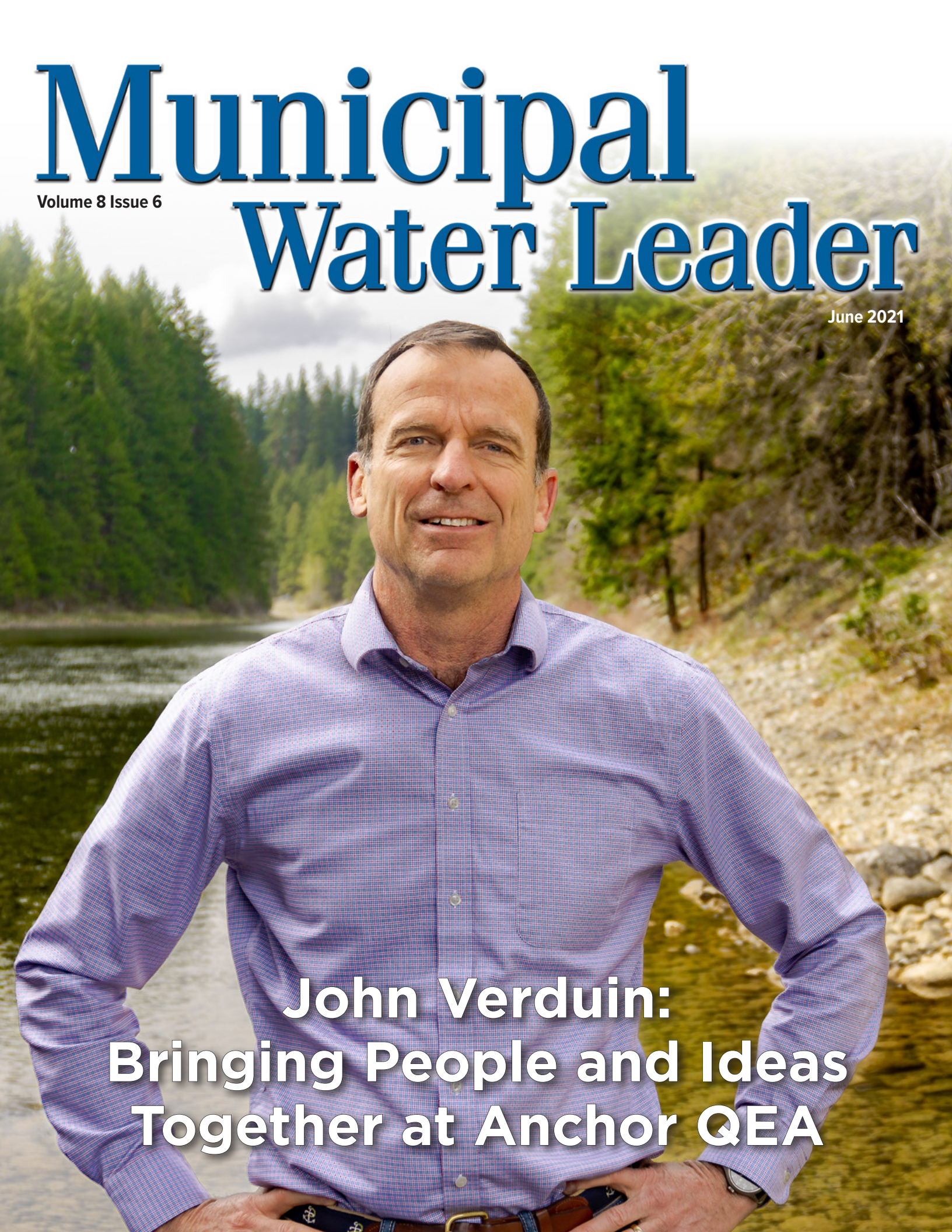


Municipal Water Leader

Volume 8 Issue 6

June 2021



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Bringing People and Ideas
Together at Anchor QEA**

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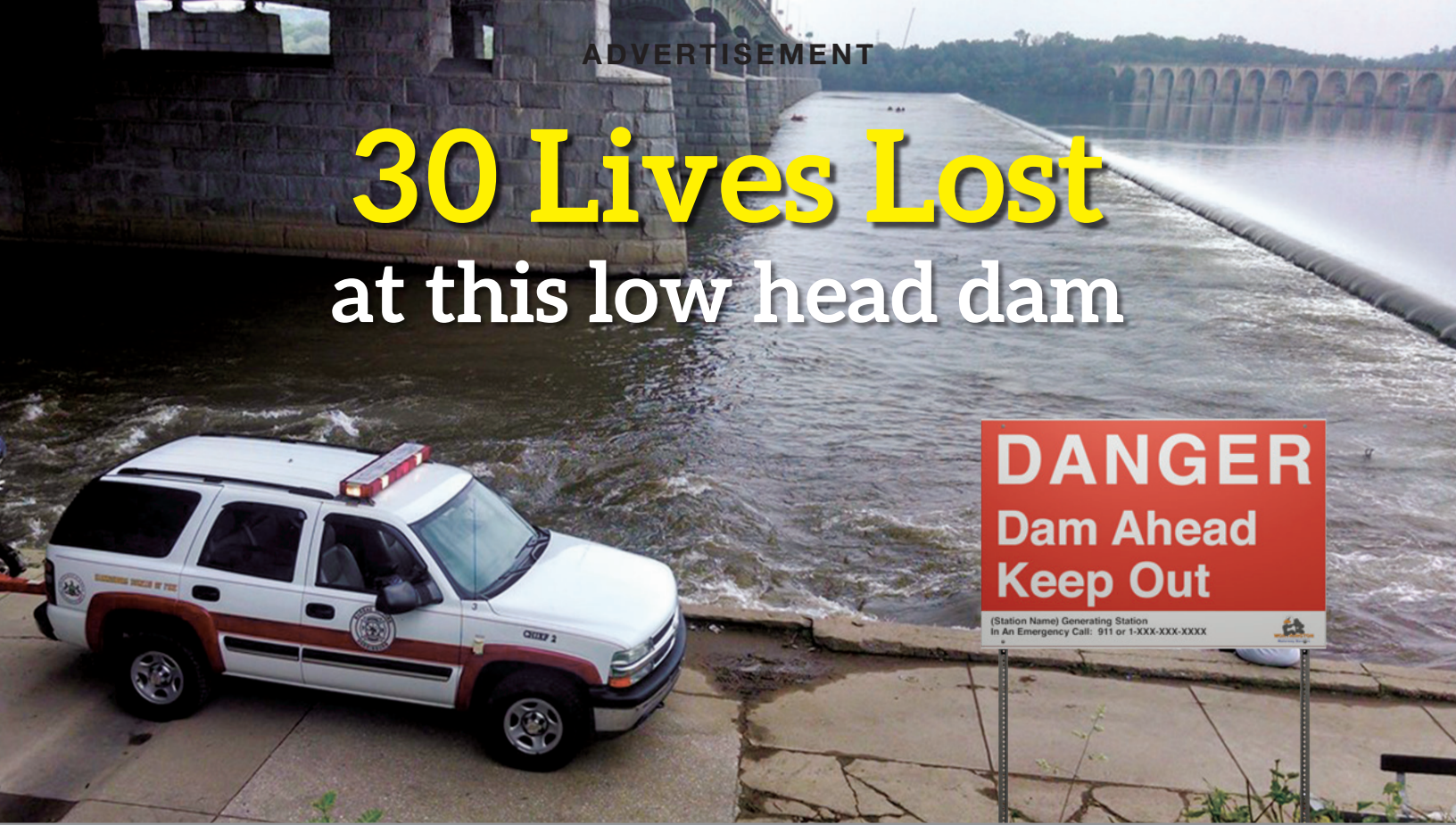
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Coming soon in *Municipal Water Leader*.
July/August: Texas's February Storm

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Municipal Water Leader

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COVER PHOTO:

John Verduin, Managing Partner, AnchorQEA.
Photo courtesy of Anchor QEA.

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Storm Water Management

By Kris Polly

Storm water management is a constant concern for municipalities. Sudden influxes of water, often bringing pollutants of various sorts, can overflow systems, challenge treatment infrastructure, and affect the environment. Luckily, municipal water professionals are working to design ever better systems, develop innovative mitigation technologies, and find funds to improve infrastructure.

Our cover interview this month is with John Verduin of Anchor QEA, a firm that specializes in challenging projects in the environmental science, engineering, planning, and restoration fields. AnchorQEA incorporates environmental concerns into its work from planning and design through construction and monitoring.

Amber Ponce of LiveRoof tells us about how her company's green roofs mitigate storm water runoff while also cooling buildings and providing aesthetically pleasing spaces for events and recreation.

Greg Yeoman of Enviropod introduces his company's simple and effective LittaTrap, a catch-basin insert that traps garbage before it enters storm water collection systems. By trapping waste, including the minute resin beads used in plastic manufacturing, on the sites where it originates, the LittaTrap reduces strains on treatment facilities and protects the environment.

Scott Montross, Heather Christensen, and Mike Wray of Northwest Pipe Company tell us about its Perfect Pipe and Perfect Lined Manhole products, two new lined-concrete products whose corrosion resistance makes them ideal for conveying storm water or wastewater.

Finally, we speak with Tia Cavender and Fernando Gonzalez of Dig Deep Research, a consultancy that helps municipalities and agencies secure capital funding for water infrastructure projects. Dig Deep's new Grant Pursuit Strategy service provides a roadmap for municipalities to identify which grants they should pursue and in which order.

Using everything from concrete and high-density polyethylene to living plants and soils, municipal water professionals are creating new ways to handle storm water. I hope that this issue informs you about new developments in the field, and maybe even gives you a few ideas for your own system. Keep in mind—if something will be seen, it should look nice. **M**

Kris Polly is the editor-in-chief of Municipal Water Leader magazine and the president and CEO of Water Strategies LLC, a government relations firm he began in February 2009 for the purpose of representing and guiding water, power, and agricultural entities in their dealings with Congress, the Bureau of Reclamation, and other federal government agencies. He can be contacted at kris.polly@waterstrategies.com.

