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April 2021

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on opportunity to deliver  
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to residential  
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SEWER NOZZLES  
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David Garza  
Wastewater Systems Director  
McAllen, Texas

PRODUCT FOCUS:  
HYDROEXCAVATION AND INDUSTRIAL JET/VAC SERVICES





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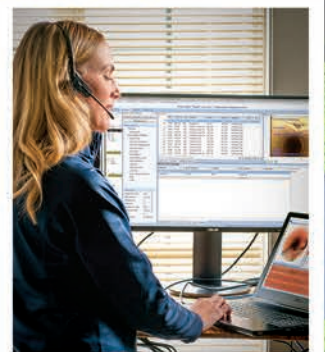




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**ON THE COVER:** David Garza, director of wastewater systems, and the rest of the McAllen Public Utility team are leading the way in delivering reclaimed water to residential customers. (Photography by Verónica G. Cárdenas)



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Luke Laggis

## MAKE QUALITY CONVINCING

Outreach and education are important to promote the value of your services

**C**an you make my sister drink tap water?

The city of Madison (Wisconsin) has good tap water. I've lived there and drank it. I've visited and drank it. Madison has won several best-tasting awards. The whole state of Wisconsin actually has a pretty good reputation for clean drinking water.

My sister, however, refuses to drink it.

She grew up drinking tap water, obviously, as everyone over a certain age did. There wasn't really an option. You either lived in town and had city water or you lived in the country and had a well. That's where water came from. Evian was just a city in Southern France that most of us knew nothing about. No one bought water in 16-ounce increments.

Flash forward to today. She's lived around the country and has now been

### It's the misperception that your water isn't a healthy option.

in Madison about eight years. She's 12 years older than me, active and very health-conscious. Right next to her refrigerator there's a dispenser drawing water from a 2.5-gal-

lon glass jug in its base. Yes, glass is important.

The dispenser itself, a sleek, modern-looking tower of black plastic and chrome, has been replaced multiple times because it functions poorly. It loses its prime almost instantly, and getting a glass of water requires holding the lever down and listening to 30 seconds of obnoxious chugging and spitting before the water finally reaches the spout again. I can get up from the table, fill a glass from the kitchen tap and sit back down in less time than it takes to coax the first drop of water from the dispenser. But it's healthier, right? Pure and unadulterated. (I can hear you all mentally screaming "No!")

Personally, I live in the country and get my water from a private well. It's 175 feet deep and the water it produces tastes so good my seasonal neighbors get their drinking water from my hose bib.

I drink it in great quantities. Yet it wasn't until a few years ago that I convinced my sister that she didn't need to bring a trunkload of bottled water when she came to visit. It wasn't that she thought my water tasted bad. She didn't really even understand where the water came from and assumed it wasn't as pure and healthy as what came out of her glass bottles. I assume she feels the same about city water.

The problem, and it's one you face, isn't that she's looking for the healthiest option. It's the misperception that your water isn't a healthy option. No matter how many awards you win and how much value you deliver, some will think they need to pay \$8 per gallon for good drinking water, with no thought to the vast resources that go into bottling and distributing water commercially. Or the waste it produces.

My sister is smart and successful, but she's bought into the idea that branded bottles can deliver benefits your municipal utility can't. That's a shame, because you do good work and take care of your communities. And it speaks to the importance of community outreach to teach your customers about where their water comes from, how it's treated and the important roles you play in protecting those resources.

As you well know, it's a mission that requires all the support you can build.

Enjoy this month's issue. ♦

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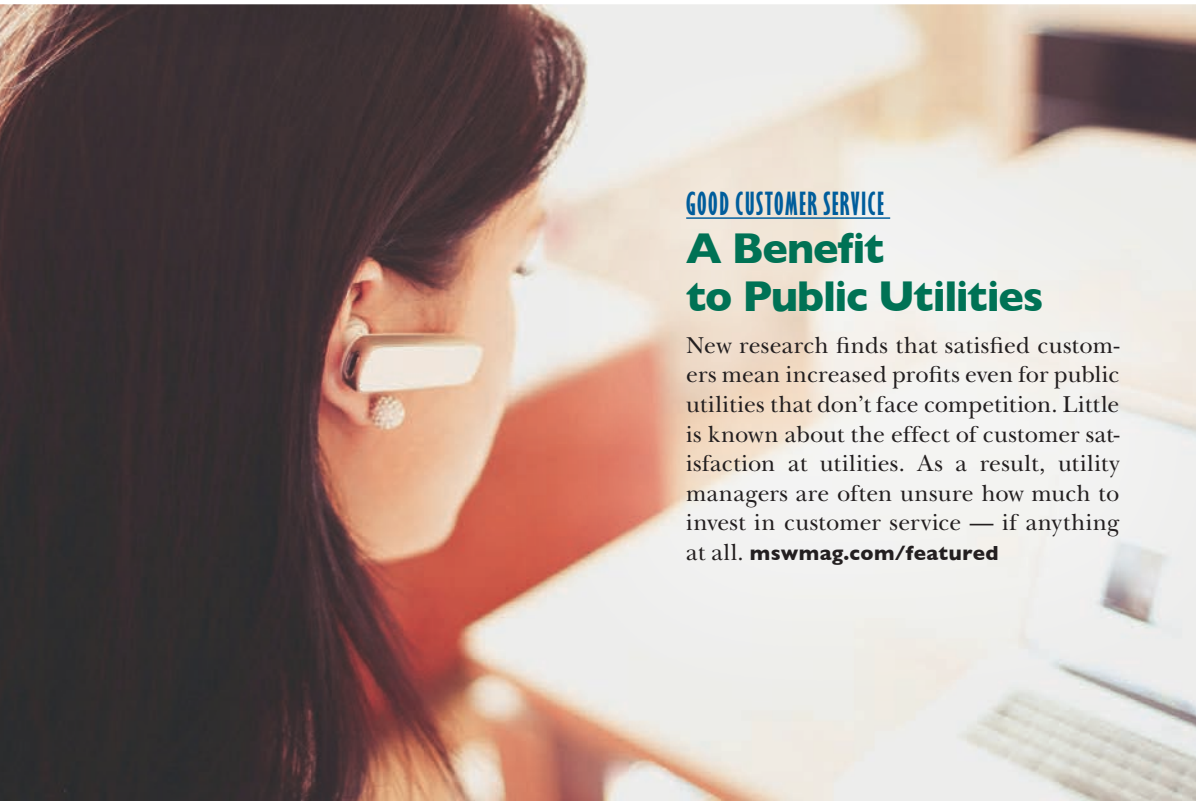
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## GOOD CUSTOMER SERVICE

