.

# Mike Mills on Reinke's Sustainability Solutions for Producers Around the World

*For Reinke Manufacturing, the world's largest privately held manufacturer of center-pivot and lateral-move irrigation systems, a commitment to sustainability starts with providing water application efficiencies up to 95 percent by maximizing water delivery directly to the root zone. But that's just the beginning of an approach that encompasses everything from recycling to cleaner manufacturing processes. In this interview, Elizabeth Soal, the contributing editor for the New Zealand edition of* Irrigation Leader, *interviews Mike Mills, Reinke's director of sustainability solutions, about the company's roots, its recent pivot to advanced tech, and what it has to offer producers in New Zealand and around the world.*

**Elizabeth Soal:** When was Reinke founded and by whom?

**Mike Mills:** Richard Reinke started Reinke Manufacturing in 1954. He was a self-taught engineer who built laminated rafters for churches. In the 1960s, he was called to take a look at a center pivot that wasn't operating correctly. When he saw the issue, he thought he could improve the design. He went back to his shop in central Nebraska and built some models. He created what is today the hallmark of the modern pivot: the bowstring truss. In 1968, he built his first center pivot with that technology and the reversing electric drive.

**Elizabeth Soal:** Where is Reinke headquartered?

**Mike Mills:** Reinke is headquartered in the little town of Deshler, Nebraska. We're about 2½ hours southwest of Omaha in Thayer County. Richard Reinke lived here, and the Reinke family continues to dedicate itself to maintaining the company's headquarters and main operation here.

**Elizabeth Soal:** Is Reinke still a family-owned company?

**Mike Mills:** Yes, it is still a family-owned company run by Richard Reinke's children, nieces and nephews, and their descendants.

**Elizabeth Soal:** What is your role at Reinke?

**Mike Mills:** I am the director of sustainability solutions. In this new role, I work to position our product in the sustainability space as an alternative for sustainable water application, and I monitor and oversee our sustainable manufacturing processes.

**Elizabeth Soal:** Would you tell us about some of Reinke's innovations over the years?

A Reinke touchscreen control panel demonstrating a variable-rate irrigation program.

**Mike Mills:** In addition to inventing the first bowstring truss, Reinke was the first company to manufacture a pivot that spanned over 100 feet and the first to incorporate a computerized touchscreen control panel. We've gone through some changes over the last few years. We used to be a steel company that used technology, and we have become a technology company that uses steel. We led the industry with our touch-screen control panel and our GPS-guided swing-arm corner. We recently introduced the electronic swing-arm corner, or ESAC, which gives accurate water patterns to traditionally inaccurate swing-arm corners. We work with variable-rate irrigation and, most recently, we have invested in a partnership with CropX, which offers advanced soil-moisture sensing.

**Elizabeth Soal:** Irrigators in New Zealand often have issues with swing arms and end guns that end up watering the road. They need solutions that can prevent that sort of thing from happening.

**Mike Mills:** Absolutely. The GPS position-monitoring system allows the end gun to be programmed to come on and off in specific locations so that you don't have any variation based on human error or mechanical changes in the field while the machine is running. As long as it's programmed right, it's ready to go.

**Elizabeth Soal:** How else is Reinke demonstrating its commitment to sustainability?

PHOTOS COURTESY OF REINKE MANUFACTURING.

**Mike Mills:** As a manufacturer, we feel a tremendous responsibility to the environment as well as to our own community. We have made a lot of investments because of that. When we first built our galvanizing facility, we used high-tech air scrubbers and built a building inside of a building that captured the offgassing from the galvanization process. The air scrubbers are so effective that the air we release is actually cleaner than the air that comes into our facility. The material captured by the air scrubbers is reused as soil fertilizer.

We deal responsibly with the products of manufacturing. All our waste products are recycled. We recycle the excess steel from the punching, stamping, and tube mill processes. When we galvanize, we clean the bottom of the galvanizing kettle. The precipitate, which is called *dross*, is captured, recycled, and sold as another product. We do our own onsite wastewater management as well as some more traditional energy-conserving measures. We recycle what we can of end-of-life electronics, and for those that can't be recycled, we invest in responsible disposal rather than just throwing them in the landfill.

**Elizabeth Soal:** Where are Reinke's products distributed around the world?

**Mike Mills:** We have dealerships in all the agricultural regions of the world. We have independent dealerships in Asia, Australia, Europe, South Africa, and South America as well as in North America. We support those dealers with international parts distribution centers in Argentina, Australia, China, Romania, and South Africa. We also have five facilities here in the United States.