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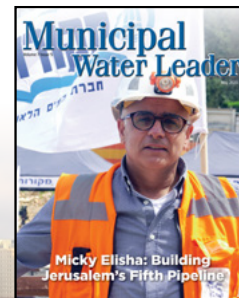
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John Verduin: Bringing People and Ideas Together at Anchor QEA



In Meydenbauer Bay Park in Bellevue, Washington, a 300-foot-long restored stream channel (left) replaces a buried storm water outfall that drains a large urban area to Lake Washington, improving water quality and habitat. An open, cobble-lined channel (right) conveys treated storm water from a new parking area to infiltration facilities adjacent to Lake Washington.

Working with varied stakeholders on complicated issues to produce innovative, effective solutions is a considerable challenge, particularly for water-related issues. But John Verduin has made a career of doing exactly that, particularly in his current role as managing partner of Anchor QEA, a company that uses innovation and collaboration to solve complex environmental and water issues ranging from irrigation and municipal water supply to storm water, wastewater, and green infrastructure. In this article, Mr. Verduin tells Municipal Water Leader about Anchor QEA's origins, the company's approach to the challenging projects it undertakes, and how it has created a culture of innovation and collaboration both internally and externally.

Municipal Water Leader: Please tell our readers about your background.

John Verduin: I'm a geotechnical engineer by trade and am entering my 34th year in engineering practice. Most of my geotechnical engineering experiences have focused on unique design settings, not the standard foundation or shoring geotechnical-type design, which was what I did early in my career. I eventually moved toward more out-of-the-box geotechnical problems. For example, how do you build a restoration site in a coastal environment in weak soils and make sure it's going to be there over time? Situations

PHOTOS COURTESY OF ANCHOR QEA

like that required me to apply my geotechnical skills in a nontraditional way.

I grew up in southern Illinois. I have an undergraduate degree in geological engineering from the University of Missouri–Rolla, now known as Missouri University of Science and Technology. I then acquired a master’s degree at Purdue University in engineering with a focus on geotechnical engineering. I moved out to Seattle about 35 years ago. My wife is from Seattle, and we have made it our home.

Municipal Water Leader: How long have you been associated with Anchor QEA? What are your responsibilities?

John Verduin: I came to Anchor Environmental, one of Anchor QEA’s predecessors, in early 1998, shortly after the company formed, after spending 10 years at a local geotechnical company in Seattle. I think I was employee number 5 at Anchor Environmental. I was our first engineer and led many of our early design projects around the country. Because of that, I think I am a registered professional engineer in roughly 20 different states. I’ve worn many hats since coming to the company, and I dabbled in management from the beginning. I have been more involved in management for the last 10–15 years. I have been the managing partner for the last 3½ years.

Municipal Water Leader: What is the history of the company?

John Verduin: Anchor Environmental was established in late 1997 in Washington State, and QEA was founded in the New York–New Jersey area in early 1998. Our founders were really focused on providing quality scientific and engineering work. We were fortunate enough to be involved in some of the country’s toughest environmental challenges. We really thrived in innovation, expertise, and collaboration. Anchor Environmental quickly dominated the aquatic environmental engineering services industry, working on some really large projects for big clients around the country. QEA became a national leader in water quality, water resources, chemical fate, and transport modeling within a few years.

In 2006, Anchor Environmental took a big step into the water resources market when it acquired a company called Montgomery Water Group. Bob Montgomery and his staff gave Anchor the engineering skill set to step into complex water resources projects. Subsequently, Anchor added other key leaders in the field, including Tracy Drury, PE, an applied geomorphologist specializing in river restoration; Greg Summers, a national and local regulatory professional focused on large-scale water resources projects; and Michael MacWilliams, PhD, PE, a nationally recognized hydrodynamic and morphologic modeler in river and estuarine systems. All these additions greatly strengthened Anchor’s water resources capabilities.

In 2009, Anchor Environmental and QEA merged to create Anchor QEA. QEA had a strong East Coast presence, and Anchor had a strong presence on the West Coast and around the country. Anchor was more engineering heavy, and QEA was a little bit more science heavy, so the merger made a lot of sense. We continue to expand and specialize in a variety of services in environmental science, engineering, planning, and restoration. I think one thing that’s really helped us since our beginning is that we’ve grown without losing the entrepreneurial drive of a small startup. We think differently and challenge the status quo with our solutions. Today, we have over 350 employees and 25 offices around the country.

Municipal Water Leader: Would you give us some examples of the different kinds of work that your company does?

John Verduin: We are attracted to the more challenging projects around the nation. We try to assist our clients with water resources; surface and groundwater quality; coastal flood resiliency, which is a big topic now; contaminated sediment management; and habitat restoration projects. We provide a full range of science and engineering services for both the public and private sectors. We work with our clients from the initial planning, site investigation, and feasibility evaluation stages through design; plans and specifications; construction management; permit compliances; and environmental monitoring, if required. We’ve been fortunate to have some of the more successful projects in the industry, including some of the bigger, high-visibility projects, from small municipal projects to large Superfund sites. We work in five market sectors, serving state and local, industrial, energy, federal, and port and harbor clients across the nation.

Municipal Water Leader: Is it possible to develop win-win water solutions that address needed supplies and environmental concerns?

John Verduin: Yes. One type of project we often evaluate here in the Northwest is optimizing the use of reservoirs to provide water for multiple uses, including irrigation and municipal uses and instream flows for fish. We combine that with work to reduce demands through water conservation to increase supplies for fish. We also prepare fisheries studies to evaluate the best use of water for fish and water quality studies to help manage temperature in the water released from reservoirs. Bringing the water users, reservoir operators, and biologists together can result in creative solutions to water supply and environmental issues. This has become increasingly important as climate change is changing water supplies, demands, and environmental conditions.

Municipal Water Leader: What are some recent examples of your projects?

John Verduin: The Meydenbauer Park project in Bellevue, Washington, is a high-visibility project on an important linkage from downtown Bellevue to the Lake Washington waterfront. We designed the park and the storm water facilities, including a media filtration system, bioretention area, and infiltration facility and daylighted a storm drainpipe to create a natural stream channel down the middle of the park. It's an award-winning project that showcases our storm water engineering and landscape architecture skills. Another typical water resources project for us is one called the Icicle Creek strategy. We are currently working with multiple stakeholders to evaluate different projects and actions intended to improve the management and use of water resources in the Icicle Creek watershed in eastern Washington. The overarching goal of the strategy is to improve water supply reliability within the watershed for both agricultural and municipal users but also increase instream flows for fish. We recently completed a programmatic environmental impact statement (EIS) to evaluate multiple alternatives, including assessments of optimizing and automating releases from lakes in the Alpine Lakes Wilderness area, the restoration of a dam on Eight Mile Lake, the evaluation of pump-back projects for multiple stakeholders, and the replacement of an old gravity-irrigation system with a pressurized system to reduce diversions from Icicle Creek. We are now developing designs for several of the alternatives evaluated in the EIS. It is a multidisciplinary project that we can get a lot of our different technical groups involved in.

Municipal Water Leader: Have you worked specifically on municipal water supply and wastewater projects?

John Verduin: Yes. We typically work on projects that have multiple components, as opposed to strictly municipal or strictly wastewater projects. For example, a lot of our water resource projects have irrigation, municipal, or natural resources components, and the supply must be balanced to meet the demands of multiple users. Similarly, most of our storm water projects also include natural retention or green infrastructure, not just pipes. Again, there are multiple components in these challenging projects.

Municipal Water Leader: Would you expand on your storm water projects, specifically on how they reduce urban water runoff?

John Verduin: Anytime you do not have to handle or treat water, you can save money. The trend to using green infrastructure and low-impact development such as bioswales, rain gardens, and permeable pavement is something we've been incorporating into our waterfront development and landscape architecture projects for decades. We have a landscape architecture group led



In Seahurst Park in Burien, Washington, a stream was restored by replacing a small culvert and fish capture structure that blocked streambed sediment from reaching the beach. The daylighted stream now delivers natural beach-material to sustain and nourish the restored beach on Puget Sound.

by Peter Hummel, a fellow of the American Society of Landscape Architects who has been one of the leaders in applying these solutions. Our designs have been employing these techniques for a long time. Allowing water to infiltrate in the ground eliminates the need to treat the water before reentering it in the natural systems. They also

PHOTOS COURTESY OF ANCHOR O&A

provide green space that can easily be incorporated into city parks and recreation areas.

A developing area in storm water that we are involved with is the capture and recharge of storm water to aquifers through larger infiltration projects. The goal is to increase groundwater discharge to streams to increase low flows and reduce stream temperatures. The recharge will also offset demand from wells that serve water systems and private homeowners.

Municipal Water Leader: How can utilities save money by using natural water systems instead of having to treat the water?

John Verduin: It is done by trying to minimize the handling of the water in complex built systems and instead using what Mother Nature has given us: using the ground and natural contours to handle and treat the water and using those opportunities to restore habitat and mitigate habitat losses. These projects can provide occasions to address multiple stakeholders' wants and needs in a cost-effective manner.

Municipal Water Leader: What trends do you see in environmental restoration work?


John Verduin: It is an exciting area that we have been involved in for a while. We have been involved in several of what are called *floodplain by design* projects. Washington has been one of the states at the forefront of this strategy. Floodplain by design integrates flood damage reduction, habitat restoration, and agricultural viability. We see this concept taking off around the country, and we have a lot of experience in this type of river and watershed restoration project.

One of our largest watershed restoration projects, the Chehalis basin strategy, is looking at a comprehensive, long-term set of actions to reduce flood damage and restore aquatic species habitats in a 2,400-square-mile watershed in western Washington. It is an exciting project that allows us to draw on in-house expertise in several technical disciplines as well as to work with outside consultants. It is being funded by the State of Washington. This is a good example of providing a multibenefit strategy for floods and fish. More and more cities and counties are looking at reducing flooding effects while also restoring floodplains to benefit fish and people.

Another large restoration project that we have worked on is the Yakima River Basin Integrated Water Resource Management Plan, which is funded by the Washington State Department of Ecology and the Bureau of Reclamation. It was one of the first plans of its kind in Washington State and led the way for evaluating and implementing multiple benefit water resource projects. Anchor QEA worked with federal, state, and local agencies; the Confederated Tribes and

Bands of the Yakama Nation; and stakeholders to develop alternatives and projects that benefit the environment while improving water supply reliability for agricultural and municipal users. This project also draws on multiple disciplines within our company.

Municipal Water Leader: What should everyone know about Anchor QEA?