### **A Benefit to Public Utilities**

New research finds that satisfied customers mean increased profits even for public utilities that don't face competition. Little is known about the effect of customer satisfaction at utilities. As a result, utility managers are often unsure how much to invest in customer service — if anything at all. [mswmag.com/featured](http://mswmag.com/featured)



## MANAGING EMPLOYEES

### **Reshaping Workplace Culture**

There's a lot of emphasis these days on building a great workplace culture. Unfortunately, doing so is easier said than done. But it's not mission impossible, either. The rewards make it a goal worth pursuing, says Heidi Lynne, owner of Heidi Lynne Consulting in Philadelphia. [mswmag.com/featured](http://mswmag.com/featured)

## OVERHEARD ONLINE

“Taking some time to think through the pros and cons of each new purchase will help to ensure you're purchasing purpose-built tools for your goals.”

— **Questions to Ask Before Investing in New Tech**  
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## MULTI-YEAR DROUGHTS

### **Take the Waste Out of Water**

Caught between climate change and multi-year droughts, California communities are tapping groundwater and siphoning surface water at unsustainable rates. One public-private partnership in the Monterey/Salinas region has created a novel water recycling program that could serve as a model for parched communities everywhere.

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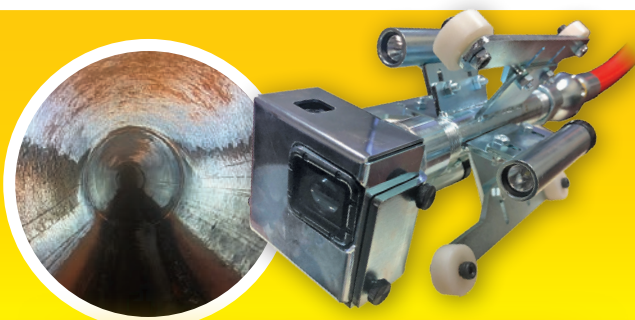
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# EMPHASIS ON INNOVATION

Award-winning Georgia utility develops its own approach to providing value for customers

By Ken Wysocky

**T**he Clayton County Water Authority faces a big daily challenge. It serves one of Georgia's most densely populated counties, but unfortunately sits atop a subcontinental divide, leaving it with limited natural water resources.

Yet during a severe drought in 2007-08, the five reservoirs the utility — based in Morrow, just south of Atlanta — relies on for drinking water never fell below 77% capacity. By comparison, the water level in nearby Lake Lanier, Atlanta's primary source, hit record lows.

The utility sustained its drinking-water supply through an innovative system of constructed wetlands that filters treated effluent, discharged from two wastewater treatment facilities. The gravity-fed system then delivers around 17 million gallons of water per day to three of the reservoirs, where it's stored for eventual reuse as drinking water.

**"We always try to be leaders in the industry — that's always our objective."**

Jeff Jones

"We like to say that it rains every day in Clayton County," says Jeff Jones, the utility's distribution and conveyance director and a 33-year employee.

Only a handful of metropolitan water and wastewater utilities nationwide use constructed wetlands as a final treatment stage for wastewater. And this outside-the-box approach to water sustainability is just one of many ways the utility embraces innovation and proactively tackles challenges, ranging from a comprehensive sewer line replacement program to utilizing technology that makes inspecting and cleaning lines more efficient and cost-effective.



Clayton County Water Authority crew leader Tony Clay (left) and jet truck operator Juan Floyd use a Model 800 HPR jet truck from Sewer Equipment Company of America and a Southland Tool debris catcher to clean a sewer main. (Photography by Kaylinn Gilstrap)

**“Through this ongoing program, we’re investing in our community to ensure we provide quality services to our customers.”**

Suzanne Brown

### Award-winning operations

The utility’s progressive agenda has earned it numerous state awards as well as a national reputation for innovation. For the last 11 years, it’s garnered gold and platinum collections system excellence awards from the Georgia Association of Water Professionals. The utility’s facilities also consistently earn recognition from GAWP. For example, the Northeast Water Reclamation Facility was named the 2020 wastewater plant of the year for advanced treatment in plants with a 6 to 9.9 mgd treatment capacity.

“We always try to be leaders in the industry — that’s always our objective,” Jones says. “We’re also big on innovation, which goes back to our board and management team. Our board has invested millions of dollars into upgrading our system.”

The utility provides water and sewer service to more than 290,000 people living in the roughly 143-square-mile county, which includes six incorporated cities. It treats around 38 mgd, collected through 1,932 miles of wastewater lines. The system also includes 26,343 manholes and 42 lift stations.

The utility owns three wastewater treatment facilities. The biggest one, the W. B. Casey Water Resource Recovery Facility (named after the late William Casey, a 30-year board member), treats about 24 mgd; the aforementioned Northeast facility handles about 10 mgd; and the Shoal Creek Water Reclamation Facility treats roughly 4.4 mgd.