**Elizabeth Soal:** Improving water use efficiency is always important, but it's of growing importance in New Zealand. What sort of products and services does Reinke offer to support water use efficiency and precision ag more generally?

**Mike Mills:** A lot of that comes down to our technology products. We've developed the technology to allow growers to precisely monitor and control when, where, and how much water is being applied so that they don't overwater or underwater. Using a computerized touchscreen control panel with a GPS position-monitoring system and a variable-rate irrigation system, growers can control how much water is being applied right down to the square meter. We have found that many growers are overwatering because they're calculating water use requirements based on surface conditions even though the water availability in the root zone is significantly better. Thanks to our relationship with CropX, which offers enhanced soil-moisture-monitoring abilities, our products can help growers water accurately, which increases yields and improves root health. They can also reduce their water investment and energy costs in what might be an unnecessary irrigation cycle.

**Elizabeth Soal:** By doing that, you'd be avoiding excess nitrate runoff and reducing leaching into groundwater, which is of critical concern in New Zealand right now.

**Mike Mills:** Absolutely. Monitoring soil moisture in the root zone is critically important, because that's where the plant gets its moisture, regardless of what it looks like on the surface. If there's plenty of moisture at the roots, then there's no reason to run an irrigation cycle, even if the surface is dry and cracked.

**Elizabeth Soal:** How do you handle the fact that different plants have different root depths?

**Mike Mills:** The CropX units measure at 20, 45, and 90 centimeters (8, 18, and 36 inches). With those measurements, we can calculate the available water in the root zone of any crop that you're growing.

**Elizabeth Soal:** Is there anything you would like to add?

**Mike Mills:** Reinke has always been on the cutting edge of irrigation technology, and it continues to be there. Our corporate culture has always been to reduce, reuse, and recycle at every opportunity. By establishing the new role of director of sustainability solutions, we're taking the next step to bring those initiatives together into a focused effort. We want to be a responsible manufacturer in our community and in our industry and to provide a product that helps growers use water responsibly. We look at our customer base as more than just a way to sell pivots. We think about how we can help growers leave abundant natural resources for future generations as well.

**Elizabeth Soal:** Reinke is a family company with a global reach. That's important in terms of helping support sustainable food production and feed a hungry world.

**Mike Mills:** Our vision of sustainability goes beyond just using less water. We want to help growers generate the highest quality and quantity crop with the lowest water input per unit of measure. We work toward that goal by selling products that help farmers worldwide use water efficiently to grow strong crops. IL

*Mike Mills is the director of sustainability solutions at Reinke Manufacturing. He can be contacted at mikemills@reinke.com.*

# Emrgy's New Marketing Manager, Tanika Owens

*Emrgy is an innovative producer of small, modular hydro turbines that can be placed in shallow canals or other water conveyance structures. Since its foundation 6 years ago, it has rapidly established a global footprint and struck up partnerships with many irrigation districts across the American West. In this interview, we introduce one of Emrgy's dynamic new employees, Marketing Manager Tanika Owens.*

**Irrigation Leader:** Please tell us about yourself and your background.

**Tanika Owens:** I am from Nashville, Tennessee, and moved to Georgia about 15 years ago. I love the state of Georgia and have adopted it as my home. I went to school at Columbus State University in Georgia. Columbus is a military town and coincidentally, my father was in the army before his retirement. I've lived in the Atlanta area since college and have over 5 years of marketing experience. I love hiking, reading, and cooking. I like to cook Southern and Italian cuisine—I make a nice fettuccine alfredo.

**Irrigation Leader:** Please tell us about your role at Emrgy.

**Tanika Owens:** I've been with Emrgy for about 5 months. I manage our branding, publicity, marketplace positioning, events, and social media.

**Irrigation Leader:** Please tell us about Emrgy.

**Tanika Owens:** Emrgy transforms water infrastructure into renewable energy projects. We use our innovative turbine technology to generate power in shallow canals. Each of our modular turbines is the size of an SUV and generates as much energy as 200–500 solar panels.

**Irrigation Leader:** What's it like working at Emrgy?

**Tanika Owens:** I love it. I've always worked in large corporate settings, and when I saw this opportunity, I was excited by the thought of making a difference by bringing clean energy generation to our customers. It's great to have a voice and to be a part of a growing company.