John Verduin: Our company's mission is to improve the environment and our communities by solving challenging problems together, with integrity and vibe. We want to tackle the most pressing and challenging projects affecting us. We understand the value of enduring relationships, and we prioritize them in our work. We want to work together with the involved stakeholders and help forge the best solution, doing the right thing and enjoying our work. Our large water resource projects draw on that mission. Our vision is to be a growing company that is our clients' first choice for solving the most challenging problems and our employees' first choice for where they want to work. We believe that accomplishing this starts with having engaged employees who want to be challenged and to do meaningful work, which leads to better client service. Our size allows us to be nimbler and to foster closer client relationships than the larger firms while also allowing us to be proactive in solving these large, challenging problems. We enjoy projects that draw on our multidisciplinary teams. It is rewarding when we have a project that involves water resources, civil, geotechnical, and coastal engineers; landscape architects; biologists; and planners and permittees. Since we provide a full range of science and engineering services to both the public and the private sectors, our teams really understand the importance of stakeholder relationships, how to foster partnership strategies, and how to align project goals and community initiatives early on. Lastly, our team really prides itself on knowing that our clients can depend on us to deliver innovative results that will build resilient ecosystems, restore local habitat, and protect the land and waters that our communities depend on in more ways than one. When we can truly grasp what stakeholders need to be successful, we can help develop good solutions. 



John Verduin is the managing partner for Anchor QEA. He can be reached at jverduin@anchorqea.com.



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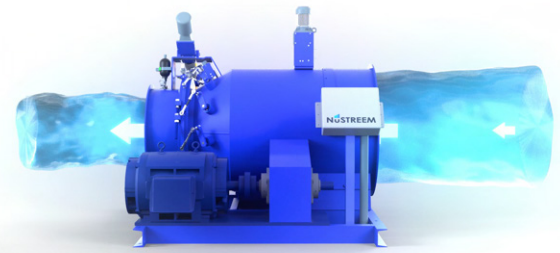
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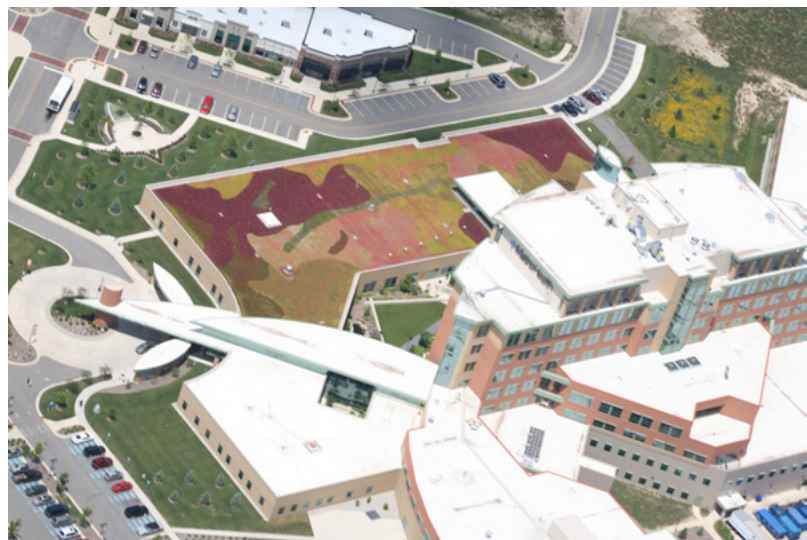
Amber Ponce: Raising the Roof for Water and People at LiveRoof

LiveRoof's products allow companies and cities to make better use of rooftops in ways that reduce storm water runoff, improve environmental conservation, and enhance quality of life. The company is also managed in a way that encourages, and in fact requires, innovation among its employees, partners, and customers. In this interview, Amber Ponce, LiveRoof's business development manager, tells Municipal Water Leader about how the company's green rooftop projects are revolutionizing the management of infrastructure and storm water runoff.

Municipal Water Leader: Please tell us about LiveRoof.

Amber Ponce: Hortech, Inc., was started by David MacKenzie and his business partner in 1983 as a small wholesale perennial and shrub plants supplier. David bought out his partner, became the sole owner, and expanded to approximately five states with a specialty in perennial ground covers. The customer base was mostly independent garden centers and landscape contractors. In 2003–2004, he was involved with the development of the green roof system at the River Rouge facility of Ford Motor Company. That was one of the earliest large-scale green roofs implemented in North America. The board hired consultants from Germany, where green roofs have been commonplace for a much longer period of time. Those consultants worked with David to address Michigan's local climatic differences, plants supply, and the suitability of certain plants for the rigors of a rooftop environment. We actually ended up growing and supplying many if not all the plants that were used in that particular installation. Following this experience, we started the brand LiveRoof to market green roof plants to landscapers working on green roof installations.

Eventually, we were approached by a customer of ours in the landscape industry, who asked us if we could also supply a modular green roof system. We developed what we call a hybrid green roof system, which has the benefits of both modular and built-in-place green roof methods without the drawbacks of either approach. We achieved that through a patented design whereby we extended the height of the container module temporarily using what we call a Soil Elevator. That is a plastic collar that inserts into pegs near the sidewall of a 3¼-inch-deep module and allows you to place 4¼ inches of soil in it. We fill those up, plant them, and grow them until the module itself is fully covered. Then we install the module and remove the inserts. This provides the appearance and function of a continuous, built-in-place green roof system. We've also introduced our own line of aluminum edging called RoofEdge, which is available in multiple sizes and finishes and is used to contain the soil and protect the modules at the perimeter of the green roof. We also have developed and manufacture



An aerial view of Metro Health Hospital's green roof.

RoofStone, a paver with an integrated base designed to work seamlessly with the LiveRoof system.

Also crucial to our success is the team that we built to grow and represent LiveRoof throughout North America. We work with a group of fantastic, like-minded horticulturalists who really understand the demands of their local climates and have decades of experience in the nursery and landscape trades. Through this team, we usually can supply green roofs grown within 500 miles of the building site, using locally sourced engineered soil and plants.

Municipal Water Leader: Please tell us about how your green roof system can help mitigate or eliminate storm water runoff in an urban setting.

Amber Ponce: Anywhere you have a building and a roof, you have an impervious surface that has disrupted the natural hydrology of the site, meaning that there will inevitably be more runoff from it. By replacing some of the lost soil and vegetation, we're restoring the site's ability to manage storm water to something more like its ability prior to the introduction of a building. By acting as something of a natural sponge and wick, the soil and vegetation help reduce the overall amount of water that runs off the roof. The other thing green roofs do, which is important for managing storm water, is reduce the peak flow. When there is a heavy downpour, it is initially managed and absorbed by the green roof system. Only after the roof reaches the point of saturation will the water start to run off. This delays the peak flush and gives the municipal storm water system a bit more time to manage the storm water running off impervious surfaces. Further, our RoofBlue system elevates the green



The green roofs at the Grand Rapids Downtown Market.

roof to create a gap between the green roof module and the membrane. Used in combination with control flow drains, RoofBlue allows for a metered amount of water to flow off the roof. This further detains and slows that heavy peak runoff. Generally, these systems are designed so that water will not stand on the roof for more than 24 hours, in line with warranty requirements typical of roof membrane manufacturers. The gap created by the RoofBlue risers prevents the plant roots from sitting in standing water, which can damage plant health over time.

Municipal Water Leader: Please tell us about your Grand Rapids Downtown Market project.

Amber Ponce: At that site, the green roof system doesn't cover the entire roof, and there are other areas of the roof where storm water runs off and is collected in a cistern. The cistern is used to irrigate a sizable outdoor green wall system supplied by LiveWall, LLC, a sister company of LiveRoof. The designers of this project paid close attention to managing the site's water. The site's management of onsite water was a key contributor toward its LEED Gold certification. Because the green wall itself is vertical, it only has a small amount of surface area that can naturally catch rainwater. However, it consumes captured runoff water and thus manages a good amount of the storm water that is collected from the roof surface.

Municipal Water Leader: Aside from storm water runoff mitigation, why else might a business entity or a municipality install a green roof or a green wall?

Amber Ponce: Some municipalities mandate or incentivize green roofs because they help mitigate the urban heat island effect. A green roof helps to cut down on the amount of heat that is absorbed and later radiated through the process of evapotranspiration—the process by which plants take up water and release it during photosynthesis while water simultaneously evaporates from the soil. From the perspective of a private entity or a building owner, this can achieve a modest level of energy savings, since the project may need less air conditioning. The same cooling effect also helps cool the building floor below the green roof. Additionally, if the HVAC air intakes are rooftop mounted, the plants reduce the temperature of the air taken into the system and reduce the resulting energy required to cool the air.

If your green roof is accessible to the people who live or work in a building, they can gather or hold rooftop meetings on it. This access to nature has been demonstrated to contribute to improved wellness, attendance, productivity, and creativity. We do quite a bit of work in healthcare, because studies have shown that patients with access to nature show a decreased need for pain management after procedures and recovery more quickly. Similarly, employees in healthcare are under a high amount of pressure and stress. By providing staff a rooftop garden that is closed to patients and visitors but available as a place of respite, you're giving them the opportunity to refuel, recharge, and defuse their stress in a natural environment.

Municipal Water Leader: One of the early projects that your company was involved with was a hospital green roof

that you worked on with HDR engineering. Would you tell us about that project and its role in the history and development of your company?

Amber Ponce: That project was Metro Health Hospital in Allendale, Michigan. We supplied the plants for that project, and we also helped supply the labor. It was one of the earlier large-scale green roofs implemented in western Michigan. That green roof is on a lower level and is visible from a number of windows in patient rooms and in public areas for visitors. This was a key aspect of the vision for this state-of-the-art facility.

Municipal Water Leader: Please tell us about the culture of innovation at your company.