The five raw-water reservoirs have a total capacity of around 4 billion gallons and the utility can produce up to 42 million gallons of potable water per day. The utility operates roughly 1,500 miles of water mains.

### Natural filtration

There are two constructed wetlands: The E.L. Huie Jr. site — named after the late Edward Lynn Huie Jr., the general manager of the utility from 1960 to 1983 — in the center of the county and the Panhandle site on the southern end.

In simplest terms, the wetland sites use soil and a dense array of indigenous aquatic vegetation to filter treated effluent from the Casey and Shoal Creek treatment plants.

The larger of the two, the E.L. Huie Jr. site, was completed in 2010 at a cost of \$30 million. It covers 532 acres and includes 263 “cells” that can treat up to 17.4 mgd from the Casey treatment facility. It discharges treated effluent into the Shamrock and Blalock Reservoirs.

The Panhandle site was completed in 2003 at a cost of \$4 million. It covers 55 acres and features 22 cells that can treat up to 4.4 mgd before it travels into the Shoal Creek Reservoir.

While enhancing the utility’s ability to sustain an adequate water supply, the constructed wetlands also decreased treatment costs. It cost \$4.73 per gallon to build the wetlands facilities, compared to \$10 per gallon for more conventional treatment methods, officials say.



CCWA Conveyance Department rehab crew leader Orlando Kendall sets up a sewer main smoke test using a Hurco Ripcord Power Smoker.

Furthermore, wetlands treatment also allows for more efficient land use. With wetlands, the utility can treat a million gallons of effluent per day on 20 to 25 acres of land, while the prior method — an aeration-spray, land-application system — required 100 to 150 acres to treat the same amount.

The E.L. Huie Jr. site replaced an aging irrigation system built in the 1970s. Treated water from the Casey facility was discharged into four ponds. From there, a system that incorporated about 18,000 sprinklers and more than 250 miles of pipe distributed the water over 2,400 acres of timberland, Jones explains.

“It got to the point where it was very expensive to maintain and repair all those miles of pipes,” he says.

The only maintenance required by the wetlands is vegetation management. And since they use less land and require no electricity, there are additional savings as well.

### Infrastructure improvements

Initiated in 2015, Project PipeFix is one of the utility’s largest capital improvement projects and reflects the utility’s proactive approach to upgrading facilities. When the first three phases are completed in 2022 at a cost of nearly \$54 million, the utility will own more than 12 miles of new 60-inch-diameter outfall pipe, most of which carries wastewater to the Casey treatment facility.

“It’s the aorta of our system,” Jones says.

The project is being performed in seven phases that involve replacing mostly 24- and 48-inch-diameter clay, concrete and ductile-iron pipe, originally installed in the 1950s, with HOBAS Pipe USA fiberglass-reinforced pipe. The corrosion-resistant HOBAS pipe is guaranteed to last 100 years.

A combination of ratepayer revenue and low-interest loans from the Georgia Environmental Finance Authority are funding the project, says Suzanne Brown, the utility’s communications and community relations manager.

The utility also spends around \$2 million annually to replace or rehabilitate problematic sections of smaller pipes identified by sewer evaluation surveys.

### PROFILE:

Clayton County Water Authority, Morrow, Georgia

### SERVICE AREA:

143 square miles in Clayton County

### WATER INFRASTRUCTURE:

About 1,500 miles of water mains

### WASTEWATER INFRASTRUCTURE:

Approximately 1,932 miles of wastewater sewers, 42 lift stations, 26,343 manholes

**ANNUAL WASTEWATER OUTPUT:** about 10 billion gallons

**ANNUAL WATER OUTPUT:** 9.5 billion gallons

**EMPLOYEES:** 385

**WEBSITE:** www.ccwa.us





**“By assigning pipes a risk score, we’re not wasting time and resources cleaning things that already are clean.”**

Jeff Jones



**Members of the CCWA Conveyance Department include (from left) Michael Shelton, Gerald Fuller, Cornell Sims, Jeffrey Pearson, Juan Floyd, Jimmy Crowder, Cortez Peterson, Tony Clay, Jake Lane and Joel Barrio.**

## FOCUSING ON OUTREACH

The Clayton County Water Authority is well-known for innovation. But the utility also strongly emphasizes community outreach, based on the premise that an informed and educated public helps build support for infrastructure-improvement projects — and might even generate interest in water industry careers.

To that end, the utility — based in Morrow, just south of Atlanta — started a CCWA Ambassadors program, in which approximately 160 employees a year attend public events and educate people about what the utility does. That includes explaining things such as how the district reliably produces a sustainable supply of drinking water to how water is tested to ensure it’s safe.

When ambassadors attend events, they’re typically accompanied by the Tap On the Go, a portable water tank filled with ice-cold tap water. It holds 100 gallons of water, or enough for about 500 single servings.

“It’s all voluntary, not mandatory,” Jeff Jones, distribution and conveyance director, says of the Ambassadors program. “We do it because we want to show people that we really do care, even if they can’t get their water anywhere else. We don’t want them to feel like we just provide water and then take their money.”

To help motivate employees to volunteer, the utility holds an annual luncheon and recognizes the employee who compiles the most volunteer hours. The winner gets a gift card as a reward, plus bragging rights, Jones says.

The utility also uses social media such as Facebook to publicize everything from major infrastructure projects to awards the utility wins to operational shutdowns for water and sewer repairs.

“The more you get your customers involved in day-to-day operations, the better,” he says. “Everyone wants information now.”

“Every chance we get, we talk to the public about everything we’re doing. If your utility isn’t involved in communicating with its customers, you’re really missing the boat.”

“Through this ongoing program, we’re investing in our community to ensure we provide quality services to our customers,” Brown says.