**Irrigation Leader:** What do you think of the customers so far?

**Tanika Owens:** I love our customers. Since I come from the corporate world, I've been used to impersonal, by-the-book connections with customers. During my short time at Emrgy and at the industry events I've attended, I've appreciated my one-on-one interactions with customers and have learned that they have both opportunities and problems that affect people all across the country. I've talked to farmers and realized how big an impact they have on our domestic food supply and the challenges they face related to water. At Emrgy, we want to help make the world a better place, so that personal connection is important.

**Irrigation Leader:** What did you think of the recent National Water Resources Association Western Water Seminar in Montana?

**Tanika Owens:** I loved it! It was great to have brainstorming sessions to hear about what's going on in the industry and with our customers. It was great to see how passionate people in this industry are about what they do. We received a lot of great feedback about our equipment, since we brought a turbine to showcase at the event. People asked how the product would work with their unique situations, suggested incorporating certain technologies, and suggested ideas for other types of turbines. It's always good to get that input. I can read articles, receive Google Alerts, and scroll through social media all day long, but sitting there and hearing what is affecting our customers and what they're facing is what marketing in this industry is all about. Of course, I loved the scenery as well—it was gorgeous.

**Irrigation Leader:** What do you see in Emrgy's future?

**Tanika Owens:** I see a bright future for Emrgy. We embody our core values within our company and in our external relations. We have five core values that we're actively working on. The first is *we are the spark*: embracing the unique aspects of our solution and inspiring customers to foster their energy potential. The second is *we are bold*: not being afraid to bring ideas to the table and go for them. The third is *we connect*, whether that means interconnecting with each other as a company or connecting with our partners and our customers to build a better company. The fourth is *we build the best:* our equipment is designed to last for generations. The last one is *we improve lives:* the work we do is not simply for economic success but to build economic, environmental, and societal wealth for those we serve.

We have a lot of things coming down the pipeline that will help all our stakeholders, anyone we're partnering with or doing business with, and future employees.

**Irrigation Leader:** Emrgy has a global reach, with work in New Zealand and Australia. Does Emrgy work in any other countries?

**Tanika Owens:** Our international team is developing projects in Canada, Italy, Mexico, and Peru. There is a large global opportunity for power generation within water infrastructure, and we are excited to be delivering value to irrigators across the world. IL

*Tanika Owens is the marketing manager at Emrgy. She can be contacted at marketing@emrgy.com.*

PHOTO COURTESY OF EMRGY.

JOB LISTINGS

# Irrigation Leader

Does your organization have a job listing you would like to advertise in our pages? *Irrigation Leader* provides this service to irrigation districts, water agencies, and hydropower facilities free of charge. For more information, please email Kris Polly at kris.polly@waterstrategies.com.

### MARICOPA-STANFIELD IRRIGATION & DRAINAGE DISTRICT
### DISTRICT WATER ENGINEER

**Salary:** Based upon qualifications
**Location:** Maricopa, Arizona
**Deadline:** Until filled
**Summary:** Critical role in sustaining local agriculture by managing civil and/or agricultural engineering work from planning through maintenance for the construction and improvement of irrigation and drainage facilities.
**Apply:** https://www.applicantpro.com/openings/passionhr/jobs/2548346-369308

### ACCOUNT MANAGER, SOUTHWEST

**Salary:** Based on qualifications
**Location:** Southern CA, NM, or AZ
**Deadline:** Until filled
**Summary:** The Southwest Account Manager will be responsible for a range of duties including but not limited to developing and managing key customer accounts, developing targeted sales strategies for these accounts, preparing proposals and bids for regional customers, and maintaining post-implementation contact with customers. Regional travel is required (up to 50% depending on the season).
**Apply** LinkedIn: https://www.linkedin.com/jobs/view/3225199814/?alternateChannel=search&refId=CGZll3kq2XIaagl%2BtLzC%2Fw%3 D%3D&trackingId=rm8c7xZnJwO%2BmDiS8xetnw%3 D%3 D
Indeed (different links for the different locations):
https://www.indeed.com/jobs?q=Rubicon%20Water&l&vjk=f08ee0119dc7565f