Amber Ponce: At one point, we had a consultant come in to train our staff and to conduct audits, using the lean manufacturing principles that were becoming more prevalent in automotive and hard-good manufacturing. That led to a culture that emphasizes continually improving every aspect of our work at every turn. For example, before we had this culture change, we primarily used chemicals to manage pests and weeds. We also had high amounts of waste consisting of plants dumped either because they had health issues or they were unsold due to overproduction. By examining the conditions that led to weeds and pests, we were able to implement what is called integrated pest management. We use mechanical or natural preventative methods in our daily work and only resort to chemicals as a last resort. We also switched to customer-focused production, which involves sitting down with our customers, interviewing them, and explicitly asking them about their needs for the coming year. We then plan production based on what customers have told us. The result is that we have better sell-through and availability for the most in-demand plants and many fewer wasted plants at the end of the growing season. This practice of seeking customer input helped spur the LiveRoof division. Without this reputation for implementing changes based upon customer feedback, we would likely have either been late to the game or have missed out completely on the expansion of the green roof market in North America.


Our employees are trained to present ideas, and we have a program in which every single idea that is voiced by someone on our team, whether it originates with a customer or whether it is simply their own observation or idea, is evaluated. We either explain why we're not going to implement the idea or ensure that it does get implemented. Many of these ideas are not groundbreaking, but they incrementally improve the quality of our offerings and satisfaction amongst our teammates. We call the program the Voice of the Customer (VOC).

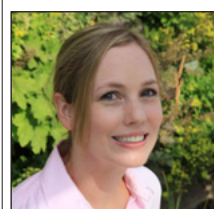
Municipal Water Leader: So, if anyone in your company has an idea, they write this idea down and submit it, and then they either get an explanation of why it won't work or the idea is implemented?

Amber Ponce: That's correct. Employees don't have to submit the idea to their supervisor, and the idea doesn't have to get preapproved or go up some chain. Instead, the idea goes directly to the person who oversees the relevant area of the company. For example, if I had an idea related to something happening in the shipping department, instead of submitting it to my supervisor, I would give it directly to the shipping manager. The shipping manager is responsible for responding to me directly with an evaluation of and plan for the idea. Our program is bilingual, because the horticultural industry generally employs many Spanish-speaking individuals, and we're no exception. We make the forms available in both English and Spanish, and the response and explanation is provided in the native language of the person who suggested the idea.

Municipal Water Leader: Do you keep track of how many ideas come out of each department?

Amber Ponce: Yes. We keep all the submissions in a binder, and each employee has a tab. At the end of the year, during their appraisal, their supervisor generally takes a look at the ideas they contributed. Our supervisors do not emphasize how many ideas were actually implemented, but rather how many ideas were suggested. We recognize that every idea—whether we implemented or not—is a learning opportunity.

In our weekly meetings, I ask our team, "What new VOCs have you voiced? Are you evaluating any from other people?" One of my colleagues has a goal to submit at least one per month, because in his position, he frequently interacts with both internal and external customers. We need our colleagues who work most closely with our clients to discuss their problems and seek out solutions. Generally, the best way to delight a customer is to listen to them and show them that we genuinely value their input. Welcoming criticism is not something that comes naturally, but if we can do it, we can use the feedback constructively to identify challenges, develop new solutions, and introduce in-demand products quickly and efficiently. 



Amber Ponce is the business development manager of LiveRoof Global LLC. She can be reached at amberp@liveroof.com.

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How Enviropod's LittaTrap Removes Pollutants From Storm Water at the Source



A LittaTrap placed in a catch basin near a loading dock. The LittaTrap has captured thousands of tiny resin nurdles, which can easily wash into waterways.

Simplicity, effectiveness, and versatility are often the hallmarks of innovative technologies and people. Greg Yeoman, Mike Hannah, and their Enviropod company embody those traits. Starting out with the goal of reducing plastic contamination in waterways, they discovered that they could bring their innovative filter technology directly to plastic manufacturers to stop contamination before it began. Since its founding in 1996, Enviropod has become a global force in the effort to clean up beaches, plastic manufacturing sites, and storm water systems. In this interview, Mr. Yeoman tells Municipal Water Leader how the company came to be, the advantage of its products for combating plastic contamination, and how it has expanded from New Zealand to North America.

Municipal Water Leader: Please tell us about your background.

Greg Yeoman: I studied architecture at university. After university, in 1996, an engineer friend of mine, Mike Hannah, was working in the storm water industry, and we found out about the problem of pollutants coming off main base sources and getting into waterways. We're passionate about the environment, and we figured that there must be a simple way of intervening to stop pollutants from getting into the waterways.

In 1996, we came up with a catch basin insert technology called the Enviropod, and we founded our company in Auckland, New Zealand, that same year. The Enviropod was a cage with a 200-micron filter bag developed to target sediment and other pollutants in storm water runoff. Eighty percent of the pollution that gets into waterways is from land-based activities, so it made sense to start closest to the source of the pollutants. We developed a business around the Enviropod product and took it to Australia around 1998, where we started getting some good opportunities with some of the councils. We ended up licensing a range of technologies in New Zealand and Australia for complex storm water problems, which included the presence of heavy metals and organics in storm water.

About 5 years ago, we redeveloped the Enviropod filter, because we had noticed that the problem of plastic litter and trash in waterways had been overlooked in a lot of regulations. Once those plastics are in the waterways, they're hard to get out. We redeveloped the original catch basin insert product into a version called the LittaTrap, which focuses on pollutants that are 5 or more millimeters (mm) in size. The aim was to develop the product so that it required less maintenance, was easier to install in different places around the world, and could be flat packed for cheaper

freight and storage. With this updated technology, there is no reason not to use catch basin inserts.

We started redeveloping the product 3 years ago and moved to Canada for a year to get some product installed, to work with partners there, and to focus on nonregulated sites around the Great Lakes. We found the process to be a bit slower than expected, because without regulation, there is little motivation to install technology like ours. Then, we realized that California is the one place in the world that has a full trash-capture regulation, meaning that every commercial site, public or private, has to prevent anything bigger than 5 mm leaving the premises. We got our product approved by the California Water Board and are now actively preventing trash from getting into waterways. The Great Lakes and California are our initial focuses for the product, but it's applicable everywhere.

Municipal Water Leader: How long have you been marketing your products in the United States?

Greg Yeoman: Officially, since the end of last year, when we got our California Water Board approval. We're working with some partners in California to get the product specified and installed in both regulated and nonregulated sites. We also have a strong focus on manufacturers, which started in New Zealand and Canada, where we worked with plastics manufacturing associations. Plastic manufacturing sites use resin pellets called nurdles. They are often shipped from the manufacturer on trains, loaded into trucks, and then loaded again at the manufacturing site, so there's a lot of places where they can escape. Once the nurdles get into waterways, they look like fish food. On almost any beach, if you dig around the high-tide level, you'll start to find these little plastic pellets. It's a huge global issue. There is a global movement called Operation Clean Sweep that aims to prevent all resin pellet loss from plastic manufacturing sites. We have different performance liners that we can put into the LittaTrap basket to target specific pollutants, including one that targets resin pellets, which are about 3 mm in size. It is highly effective, with a 100 percent capture capability. It is an easy, cost-effective retrofit solution for manufacturing sites and for the whole supply chain of these resin pellets.

Municipal Water Leader: What size catch basins can the LittaTrap work in?

Greg Yeoman: Catch basin sizes vary across the world, depending on rainfall and flow conditions. For example, there are areas in New Zealand with quite low flows, while in Queensland, Australia, there are large, tropical flows. Based on our work in New Zealand, Australia, Canada, and the United States, we've come up with five sizes that will fit catch basins from 12 inches by 12 inches to 48 inches by 48 inches and sizes in between. There are also curb-inlet models. In California, for example, there are curb-inlet

basins in the form of slots at the side of the roadway that are 16 feet long or longer with no grate as such. We can adapt to configurations like these by installing standard models next to each other with seal kits.


Municipal Water Leader: What is the advantage of capturing pollutants at the catch basin rather than trapping them with a large net or screen later in the storm water collection system?

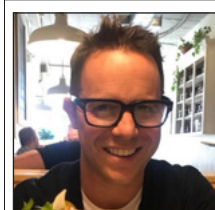
Greg Yeoman: The flows and volume of these pollutants are high, and we can achieve a much bigger filtering area and storage volume by putting our devices closer to pollutant sources and in multiple catch basins. That way, we can take out and store more pollutants. If a net or screen is put at the end of the catchment, it can be limited in the size and may only be able to capture a limited volume of pollutants. Devices like that are also difficult to maintain—you need large cranes to remove and empty them. Further, they do not solve the issue of pipe blockages upstream. By contrast, our devices can target hotspots and capture pollutants near the point source. That also means that the pollutants don't get a chance to break down as much on their journey from the source to the capture device.

Another benefit of our product is that it can be easily maintained. The basket can be lifted out and emptied into a bin, which means that private sites can easily look after their own infrastructure. For example, a plastics manufacturer that is catching small resin pellets with LittaTraps can have its operational people easily maintain these themselves.

We've also carried out a lot of research on litter hotspot mapping. You might have 80 percent of your litter pollutants coming from 20 percent of the catchment, and by targeting those areas, you avoid the need to fit LittaTraps out in all your infrastructure. We identify the hotspots and then, based on our knowledge and our database of these land uses, we recommend the best locations to place LittaTraps to get the best performance for the least cost.

Municipal Water Leader: Is the LittaTrap available throughout the United States?

Greg Yeoman: Yes, it is available in all 50 states. We have logistics centers in Ontario, Canada, and in California. While catch basin infrastructure varies by area, our product typically fits 90 percent of catch basins, and if it doesn't, we're definitely interested in making it fit. 



Greg Yeoman is the president of Enviropod. He can be reached at (+64) 21 525398 or locally via Will Harris at Clean Waters USA at (877) 651-0566.

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Trenchless Projects in the Borough of Queens Minimizes Disruption



Maintaining the extensive sewer system throughout the five boroughs of New York City is a full-time endeavor. Public works construction repairs create work zones with significant concerns for both the general public and construction workers. Traffic disruptions in major cities, like New York City, are frequently met by the public with anger, disgust, and frustration. In Queens, there are two recent projects where this was of particular concern. Originally designed and bid as open cut installations, these projects addressed flood mitigation and sewer improvements.

To maintain public safety and convenience as well as essential worker safety, Northeast Remsco Construction, of Wall Township, N.J., chose

to value engineer these crossing projects to trenchless technologies including microtunneling and sliplining by using HOBAS CCFRPM pipe..