### Embracing technology

The utility also uses technology to more efficiently perform routine sewer cleaning, aimed at minimizing sewer overflows.

Years ago, Jones says the utility tried to clean every foot of sewer line in the system, which could take about five years. But now it uses Cityworks asset-management software, developed by Azteca Systems, to detect sewer overflow hot spots.

“Now when we clean lines, we input information into a database and the software assigns a score that indicates how frequently pipes need to be cleaned,” Jones says. “Some pipes might need cleaning every year while others might require cleaning every five or six years or every six months.”

“By assigning pipes a risk score, we’re not wasting time and resources cleaning things that already are clean.”

The new philosophy appears to be working, if the number of sanitary sewer overflows is any indication. Before the new approach was implemented, the utility averaged about 50 SSOs per year, not including those stemming from high rainfalls. But from May (the start of the utility’s fiscal year) through December 2020, there were only 17 non-weather-related SSOs.

### Equipment investments

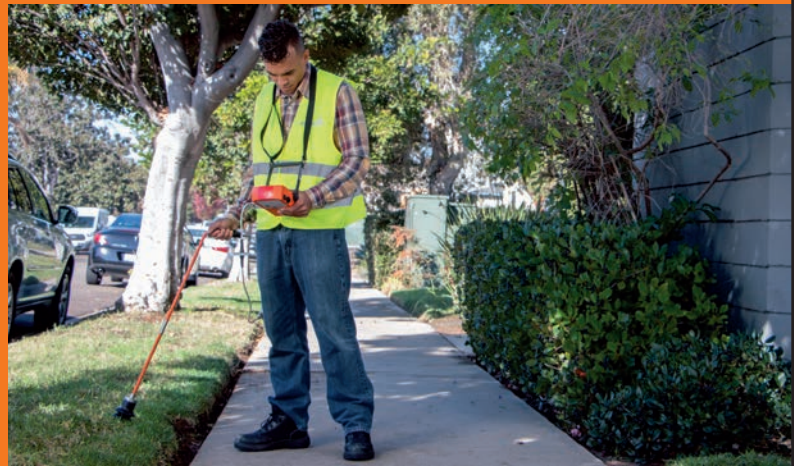
The utility has three two-man crews that clean sewer lines. To do that work, it owns two Vactor 4700 jetting trucks and one 800 Series jetter made by Sewer Equipment. It also owns a Vactor combination truck.

“We also have a troubleshooting crew in a smaller truck that tows a Model 545 trailer jetter made by Sewer Equipment,” Jones says. “We consider them as first responders that break through a stoppage really fast. Then we bring in the bigger equipment afterward.”

Starting in 2017, the utility also has relied on SmartCover technology to help minimize SSOs. Utilized on six manholes in hard-to-access areas with a history of overflows, the technology uses a satellite communications network to provide real-time monitoring of water levels in sections of sanitary sewers.



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**CCWA Conveyance Department crew leader Larry Evans and mechanic Thomas Jones Jr. push down a sleeve to connect a PVC sewer main to a vitrified clay line.**

Utility staff can log in and view a graph of water levels on a laptop computer, tablet or cellphone. When water levels change, the system sends an alert via text or email.

The utility also spends about \$2 million per year on sewer inspections. Three two-person teams use camera trucks outfitted by CUES, and Power Smoker smoke-testing units built by Hurco Technologies. The crews perform manhole inspections using Envirosight Quickview airHD pole cameras.

### **Smart investing**

Looking ahead, Jones says continued development and population growth will present challenges, including the need for additional wastewater capacity at the Casey treatment plant.

"In the long term, we're looking at enlarging the Casey plant," he says. "It just makes more sense to invest money in upgrading the Casey plant because it's in a central location."

Moreover, the utility will remain focused on innovation and embracing technology whenever possible, he adds.

"We'll keep on striving to be the best we can be."



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# NO RETENTION, NO SUCCESSION

Without employee development and retention, succession planning is a moot point

By Ken Wysocky

*Editor's Note: This is the second article in a two-part series about succession planning at the City of Fort Worth Water Utility.*

To contend with a potentially large wave of retirements, the City of Fort Worth Water Utility embarked on a painstaking journey in 2017 to develop a comprehensive succession plan.

Around the same time, utility officials also initiated a parallel effort aimed at employee development. The reasoning was simple: If you don't groom younger employees for advancement, they're more likely to leave. Or perhaps they stay but are never qualified to fill the void left when longtime managers retire. That, in turn, renders succession planning a moot point.

"Succession planning and employee development go hand in hand," says Shane Zondor, the utility's manager of workforce initiatives. "If we're not developing future leaders, then we're mostly just maintaining the status quo."

"From an organizational standpoint, there's nothing worse than having an opening for a mid-management-and-above position and finding you have zero internal candidates."

It's not that the utility didn't develop employees before this initiative. But it was primarily supervisors' responsibility and, as such, wasn't always a priority amid the steady stream of brush fires they face every day.

"The quality of employee development was dependent on the supervisors," Zondor explains. "And unfortunately, the fact of the matter is that they're often overwhelmed by just their daily tasks."

### Sharper focus on development

So in 2017, in an effort to standardize employee development efforts across the utility, officials created a formal organizational development section within its management services division. In August 2020, it subdivided the section even further, creating a workforce initiatives section.

"We found we needed more specialized and more focused efforts," he notes.

The organizational development section now focuses more on bigger-picture strategies that ensure the utility is meeting the needs of consumers as well as industry standards. At the same time, the workforce initiatives section homes in on employee development, which includes training, mentorships, succession planning and community-outreach programs that expose young students to water and wastewater careers.

**"The quality of employee development was dependent on the supervisors."**

Shane Zondor

"Employee empowerment is one of the biggest pieces of our initiatives," Zondor points out. "You can force development on employees and hope they take advantage of it. Or you can empower them to take on their own development — let them decide whether or not they want to advance."