### EAST COLUMBIA BASIN IRRIGATION DISTRICT
### DISTRICT ENGINEER

**Salary:** Dependent upon qualifications
**Location:** Othello, WA
**Deadline:** Until filled
**Summary**: Working under the direction of the Assistant Manager for Technical Services, the District Engineer supervises the engineer team in an array of projects. Provides general engineering and planning support for operation and maintenance activities for irrigation and drainage facilities, District properties, buildings and pump equipment.
**Apply:** https://ecbid.org/open-positions/

### UPPER BIG BLUE NATURAL RESOURCES DISTRICT
### WATER DEPARTMENT MANAGER

**Salary:** $69,000 -$72,250 Annual
**Location:** York, Nebraska
**Deadline:** Until Filled
**Summary:** The Upper Big Blue Natural Resources District (NRD) has a full-time opening for a Water Department Manager. The Water Department Manager is responsible for all activities and staff within the Water Department. The department manager sees that the groundwater management policies set by the board of directors are carried out accurately and efficiently.
**Apply:** https://www.upperbigblue.org/employment

### INTERNATIONAL CHANNEL SALES MANAGER

**Salary: Based upon qualifications**
**Location: Remote (U.S.)**
**Deadline: Until filled**
**Summary:** Bring new partners on board and maintain relationships with existing partners. Understand customer and business needs to cross-sell and up-sell the company's products. Coordinate with other company personnel such as the support team and management team to deliver and meet customer/partner expectations. Act as a bridge for communication between the customers/partners and the engineering team.
**Apply:** https://emrgy.com/careers/

**For more job listings, please visit: irrigationleadermagazine.com/job-board/.**

# Irrigation Leader

## Upcoming Events

**November 2–4** National Water Resources Association, Annual Conference, Santa Barbara, CA
**November 7–9** American Water Resources Association, Annual Water Resources Conference, Austin, TX
**November 9** Colorado Water Congress, Legal Ethics Workshop, Denver, CO, and virtual
**November 15–16** National Conference of State Legislatures, Base Camp, virtual
**November 15–17** Idaho Water Users Association, Headgate Water Leadership Academy, Session 1, Twin Falls, ID
**November 16–17** Governor's Conference on the Future of Water in Kansas, Manhattan, KS
**November 20–22** Nebraska Water Resources Association and Nebraska State Irrigation Association, Joint Convention, Kearney, NE
**November 28–30** Oregon Water Resources Congress, Annual Conference, Hood River, OR
**November 29–December 2** Association of California Water Agencies, Fall Conference and Exhibition, Indian Wells, CA
**November 30–December 2** Washington State Water Resources Association, Annual Conference, Spokane, WA
**December 5–7** National Conference of State Legislatures, Forecast '23, San Diego, CA
**December 5–9** Irrigation Association, Irrigation Show and Education Week, in conjunction with the National Ground Water Association, Ground Water Week, Las Vegas, NV
**December 6–9** North Dakota Water Users Association, Joint North Dakota and Upper Missouri Water Convention and Irrigation Workshop, Bismarck, ND
**December 13–15** Idaho Water Users Association, Headgate Water Leadership Academy, Session 2, Twin Falls, ID
**December 14–16** Colorado River Water Users Association, Annual Conference, Las Vegas, NV
**January 10-12** Irrigation Leaders Workshop, Chandler, AZ
**January 11–12** Four States Irrigation Council, Annual Meeting, Fort Collins, CO
**January 16–20** Idaho Water Users Association, Annual Conference, Boise, ID
**January 23–26** Groundwater Management Districts Association, Winter Conference, Simons Island, GA
**January 24–26** Idaho Water Users Association, Headgate Water Leadership Academy, Session 3, Boise, ID
**January 25–27** Colorado Water Congress, Annual Convention, Aurora, CO
**January 25–27** Mid–Pacific Water Users' Conference, Reno, NV
**January 25–27** Texas Ground Water Association, Annual Convention, San Marcos, TX
**February 7–11** American Water Works Association and Hawaii Water Environment Association, Annual Joint Conference, Honolulu, HI
**February 11–14** National Association of Counties, Legislative Conference, Washington, DC
**February 22–24** Multi-State Salinity Coalition, Annual Salinity Summit, Las Vegas, NV
**February 27–28** California Irrigation Institute, Annual Conference, Sacramento, CA
**February 28–March 2** Association of California Water Agencies, Washington, DC, Conference, Washington, DC

**PAST ISSUES OF *IRRIGATION LEADER* ARE ARCHIVED AT IRRIGATIONLEADERMAGAZINE.COM**

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