During the summer of 2020, one of New York City's major capital improvement projects required Northeast Remsco to install an 85-inch-diameter storm sewer below Queens Boulevard at 69th Street. This project location is where Queens Blvd is eight lanes wide and includes three pedestrian medians and two bike lanes—the widest and busiest street requiring open cut crossings, colloquially referred to as the “Boulevard of Death.” Due to changes in microtunneling technology, motorists and pedestrians remained unaware of the massive 85-inch pipe being installed 30 feet below them.

A different project in New York City's extensive sewer and water rehabilitation program took Northeast Remsco to JFK International Airport in southern Queens. For this project, which aimed to reinforce a deteriorating sewer in the airport's cargo area, the city learned that trenchless sliplining using HOBAS pipe would be much more economical and far less disruptive to street traffic and airport operations than open cut replacement.

Northeast Remsco is the general contractor for New York City's massive flooding alleviation program throughout southeast Queens. The program is managed by the NYC Department of Design and Construction and funded by the NYC Department of Environmental Protection Bureau of Water and Sewer.

Northwest Pipe's Perfect Pipe System: A Low-Maintenance Solution for Storm Water and Wastewater Conveyance

Perfect Pipe and the Perfect Lined Manhole are two new lined-concrete products manufactured by Northwest Pipe Company. Easy to install and maintain and with a long lifespan, these products promise long-term savings, and their corrosion resistance makes them ideal for conveying storm water or wastewater. In this interview, Heather Christensen, the technical marketing manager of Geneva Pipe and Precast, a Northwest Pipe Company; Scott Montross, the president and CEO of Northwest Pipe; and Mike Wray, the vice president and general manager of Geneva Pipe and Precast, tell Municipal Water Leader about the virtues of the Perfect line of products.



Perfect Pipe and Perfect Lined Manhole feature a joint design that eliminates the need for field welding in most diameters. This saves time and money in the installation process and ensures a quality connection. Perfect Pipe is ideal for open-trench or trenchless installation and performs well in high-water-table environments.

Municipal Water Leader: Please tell us about Perfect Pipe and Perfect Lined Manhole.

Mike Wray: Originally developed in Europe, Perfect Pipe is a gasketed, reinforced concrete pipe lined with high-density polyethylene (HDPE). Similarly, Perfect Lined Manhole is composed of a concrete manhole base and cone lined with fiber-reinforced plastic (FRP) and with HDPE-lined concrete risers. These concrete-HDPE and concrete-FRP composite products are a robust solution for storm water and wastewater conveyance systems. Our Geneva Pipe location in Orem, Utah, produces Perfect Pipe and the Perfect Lined Manhole System.

Scott Montross: Our Perfect Pipe and Perfect Lined Manhole products are corrosion resistant and have high static load capacities, which makes them an ideal solution for conveying storm water or wastewater with corrosive properties in shallow or deep bury and high groundwater conditions.

Mike Wray: The products offer the strength and longevity of rigid concrete pipe and the corrosion-resistant properties of HDPE in one composite system. Many project owners specify a casing pipe to handle loads and a carrier pipe to convey water or wastewater. These functions can now be performed by one pipe in one pass, saving project time and reducing costs. Suitable for use in both open-trench construction and trenchless installation, Perfect Pipe is versatile enough to satisfy diverse project requirements.

Municipal Water Leader: Do you foresee customers using Perfect Pipe throughout an entire system, or only in specific sections?

Mike Wray: Perfect Pipe can be used for complete projects or in specific locations where rough conditions are not conducive to the use of traditional pipe products. We have seen projects consisting of several miles of large-diameter pipe in environments ideal for HDPE-lined concrete. Perfect Pipe is also used in conjunction with alternate pipe materials in select locations along a project alignment where conditions are not suitable for the main system pipeline. Railroad and river crossings and high-traffic areas are examples of locations where Perfect Pipe may be a better solution. In many instances, Perfect Pipe is the right choice for 200–300 feet of the overall pipe requirements.

Heather Christensen: The Perfect Lined Manhole is produced by forming a fiber-reinforced plastic liner to match the invert of a manhole base. The liner is then embedded in a monolithic form using self-consolidating concrete (SCC) to provide an impervious, uniform, and continuous plastic lining for the manhole base and walls. The manhole riser sections are also lined with HDPE, backed with a dense anchor pattern. A pressure-equalizing gasket ensures corrosion resistance across all joints.

Perfect Pipe is produced by forming an HDPE cylinder that is welded together and expanded to match the joint profile. The plastic liner is then placed in the pipe form along with steel reinforcement. The form is filled with SCC, and the coupler is installed once the concrete cures.

Municipal Water Leader: How does Perfect Pipe compare to other PVC and plastic liner options in terms of features and price?

Heather Christensen: Both Perfect Pipe and Perfect Lined Manhole feature a joint design that eliminates the need for field welding for most diameters. This saves time and money in the installation process and ensures a quality connection. The Perfect Pipe internal connector provides an even transition across each joint to promote smooth, laminar flow. The connector also facilitates a gas- and watertight seal by compressing the pipe gaskets against the HDPE liner for a 36-pound-per-square-inch (psi) pressure-resistant connection.

The HDPE liner used in Perfect Pipe has one of the densest anchor patterns available, with over 150 anchors per square foot. Pairing this dense anchor pattern with SCC is another advantage over alternative liners that use dry-cast or conventional wet-cast concrete. The highly flowable nature of SCC allows it to fill all voids between the anchors of the HDPE liner, forming a secure connection between the liner and the concrete. HDPE also offers higher abrasion resistance than PVC alternatives.

The premium quality of Perfect Pipe and Perfect Lined Manhole ensures a long-lasting solution to even the toughest project conditions and minimizes the potential need for system maintenance, repairs, or replacement within the products more-than-100-year design life. Because of this, these products have lower life cycle costs than other liner solutions. Further savings result from the lower installation, operation, and maintenance costs of the system over its lifetime.

Municipal Water Leader: Will field teams need to learn new installation techniques to work with Perfect Pipe or be certified to install it?

Mike Wray: Another advantage of this system is its ease of installation. The interior Perfect Connector provides a tight seal and comes preinstalled on one end of the pipe. The installation crew simply pushes the pipe ends together until the coupler is fully engaged. Contractors familiar with installing concrete pipe will find Perfect Pipe simple to install. The Perfect Lined Manhole is installed like any other precast manhole. No certification is needed, and our field service team is ready to help with any questions.

Municipal Water Leader: Please tell us about testing standards and results.


Heather Christensen: We manufacture and assure the quality of Perfect Pipe and Perfect Lined Manhole to the requirements of the ASTM C76 and ASTM C478 standards. Hydrostatic joint testing has shown that Perfect Pipe can withstand pressures of up to 36 psi. The manhole joint has been hydrostatically tested to 13 psi. The HDPE liner has been tested for pull-out resistance from the concrete per the ASTM D7853 standard and

passed at 30 psi backpressure. In addition, the HDPE liner's individual anchor strength was tested for pullout resistance at 117 pounds per anchor. More product and material testing standards and results, such as those related to chemical and abrasion resistance, are available on our website or from our team.

Municipal Water Leader: How can Perfect Pipe and Perfect Lined Manhole integrate into an existing wastewater system?

Mike Wray: Recently, we produced a lined manhole to replace a decaying manhole in a sewer system in Vineyard City, Utah. The project involved tying new construction into an existing line extending from a pump station. The upstream pump station added turbulence and increased the rate of the microbial-induced corrosion that had caused the previous unlined manhole to decay. This lined manhole includes two 8-inch SDR-35 and 14-inch PVC C900 connections, a high-quality cast-in connector, and an integrated gasket.

Our Geneva team provided support through all phases of this project, including by developing additional drawings, organizing a plant tour and training, and providing onsite installation guidance. When complete, the contractor noted that the installation, which did not require any field welds, was actually easier than installing a traditional unlined manhole. After installation, the structure was vacuum tested per the ASTM 1244 standard to verify that it met the city's standard pressure requirements.

Scott Montross: Perfect Pipe and Perfect Lined Manholes are practical, low-maintenance solutions for renewing the systems of municipalities and water and wastewater agencies. We look forward to working with regional engineers and municipalities as we demonstrate how the Perfect system offers a completely leak-proof, low-maintenance, and cost-effective sewer and storm water management solution. 



Heather Christensen is the technical marketing manager of Geneva Pipe and Precast, a Northwest Pipe Company. Scott Montross is the president and CEO of Northwest Pipe Company. Mike Wray is the vice president and general manager of Geneva Pipe and Precast. For more on Northwest Pipe, contact info@nwpipe.com.

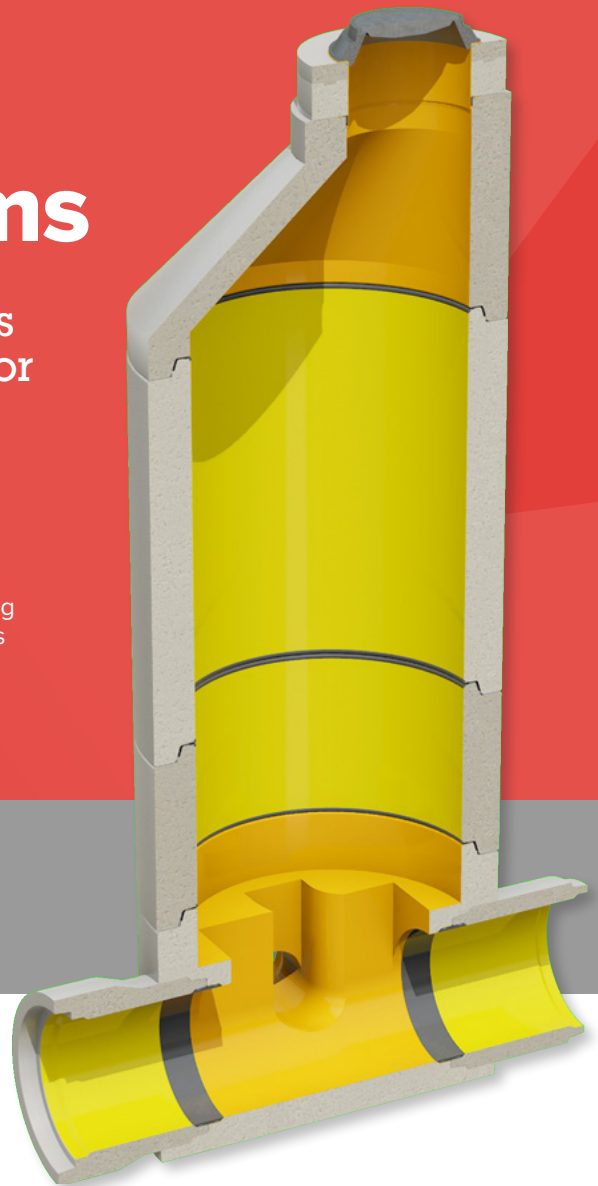


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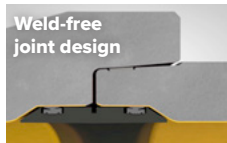
Using an integrated coupler, the joints require no field welds in most sizes and can connect to any existing system. The anchored liner provides 100% coverage, creating a smooth laminar flow with a leak-proof seal.