"Oftentimes organizations force-feed development," he continues. "But we believe in connecting employees with opportunities and letting them take advantage if they want to, and use coaching and mentorships as catalysts to buy into that development."

### Mapping out proficiencies

A central component of the utility's succession planning is so-called "job maps." They essentially are very detailed job descriptions for higher-level jobs, including daily, weekly and monthly "milestone" tasks performed on a routine basis. The maps help officials determine what skills are needed to fill those positions.

Workforce-initiatives officials decided to also use the job-mapping concept as a skills-assessment tool. Comparing an employee's proficiencies and deficiencies to a job map of their position clearly reveals training needs. Furthermore, those skills can be compared to a job map for a next-level position to determine what training is needed for career advancement, Zondor explains.

"It mirrors exactly what we're doing in succession planning," he says.

After a map is developed, both the employee and his or her supervisor are interviewed. "We interview both because it's natural for people to either over-inflate or underrepresent themselves," Zondor says. "It's always a good idea to see both sides of the coin, because the truth often resides in the middle."

After the interviews, a meeting with both parties is held to discuss areas where large differences exist between the employee and supervisor assessments. Then a training specialist steps in and works with the supervisor to create a training plan to bridge any skill gaps.

### New onboarding process

The job maps also play a role in the utility's revised onboarding process for new employees. The maps benefit the recruiting process by providing a detailed description of skills needed for positions. Moreover, they also

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enable section officials to develop tailored training plans for new employees, given that even the best job candidates don't possess every required skill.

"The job maps identify where the rubber meets the road," Zondor says. "If you're going to take the time to do them, you might as well get the most benefit from them."

The onboarding process now also includes a half-day program that fully immerses new employees in the history and culture of the utility. Providing this kind of context is an important part of employee-retention efforts, he says.

"There's something to be said for understanding where an organization comes from," Zondor explains. "Providing water seems pretty basic to the average citizen, but for those who provide it, it's a big process and a large responsibility."

"As such, exposing them to our organization's culture and its amazing accomplishments during the last 100 years unites them with a single purpose."

## In-house licensing program

To further enhance its career-development efforts, the utility also provides in-house training for employees to earn water and wastewater operators' licenses. The utility used to rely on external training.

"We wanted to be more self-sustaining when it came to the licensing process," Zondor says. "We don't have to rely on other organizations' schedules and we can standardize the training to fit our operations. When you use your own utility, it solidifies the training and makes it more clear and digestible for our employees."

To better fill the pipeline of prospective employees — particularly in hard-to-fill positions, such as instrumentation and electrical technicians — the utility also started participating in the national Pathways to Technology (P-Tech) program in 2019.

The program helps steer high school students to science, technology, engineering and math careers right out of school. In this case, the utility partners with Tarrant County College and the Fort Worth Independent School District's Early Collegiate High School to develop a curriculum for qualifying students to become instrumentation and electrical technicians.

"We work with them (the schools) to provide work-based learning experiences and internships," Zondor says. "Students who go through the program can graduate from high school with a professional certification and get a job here."

Going forward, the utility — like so many others — faces a daunting obstacle with about 285 of its roughly 930 employees, or about 31%, eligible for retirement within the next five years. But the utility is fortifying its position and is prepared to meet the challenge.

"The foundation we lay down today will determine our utility's level of effectiveness tomorrow," Zondor says. "Understanding the trends, needs and future of your workforce requires concentrated effort and time."

**"The foundation we lay down today will determine our utility's level of effectiveness tomorrow."**

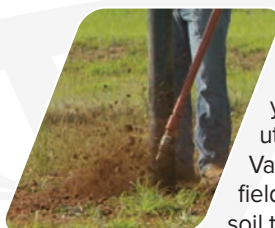
Shane Zondor

"Bridging skill gaps, retooling the workforce and creating a strong bench for succession takes even longer. That said, there is no better time than today to start addressing future workforce needs." ♦



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## FOCUS: PROJECT

# A HUGE RELIEF

Proactive planning helps Texas water district avoid conflict in the construction of a new interceptor

By Grace Sober

The North Texas Municipal Water District installed two odor control systems from ECS Environmental Solutions during construction of the large-diameter Beck Branch Parallel Relief Interceptor in Plano, Texas.

**B**uilding a sewer line in an urban area with minimal disruption to residents and businesses is a difficult task. Doing it in a tight corridor with multiple conflicting utilities, high-profile intersections and active railroad crossings is even more challenging.

The North Texas Municipal Water District faced all those obstacles when it decided to construct a parallel relief interceptor in Plano, Texas, but careful planning and execution have kept the project moving smoothly.

Over the last decade, Plano and its neighboring city, Richardson, have grown rapidly. The cities offer outstanding business and employment opportunities, schools, libraries, civic organizations and other resources that attract thousands of people every year. High-profile corporations such as State Farm, Frito-Lay, Toyota, Pizza Hut and NTT Data have established offices in the region, spawning residential and mixed-use development. This surge in population has increased current and future demands on the region's sewer system. To meet these

demands, forward-thinking officials at NTMWD identified a series of wastewater projects. The relief interceptor project was one of them.

"An evaluation we did in 2015 showed that we needed additional capacity in the existing Beck Branch Interceptor to meet current peak and projected flows," says Bret Ellis, P.E., engineering manager at NTMWD.

"Our existing 54-inch gravity interceptor was about to reach full capacity, so building a relief interceptor that would supplement current capacity was critical."