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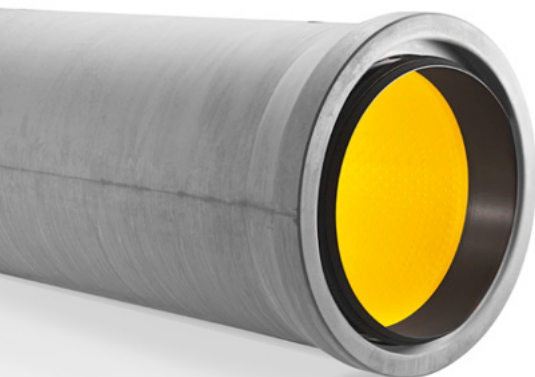
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Dig Deep Research: Helping Municipalities Follow the Money for Infrastructure



Dig Deep helped secure funding for the Big Creek Dam project, Newport, Oregon.

Grants are vital tools for maintaining and upgrading water infrastructure, but they can be hard to locate and difficult to win. The decentralized nature of information on available grants means that municipal water providers often miss opportunities. To solve this problem, Tia Cavender and Fernando Gonzalez of Dig Deep Research set out to provide a comprehensive database of water infrastructure grants from government agencies. In this interview, Ms. Cavender and Mr. Gonzalez tell Municipal Water Leader about municipalities' difficulties in finding and obtaining grants, how Dig Deep is providing a central repository of available grants, and how this information is enabling municipal water managers to maximize their dollars for maintaining and upgrading their infrastructure, even during the pandemic.

Municipal Water Leader: Please tell us about your backgrounds.

Tia Cavender: I am the CEO and founder of Dig Deep Research. We were founded in 2010 to help municipalities and agencies secure capital funding for water infrastructure projects. My background is in research, specifically for funding. I saw that more needed to be done to help engineers and municipalities get smart about the funding landscape and how to navigate it. I wanted them be able to take advantage of the best funding opportunities for their projects.

Fernando Gonzalez: I've been a researcher with Dig Deep for almost a year now. I'm a software engineer and database administrator from Brazil. I have worked in the software development industry for 20 years.

Municipal Water Leader: Tell us about your new service.

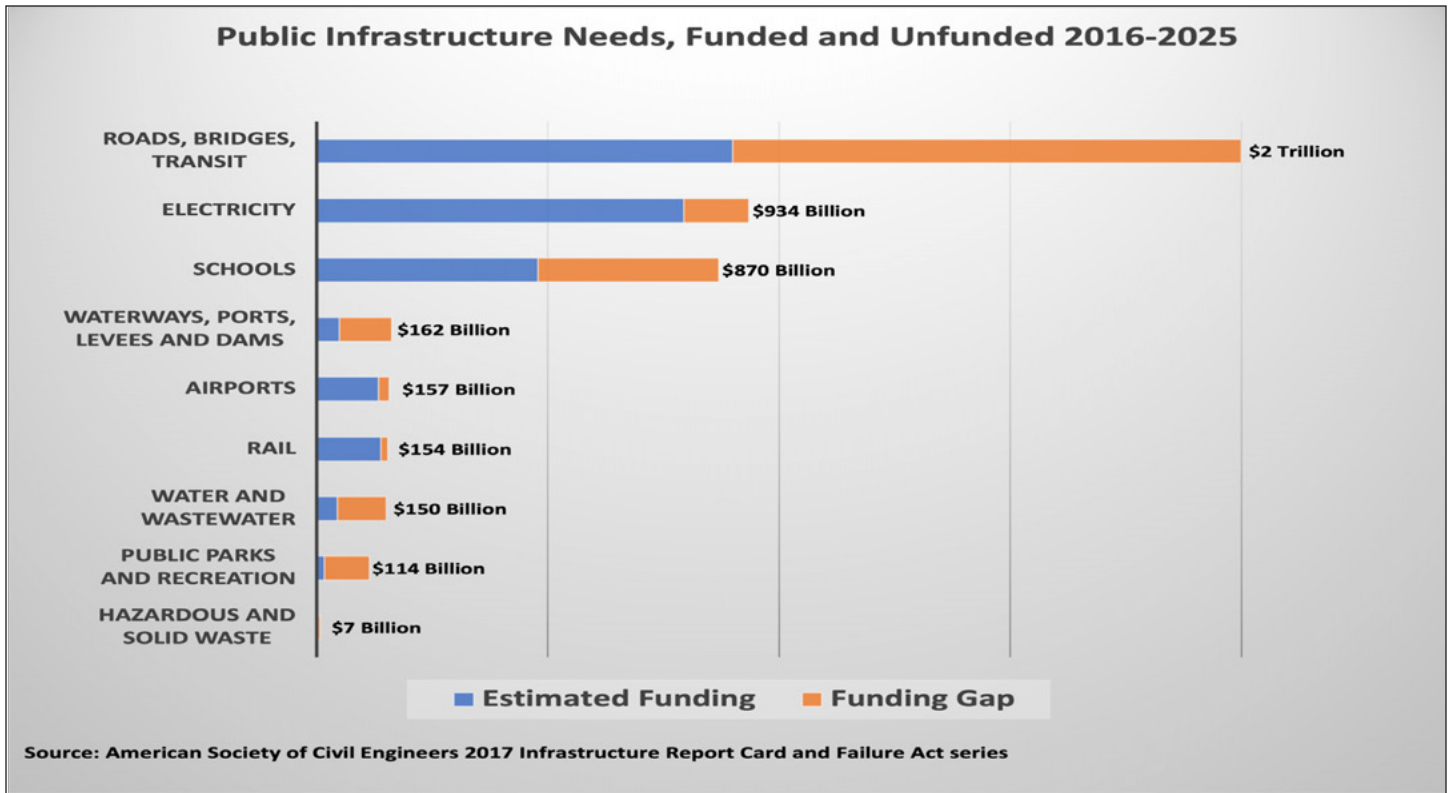
Tia Cavender: Dig Deep's Grant Pursuit Strategy (GPS) provides a roadmap for municipalities to identify which grants they should pursue and in which order. The GPS lays out which grants are the best fit for their projects and which ones they'll be most competitive for and includes in-depth data analysis performed by our team. The result is a set of customized recommendations for pursuing external funds. This way, clients are pursuing exactly the right grants rather than chasing after funding that they might not be competitive enough to win.

Municipal Water Leader: What are the critical funding issues facing local water utility providers today?

Tia Cavender: One of the biggest challenges is a lack of funding. The US Water Alliance and the American Society of Civil Engineers estimate that the federal government needs to invest a total of \$109 billion per year in water infrastructure over the next 20 years to close the water infrastructure gap. What's available in federal and state grants can meet only a fraction of the need. This pits municipalities against one another, making the competition for scarce funds fierce. As a result, only a small proportion of grant applicants are actually successful.

Municipal Water Leader: How can local water utility providers best prepare to pursue water infrastructure funding?

Tia Cavender: First, they should use every opportunity to advocate for more funding at the local, state, and federal levels. For themselves, the best preparation is to plan ahead and start early. They should not wait until a project is shovel ready. They should decide which grants to pursue at least



2 years ahead of when they actually need the money. Also, they need to secure funding for the planning and design phases, not just construction.

Waste of a Valuable Resource

- Annual U.S. water main breaks = 262,800
- Average = 1 break every 2 minutes
- 6 billion gallons of treated water lost every day

Source: Utah State University Buried Structure Laboratory study

Municipal Water Leader: How can providers balance the need to keep water rates low for customers with addressing the ever-increasing cost of repairing aging infrastructure?

Tia Cavender: Really, strategic grants planning is their best ally. It lets municipalities leverage their water revenues and fees as matching funds for external funding. It stretches taxpayer dollars and customer fees as far as possible. The alternative is waiting until they need the money and then having to fund 100 percent of the project with water user fees.

Municipal Water Leader: In what ways has the pandemic affected water infrastructure funding?

Tia Cavender: Communities are really struggling. Many have lost significant revenue. What we're seeing across the United States are cuts of 17–21 percent in capital budgets.

This means critical water infrastructure, wastewater, and storm water projects are being put on hold because there's not enough money. These projects are for repairs and upgrades that are really needed and that affect people's lives. Unfortunately, since more municipalities are pursuing the same small number of grants for more and more projects, the grants landscape is becoming even more competitive.

Municipal Water Leader: How exactly do you help a municipality target funding sources?

Tia Cavender: Dig Deep's GPS pinpoints exactly which grants to pursue so that municipalities aren't spending a lot of time researching, identifying, and chasing after funding that might not pan out. The GPS helps communities plan ahead so that they know exactly which grant applications are coming up next year (and the year after) so that they can budget matching funds, staff time, and any other costs.

Also, our product helps municipalities leverage one funding source with another. For instance, if a local government has \$1 million in matching funds and uses it to successfully pursue a state grant that provides another \$3 million, it can make the local government more competitive for federal funds. It allows the community to optimize the funding potential for water infrastructure projects.

Municipal Water Leader: Do you mainly provide information about government-provided funds?

Tia Cavender: Yes. The majority of what we help municipalities get is government funding, because it has

the largest award amounts. We also help identify cases in which low-interest loans might be a better option for a municipality. For example, securing a low-interest loan at an annual percentage rate (APR) of 1–2.5 percent will provide significant savings above the rates available on the geobond market, which might be 3.5 percent APR. While it may be hard to understand, often a community can save more in interest payments than it would be able to win in grant funds.

Municipal Water Leader: Does Dig Deep focus on specific parts of the country, or are you national?

Tia Cavender: We have the expertise to help clients in any state, especially with federal funding. In 2020 and 2021, we have been specializing in Colorado, Hawaii, and Oregon, and we have particular expertise in all the 17 western states served by the Bureau of Reclamation. The GPS is applicable anywhere.

Municipal Water Leader: Can you quantify how many different sources are out there for potential clients in Colorado or Oregon?

Tia Cavender: Yes. Our proprietary database tracks capital grants for water infrastructure, and we can analyze them by state or many other factors. It’s astonishing how the number of state opportunities varies by state. For instance, in Colorado, there are 58 state and federal grants and 9 low-interest loan programs available for water infrastructure projects. Contrast that with Oregon, where 72 state and federal grants and 13 low-interest loans are available.

Based on aggregate analysis we have done, we can say that, on average, grants to support wastewater projects make up approximately 18 percent of total water infrastructure

funding. That tells us that drinking water and storm water projects have more opportunities for grants than wastewater projects, which have more opportunities for loans.

Municipal Water Leader: Tell us about how you come up with this idea.

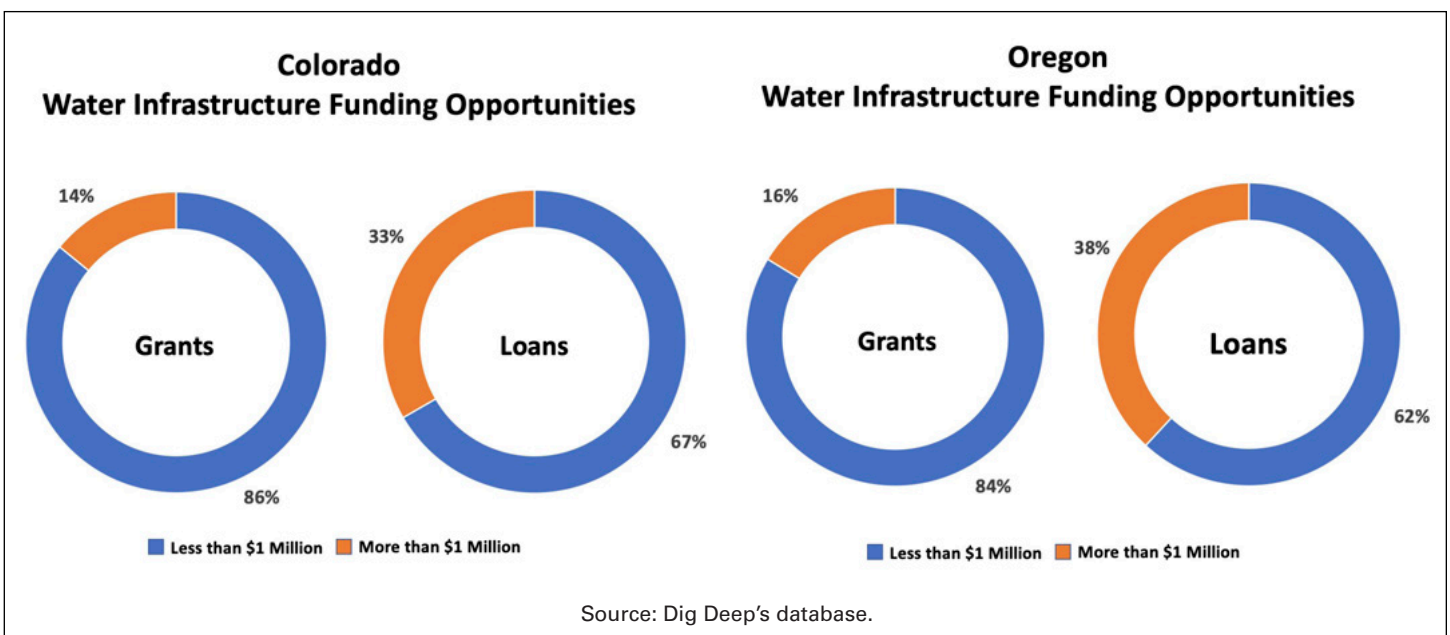
Tia Cavender: I came up with this idea back when I was an end user trying to find grants for brick-and-mortar projects. It was frustrating, because there is an immense gap in this information. There’s a place for federal grants; there are databases of foundations; but there is no central repository to search that is focused on capital infrastructure grants, not even for those in one state. In fact, many states don’t even have one place to look for all their own funding opportunities. You have to go to multiple websites and search through the information for every single department that might offer grants. I saw too many municipalities fail to get grants simply because they didn’t know that they should plan for all that research time.

In response, we designed our own grants database. It has one purpose and one purpose only: finding and tracking grants for capital water infrastructure projects. We started in 2010 and have kept improving it since then. With the

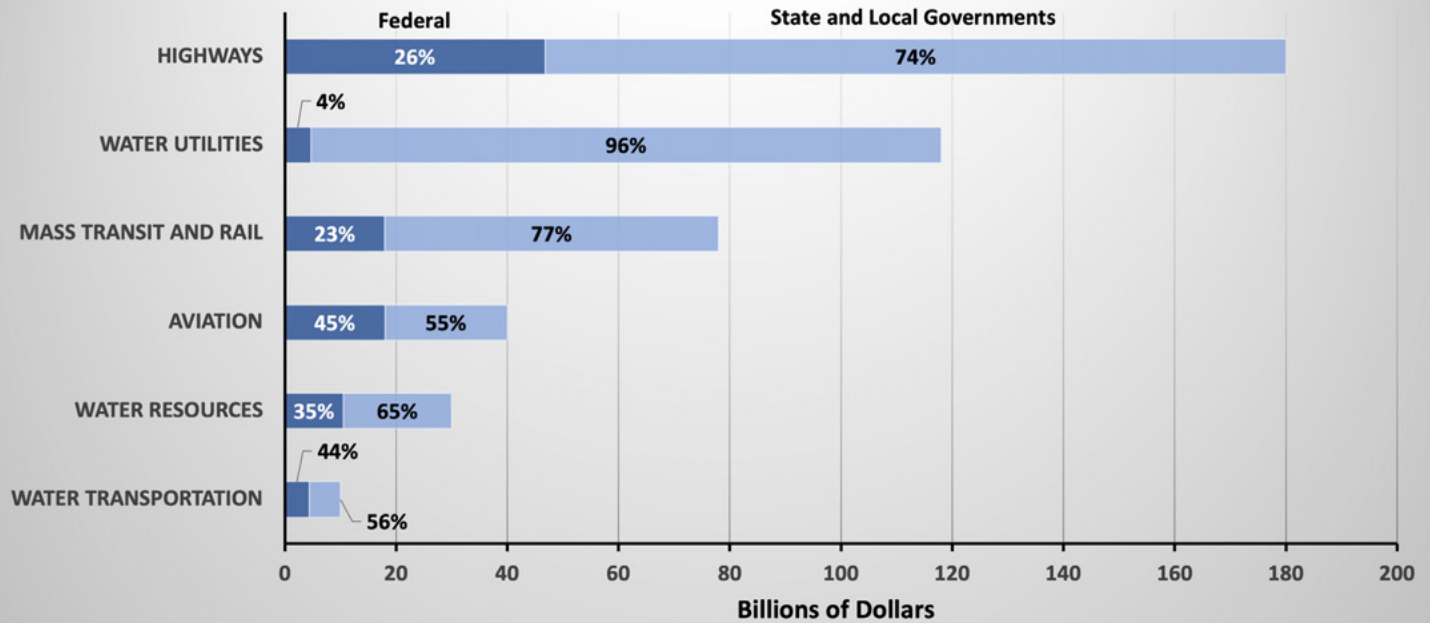
Federal Agencies Most Committed to Water Related Capital Projects

- Bureau of Reclamation
- Federal Emergency Management Agency
- U.S. Department of Agriculture

Source: Dig Deep’s proprietary capital grants database, 2021.



Federal vs. State and Local Governments' Spending on Transportation and Water Infrastructure



Source: Congressional Budget Office, using data from the Office of Management and Budget and the Census Bureau.

According to the Congressional Budget Office, the federal share of total U.S. water and wastewater investment is less than 5 percent—a much lower federal cost share than other vital infrastructure sectors.


addition of Fernando to our team in the past year, we are now able to make these data more accessible to communities in need and to help as many clients as possible.

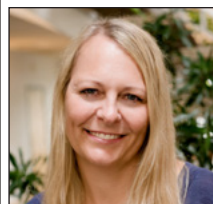
Fernando Gonzalez: As someone who has made a career of finding and analyzing data, I can tell you it's challenging to locate and understand the information about grants that is posted on government websites. So our team has done that work for you. In addition to publicly available data, we add our team's personal knowledge and experience with funding sources to give personalized advice to clients on targeting their funding pursuits.

Municipal Water Leader: How does your database handle the unexpected, like a pandemic or stimulus funding?

Tia Cavender: It has been a lifesaver, actually. We can quickly access information on which funding sources are still available and which have been put on hiatus during the pandemic because the funds for those programs are tight. We also track legislation closely. For example, we were able to determine that the recently authorized stimulus funds that will be distributed soon to local government, counties, and state agencies can be used for water and wastewater infrastructure. Although the funds were created specifically for COVID-19 relief, the federal government recognizes that many of communities put essential infrastructure

projects on hold, so municipalities are able to use stimulus funds to pay for those.

This type of knowledge helps us advise our clients well. For example, it might be smarter for a community to earmark a portion of its stimulus funds for a water infrastructure project. Why? Because that makes for a great success story that the community can share with its federal delegation. Then it can point to how it invested its dollars to help meet a critical community need, rather than just putting the dollars into the general fund. That tells a much more compelling story and will contribute to educating our leaders about how much more federal investment is needed. 



Tia Cavender is the CEO of Dig Deep Research. She can be reached at tia@godigdeep.com.



Fernando Gonzalez is a database and IT manager for Dig Deep Research. He can be reached at fernando@godigdeep.com.



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A woman with dark hair and glasses, wearing a white shirt, a dark vest, and dark pants, is sitting in a brown leather chair. She has her hands behind her head and a relaxed expression. The background is a plain, light-colored wall. Numerous US dollar bills (20 and 50 denominations) are falling around her, some in the air and some on the floor. The overall scene suggests a state of financial abundance and relaxation.