**"The idea was to find a solution that maximized the previous investment in existing assets and achieved capacity goals at the same time."**

Justin Reeves

### Planning considerations

The NTMWD was established in 1951 when 10 member cities decided to collaborate to provide water during one of the most devastating droughts in state history. In 1956, NTMWD provided water to 32,000 people. Today, the district serves 13 member cities and provides vital water, wastewater and solid waste management services to more than 1 million people. The district operates a wastewater collections system that consists of approximately 226 miles of large-diameter wastewater pipelines, 23 lift stations and various support



**“We estimate it saved more than a million dollars compared to traditional methods that rely on bypass pumping.”**

**Justin Reeves**

facilities. This regional partnership has reduced costs, facilitated access to these services for communities large and small, and streamlined service delivery.

Following its 2015 evaluation, the district contracted Lockwood, Andrews & Newnam, a national planning, engineering and program management firm, to begin the preliminary engineering phase of the relief interceptor. The firm performed a hydraulic study and evaluated several alternatives to determine the most viable option. For each alternative, the firm considered a range of factors, including system shutdowns, capital costs, phasing, annual operations and maintenance, right-of-way restrictions, constructability and impacts to the city of Plano. The firm also conducted an exhaustive route study to select the project corridor.

“This whole corridor is a complex system of pipelines,” says Justin Reeves, P.E., LAN’s vice president. “Several lift stations and force mains pump flows into the existing interceptor and, ultimately, to the Rowlett Creek Wastewater Treatment Plant. In addition, there is a parallel force main that carries flows directly to the treatment plant. We looked at numerous options such as replacing the existing interceptor with a larger pipeline, changing interceptors to force mains, and changing force mains to interceptors. The idea was to find a solution that maximized the previous investment in existing assets and achieved capacity goals at the same time.”

During the planning phase, engineers evaluated pipe diameters and interconnections, depth of the pipe, construction method, utility conflicts, traffic and business impacts, and easement acquisition costs. “We also coordinated with member cities, especially the city of Plano, to get their input because the alignments we were evaluating went under Plano Parkway, one of the city’s major roads,” says Lauren Kubin, P.E., the district’s wastewater conveyance engineer.

Following the hydraulic analysis and route study, the district determined that a parallel relief interceptor segment, now known as the Beck Branch Parallel Interceptor, was the best option. The district also decided to install the interceptor within the Plano Parkway right-of-way as it met the project objectives with the fewest negative impacts. Furthermore, the district decided to break the \$26.7 million interceptor project into two phases.

The \$5.7 million first phase, which was substantially completed in March 2021, addresses the district’s immediate needs and provides an additional capacity of approximately 57 mgd. Traversing along Los Rios Boulevard from the Rowlett Creek Wastewater Treatment Plant to Plano Parkway, this phase includes a 3/4-mile segment consisting of 868 linear feet of 42-inch fiber-reinforced plastic gravity sewer, 2,900 linear feet of 54-inch FRP gravity sewer, two active odor control systems, a live flow tie-in and a connection to the treatment plant. The segment runs parallel to the existing gravity interceptor.

The \$21 million second phase, currently under construction, consists of approximately 18,000 linear feet of 42-inch

**The majority of the first phase of the interceptor project was completed with a 76-inch electric tunnel boring machine. The second phase of the project includes 15 separate boring segments.**



PHOTO CREDIT: BELT CONSTRUCTION







PHOTO CREDIT: LAN

**The interceptor was installed at depths of 40 to 50 feet in certain areas, with a 25-foot-diameter access shaft to minimize the footprint.**

FRP pipe from the intersection of Los Rios Boulevard and East Plano Parkway to a connection point near Plano Spring Creek Lift Station No. 2. This segment, which has a capacity of 52 mgd, will address the district's long-term needs. The segment parallels a major transportation corridor.

### Complex challenges

The final engineering phase began in May 2018. Belt Construction, the Phase 1 contractor, started construction in February 2019. The complex nature of the project created numerous design and construction challenges. Chief among them was navigating around multiple utilities in the congested urban corridor. In addition to the existing sewer lines, the corridor also has waterlines, gas lines, power transmission lines and fiber-optic cables.

"Initially, we looked at installing the interceptor using open-cut methods," Reeves says. "We ran multiple analyses to see if the interceptor could stay within a limited easement while still preventing parallel pipe trench impacts. We were looking at installation depths of 40 to 50 feet in some areas. We wanted to minimize impacts to traffic and businesses in the area, so we evaluated the cost differences between open-cut and tunneling. After considering these factors, we recommended tunneling for most of the project."



PHOTO CREDIT: BELT CONSTRUCTION

**A creative live-flow connection helped the district avoid bypass pumping.**

The team made an extra effort to put correct requirements in the contracting documents to minimize traffic impacts. "Building on previous experiences in the area, we scheduled and sequenced the project in such a way that we would impact only certain areas and not shut down the street at any given time," Ellis says.

In September 2019, Circle H Contractors began tunneling at Capital One Bank, heading south toward Plano Parkway. For the tunneling, Circle H utilized an electric tunnel boring machine, crane, excavator and wheel loader. Once the boring machine was calibrated, digging began and operated 24 hours per day for maximum efficiency.

"The most difficult aspects included the depth of the tunnels, limited space to access shafts, specifically in the parking lot of Capital One Bank located at 14th Street and Los Rios Boulevard, and the considerable amount of construction in the near vicinity," says Trey Linzay, project manager at Belt Construction.

To navigate these issues, Belt Construction worked closely with Circle H and the inspection team to ensure the tunnels were bored quickly and efficiently while adhering to rigid safety standards. In addition, Circle H installed a circular 25-foot-diameter access shaft to minimize the footprint, and the excavation was barricaded properly to avoid interfering with the day-to-day business of Capital One Bank and ensure the safety of its patrons. Regular coordination meetings were held between the projects' supervisors, as well as clear and frequent communication among all those involved. The tunnel, which encompassed 1,630 feet, was completed in early March 2020 at the intersection of Los Rios Boulevard and East Plano Parkway.

The district also wanted to avoid bypass pumping during the construction of a new overflow connection to the existing interceptor system. Installing bypass piping that could handle an average daily flow of approximately 55 mgd was not only expensive but would require lane closures at Plano Parkway, adverse impacts to businesses, and a risk for odor emissions. To solve this challenge, the project team designed a creative live-flow connection to the existing interceptor.

"We designed an overflow weir that essentially served as a new manhole over the existing interceptor," Reeves says. "This design allowed the contrac-



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tor to cut a hole on top of the existing interceptor in such a way that once flows reached a certain level, it would flow out of the pipe into the new parallel interceptor. We worked closely with district operations to understand flow while developing the design. We estimate it saved more than a million dollars compared to traditional methods that rely on bypass pumping."

With the interceptor terminating at the treatment plant, minimizing surcharges was also a concern due to the immediately upstream hydraulic grade line. To prevent surcharges, the project team designed the end of the line with a steeper slope to deter solids deposition in the pipe. The team also installed two active odor control systems, one at the parallel interceptor interconnect location and another at the treatment plant's junction box.

"When you have a submerged discharge, the odor has nowhere to go except back up the system," Kubin says. "Normally, we install passive odor cans on our interceptor systems. But for this project, we chose to install active control systems that would pull the gases out of the sewer line and filter it. The district is very odor-conscious, and we want to be good neighbors to our member cities."

The interceptor also passes through an active railroad crossing owned by the Dallas Area Rapid Transit and operated by the Kansas City Southern Railway. Typically, railroads require a steel casing for utilities installed under their crossings to prevent settlement. During design, the project team coordinated with DART and Kansas City Southern to obtain an exception to use tunnel liner plate instead. This coordination continued during the construction process when flaggers were used for worker safety.

### Next phase

Despite these challenges, NTMWD reached substantial completion of the first phase of the project on time and under budget. The first segment, which went into service in March 2021, will provide the district the ability

**"We haven't received any public or traffic complaints to date.  
That's one key indicator of success in my mind."**

**Andrew Stevens**

to meet the corridor's immediate peak flow demands. Construction is in full swing on the second phase of the project, says Andrew Stevens, P.E., wastewater conveyance program manager at NTMWD.

"There are 15 tunnels to construct in the second phase," Stevens says. "The pipeline will be constructed within the median of Plano Parkway, across a DART rail line and Union Pacific Railroad, and under road intersections and several critical utilities. The contractor has multiple crews working concurrently and our inspectors are on site full time."

Phase 2 is scheduled for completion in March 2022. Stevens credits the team's planning efforts with the project's success to this point.

"We have established and maintained frequent collaboration and communications with project stakeholders on our progress," Stevens says. "We haven't received any public or traffic complaints to date. That's one key indicator of success in my mind."

Concurrently, work is underway on another gravity interceptor that will facilitate the decommissioning of an existing lift station and transfer flows to the Plano Spring Creek Lift Station No. 2, which discharges into Phase 2 of the parallel relief interceptor project. The district is also expanding Plano Spring Creek Lift Station No. 2 to accommodate the flows. Together, these projects will meet the corridor's capacity needs until 2035. ♦

### About the Author

*Grace Sober, P.E., is a project manager at Lockwood, Andrews & Newnam, a national planning, engineering and program management firm. She can be reached at [GDSober@lan-inc.com](mailto:GDSober@lan-inc.com).*



# ADVOCACY BRINGS RESULTS

NASSCO's work has spelled success for the trenchless rehabilitation industry

By Sheila Joy

Many people are aware of the first half of NASSCO's mission statement: "To set standards for the assessment, maintenance and rehabilitation of underground infrastructure ... ." Less familiar, perhaps, is the conclusion: "... and to ensure the continued acceptance and growth of trenchless technologies."

Through the years, members and nonmembers alike have turned to NASSCO to not only promote, but to defend various trenchless technologies from industry threats.

In the 1990s, NASSCO worked closely with the U.S. EPA to prevent a proposed ban of acrylamide grout. Fully supported by contractor, supplier and professional members of NASSCO, the issue was finally resolved in 2002 with a rejection of the proposed ban.

In 2003, a CCTV manufacturer attempted to get government regulations revised for explosion-proof cameras in a sanitary sewer environment. The proposed revisions would have cost contractors up to a hundred million dollars. Thanks to the unification and determination of NASSCO members to do what is best for our workers and communities, the issue was successfully resolved.

In the late 2000s, proposed changes to OSHA confined-space entry regulations were made. If reclassified to new construction, routine maintenance jobs would have meant additional job site requirements, costing the industry roughly \$7.5 million per year. Through NASSCO's Health and Safety Committee, in 2008 NASSCO successfully testified at congressional hearings to

request that OSHA classify rehabilitation work as maintenance.

In 2011, The National Toxicology Program of Health and Human Services listed styrene as a potential carcinogen. NASSCO members worked closely with the styrene industry to request a government review of the science behind the findings. Ultimately a congressional committee authorized funding of the study by the National Academy of Science.

Between 2018 and 2020, NASSCO turned to institutions of higher learning to identify potential safety risks, if any, from the emission of styrenated resin used in the steam cure of CIPP. The full reports, safety recommendations and updated specification guidelines are available on [nassco.org](http://nassco.org).

In 2020, after nearly two years of advocating for the removal of language in the Uniform Plumbing Code that banned the use of cured-in-place pipe and other trenchless technologies to replace cast iron soil pipes and fittings, NASSCO received a decision from the IAMPO board of directors that reversed this ban.