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NÜSTREEM

PRODUCTION CONTROL PLANNER - ADVANCED TECHNOLOGY HYDRO POWER EQUIPMENT

Location: Mansfield Center, CT

Deadline: Open until filled

Salary: \$40,000-\$60,000

RESPONSIBILITIES:

- + Scheduling usage of production materials to ensure optimal production levels
- + Quoting, purchasing, and purchase planning; evaluation of suppliers
- + Managing stockroom and inventory levels; identifying and resolving problems relating to inventory and production schedule
- + Tracking and issuing all materials and ensure appropriate locations
- + Using automated tools, reporting material costs to bookkeeping and finance
- + Assisting with routine production hands-on requirements as needed

REQUIREMENTS:

- + Excellent verbal and written communication, organizational, and time-management skills
- + Strong regard for product quality and safety standards
- + Sharp analytical and problem-solving skills; meticulous and diligent
- + Competency with standard office computer applications
- + Ability to read technical drawings such as machine drawings, product specifications and similar

For more information: Email hr@nustreem.com or info@nustreem.com and visit nustreem.com.

Northwest Pipe Company

EHS LEAN SPECIALIST

Location: St. George, UT

Deadline: Open until filled

RESPONSIBILITIES:

- + This new role will support the team by implementing and championing safety, lean, production, and environmental initiatives.
- + Train and implement solutions to improve productivity, safety activities, and quality.
- + Lead safety program to ensure employee safety and compliance with OSHA standards.
- + Conduct weekly safety meetings with the team.
- + Provide direction for the production team in the event that unsafe acts or conditions are observed.
- + Optimize manufacturing processes to attain maximum

safety, product quality, efficiency, and repeatability.

REQUIREMENTS:

- + Industrial safety or a technical discipline is desired.
- + Minimum 3 years business operations, plant engineering, or manufacturing experience, including 1-2 years of proven success with process improvement programs.
- + Experience delivering OSHA-compliant safety programs in a manufacturing environment.
- + Understanding of welding concepts and liquid industrial coating applications.
- + Certification in OSHA General Industry Outreach Trainer program.
- + Certification in lean manufacturing, Six Sigma, and 5S processes strongly preferred.

For more information: Contact Nick Hidalgo, Talent Acquisition, at nhidalgo@nwpipe.com and visit www.nwpipe.com/careers.

Northwest Pipe Company

QA MANAGER

Location: Parkersburg, WV

Deadline: Open until filled

RESPONSIBILITIES:

- + Plans, coordinates, and directs quality control program for the Parkersburg manufacturing facility.
- + Develops and analyzes statistical data and product specifications to determine present standards and establish proposed quality and reliability expectancy of finished product.
- + Formulates and maintains quality control objectives coordinated with production procedures to maximize product compliance and minimize costs.
- + Directs workers engaged in inspection and testing activities to ensure continuous monitoring of production in progress as well as finished product.

REQUIREMENTS:

- + Ability to work with mathematical concepts such as probability and statistical inference and the fundamentals of plane geometry, solid geometry, and trigonometry.
- + Ability to apply concepts such as fractions, percentages, ratios, and proportions to practical situations.
- + Bachelor's degree from a 4-year college or university and 5 years' related experience or 10 years' equivalent combination of education and experience with a minimum of 5 years' managerial experience.
- + Active AWS CWI certification.

For more information: Contact Nick Hidalgo, Talent Acquisition, at nhidalgo@nwpipe.com and visit www.nwpipe.com/careers.

JOB LISTINGS



PROJECT DESIGNER

Location: Adelanto, CA; Tracy, CA; and Portland, OR (travel 30%)

Deadline: Open until filled

RESPONSIBILITIES:

- + Accurately compile the contract requirements, customer preferences, and manufacturing limitations of a given project into a cohesive design drawing package, bill of materials, and track.net.
- + Ability to work in a fast-paced environment with demonstrated ability to juggle and prioritize multiple, competing tasks and demands and to seek supervisory assistance as appropriate.
- + Active communication with project managers.
- + Support the estimating functions.
- + If it is determined that an applicant is qualified for a PD III position, additional responsibilities will include managing assigned low profile projects from start to finish.

REQUIREMENTS:

- + Ability to read and understand civil and mechanical drawings.
- + Basic understanding of civil engineering and surveying terms and methods.
- + Strength in mathematics through trigonometry.
- + Good computer skills, including spreadsheets and CAD.
- + College degree in engineering, mathematics, or other technical subject or equivalent work experience.
- + Preference for a licensed professional engineer (PE).
- + Experience in the engineering, pipe, steel, construction, or heavy highway industries strongly desired.
- + 1-5 years of experience.

For more information: Contact Nick Hidalgo, Talent Acquisition, at nhidalgo@nwpipe.com and visit www.nwpipe.com/careers.



DIRECTOR OF PROJECT DEVELOPMENT

Location: California, Georgia, remote

Deadline: Open until filled

Salary: \$165,000-\$215,000

RESPONSIBILITIES:

- + Originate and develop project opportunities; lead Emrgy through project development to close deals.
- + Interface directly with landowners, PPA counterparties, government officials, and other project stakeholders.
- + Manage the permitting and interconnection processes and drive stakeholder engagement.
- + Develop new relationships with project partners to increase market reach.
- + Research, conduct self-guided analysis, produce reports, and present information clearly to management.
- + Analyze, understand, and apply statutory incentives, rules, and standards in the development process.
- + Support market discovery and product requirements for new applications and territories.
- + Regular travel to project site locations and stakeholder meetings will be required.

REQUIREMENTS:

- + 7+ years of work experience in renewable energy project development originating, developing, and closing deals.
- + Bachelor's degree in business, math, economics,

- accounting, finance, or engineering (equivalent experience will be considered in lieu of a degree).
- + An understanding of resource (land, water) development or acquisition, the electric utility industry, solar and energy storage technology, and/or energy markets.
- + Direct experience developing/negotiating PPAs and utilizing existing regulatory structures to sell power.
- + Previous experience interacting directly with landowners, and state government officials, and other project stakeholders.
- + Working knowledge of project-based financial models.
- + Top-notch written, verbal, and presentation communication skills.
- + Initiative and a sense of urgency.

For more info: Contact Lee Humphrey, operations manager, at lee@emrgy.com, or visit emrgy.com/careers/.



PPA BUSINESS DEVELOPMENT MANAGER

Location: Georgia, Remote

Deadline: Open until filled

Salary: \$75,000-\$120,000

RESPONSIBILITIES:

- + Originate customers to purchase power from the Emrgy water turbines at rates necessary to deliver value to meet project hurdle rates.
- + Understand and develop strategies to navigate applicable regulatory frameworks to sell power.
- + Work with legal counsel to develop and negotiate PPAs or other off take agreements with customers.
- + Coordinate with the broader commercial team to prioritize targets and create strategy to connect water resources with customers to purchase power.
- + Create customer proposals and presentations demonstrating the benefits, value, and financial payback.
- + Use financial modeling tools to calculate cost of energy, payback period, and project IRR.
- + Meet with clients, as part of the sales team, for sales presentations, and to develop customer offering.
- + Provide timely response to customer requests during the origination and development process.
- + Develop and maintain core knowledge of Emrgy's technology, product offering, and sales strategy.
- + Acquire new customers by winning them over from competitors and discovering new opportunities.

REQUIREMENTS:

- + Bachelor's degree or equivalent experience.
- + 5+ years of energy experience.
- + Demonstrated success originating, negotiating, and reaching agreement on PPAs or other offtake agreements.
- + Be curious and excited to learn about the many disciplines of science and engineering involved in hydropower and renewables.
- + Excellent written and oral communication.
- + Excellent organizational skills and a keen eye for detail.
- + Proficiency with Excel, PowerPoint, and Word.
- + Negotiation, problem-solving, and data analysis/modeling skills.
- + Ability to travel up 50%.

For more info: Contact Lee Humphrey, operations manager, at lee@emrgy.com, or visit emrgy.com/careers/.

Municipal Water Leader

Upcoming Events

- June 7–8** Nebraska Natural Resources Districts, Papio Basin Tour, Omaha, NE
- June 7–11** American Society of Civil Engineers, World Environmental & Water Resources Congress (virtual)
- June 13–16** American Water Works Association, ACE21, San Diego, CA
- June 14–15** National Association of Clean Water Agencies, Strategic Communications: H2O Virtual Event
- June 14–17** Nevada Water Resources Association, Well and Water Week, Reno, NV
- June 16–18** Texas Water Conservation Association, Summer Conference, Horseshoe Bay, TX
- June 19–22** U.S. Conference of Mayors, Annual Meeting (virtual)
- June 22–23** National Ground Water Association, Fate of PFAS: From Groundwater to Tap Water (virtual)
- July 6–8** Irrigation Australia, Conference and Exhibition, Sydney, Australia
- July 6–12** International Commission on Irrigation & Drainage, 24th Congress & 71st International Executive Council Meeting, Sydney, Australia
- July 9–12** National Association of Counties, Annual Conference and Expo, Prince George's County, MD, and virtual
- July 12–13** North Dakota Water Resource Districts Association, Summer Meeting and North Dakota Water Education Foundation Executive Briefing, Dickinson, ND
- July 13–15** North Dakota Water Users Association, Summer Meeting, Grand Forks, ND
- July 14** North Dakota Rural Water Systems Association, Annual Meeting and Summer Leadership Retreat, Medora, ND
- July 14–16** Hydrovision International, Spokane, WA
- July 19–21** American Water Resources Association, Virtual Summer Conference: Connecting Land & Water for Healthy Communities (virtual)
- August 1–4** International Water Association, IWA Membrane Technology Conference & Exhibition for Water and Wastewater Treatment and Reuse, St. Louis, MO
- August 3–5** National Conference of State Legislatures, Legislative Policy Base Camp (virtual)
- August 9–11** 8th International Conference on Flood Management, Iowa City, IA
- August 10–12** National Water Resources Association, Western Water Tour of the Columbia Basin, Portland, OR
- August 24–26** Colorado Water Congress, Summer Conference, Steamboat Springs, CO
- September 13–16** WaterPro Conference, Milwaukee, WI
- September 14** Husker Harvest Days, Grand Island, NE
- September 22–29** National Drilling Association Convention, Charlotte, NC
- September 26–28** Nebraska Natural Resources Districts, Annual Conference, Kearney, NE

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