Trenchless technologies for the assessment, maintenance and rehabilitation of underground infrastructure are critical to repairing our aging infrastructure without the need to dig up and dispose of old pipe. Trenchless rehabilitation can be more economical, less disruptive to property owners, and deliver long-lasting solutions. If you know of a trenchless technology that is being threatened — or needs awareness to ensure its continued acceptance and growth — please email me at [director@nassco.org](mailto:director@nassco.org). ♦

**NASSCO (National Association of Sewer Service Companies)** is

located at 2470 Longstone Lane, Suite M, Marriottsville, MD 21104; 410-442-7473; [www.nassco.org](http://www.nassco.org)

Sheila Joy is executive director of NASSCO. She can be reached at [director@nassco.org](mailto:director@nassco.org).

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# 2021 SEWER NOZZLES DIRECTORY


## MANUFACTURERS



MANUFACTURER	NAME OF NOZZLE	APPLICATION	PIPE DIAMETER	FLOW RATE (GPM)	MAX OPERATING PRESSURE (PSI)	WEIGHT	NUMBER OF AVAILABLE FRONT JETS	NUMBER OF AVAILABLE REAR JETS	HOSE SIZE/ CONNECTING THREAD
<b>ENVIROSIGHT</b> <b>Envirosight</b> 111 Canfield Ave., Unit B3 Randolph, NJ 07869 866-936-8476 973-252-6700 (f) 973-252-1176 www.envirosight.com mail@envirosight.com <b>See ad page 2</b>	Jetscan	Mainline Sewers	6" to 24"		160	2.6 lb		2-6	
	Bulldog Antiblast	Anti-Toilet Blowing in Residentials	8" - 24"	55 to 80	1,500 - 1,800	17 lbs.	6		1" - 1 1/4"
	Bulldog	Cleaning grease, roots, deposits, etc.	8" - 24"	50 to 120	2,000 - 2,900	17 lbs.	7	6	1" - 1 1/4"
	Rotodril	Cleaning blocked pipes, frozen pipes, heavy debris	2" - 14"	13 to 80	2,000 - 4,000	0.25 lbs. to 1.5 lbs.	1	6	1/2" - 1"
	Grenade	Flushing heavy debris	6" - 12"	40 to 80	2,000 - 3,600	11 lbs.		10	1"
	Chisel 60.100L	Penetrating clogs, root masses, frozen pipes	6" - 16"	50 to 80	2,000 - 3,600	6 lbs.	4	6	1"
	10.125TR Chain Scraper	Root removal, hard grease, hard deposits	5" - 12"	14 to 80	2,000 - 3,600	6 lbs.		6	1"
	10.300R Rotating Chain Scraper	Removal of root masses, clogs, hard deposits	8" - 20"	50 to 80	2,000 - 3,600	78 lbs.		6	1"
	10.400R Rotating Chain Scraper	Removal of root masses, clogs, hard deposits	16" - 32"	80 to 120	2,000 - 3,600	105 lbs.		6	1"
	14.200 Milling Cutter	Removal of concrete & mineral deposits, dropped liners	8"	80 to 120	2,000 - 2,200	70 lbs.		6	1" - 1 1/4"
<b>General</b> <b>PIPE CLEANERS</b> <b>General Pipe Cleaners</b> 1101 Thompson Ave. McKees Rocks, PA 15136 800-245-6200 412-771-6300 www.drainbrain.com info@drainbrain.com	Bulldozer 50.100G	Flushing debris from large pipe	16" - 40"	40 to 80	2,000 - 3,600	57 lbs.	1	8	1"
	HydroX	Hydroexcavation	Surface Cleaning	8.4	5,000	0.58 lbs.	1		3/8", 1/2"
	Chisel Point Nozzle	Penetrating, breaking up debris	4" - 10"	12	2,500	4 oz.	4	6	1/2"
	Traction Nozzle	Sand and mud removal	4" - 10"	12	2,500	8 oz.	1	6	1/2"
	Cleaning Nozzle	Maintenance Cleaning	4" - 10"	12	2,500	12 oz.		8	1/2"
	Spring Leader Nozzle	Guiding hose around tight bends	2" - 10"	1.5 to 8	1,500 - 3,000	4 oz.		3 to 4	1/8" - 1/4" - 3/8"
	Downhead Nozzle	Dropping down T's	2" - 4"	1.5 to 4	1,500 - 3,000	2 oz.		3	1/8"
	Chain Saw Nozzle	Cutting roots	4" - 10"	4 to 12	2,500 - 3,000	2 lbs.		2 to 4	3/8" and 1/2"
<b>HYDRA-FLEX</b> <b>FLUID INNOVATION</b> <b>Hydra-Flex, Inc.</b> 8401 Eagle Creek Pkwy. Savage, MN 55378 952-808-3640 www.hydrflexinc.com sales@hydrflexinc.com	Rotary Nozzle	Scour pipe walls clean	2" - 10"	1.5 to 12	1,500 - 3,000	2 oz. to 10 oz.		2 to 4	1/8" - 1/4" - 3/8" - 1/2"
	Marskman	Cutting through and removing debris at distances of 20-30 ft. Could be used in location like lift stations or manholes. To be used with a gun+Lance. Can up adapted up to a 1" inlet			2,500	1.93 lbs.	1		
	Reaper 3/8"	Cutting through and removing blockages and flushing debris in sewer lines.	3" - 6"		4,000		1	4	
<b>Root Rat</b> PO Box 740 Bolivar, OH 44612 800-288-7873 330-874-4300 (f) 330-874-4448 www.rootrat.net kelly@chempure.com <b>See ad page 44</b>	Reaper 1/2"	Cutting through and removing blockages and flushing debris in sewer lines.	4" - 8"		4,000	1.54 Lbs.	1	4	
	Root Rat	Root & Encrustations	2" - 30"	4 to 150		0.5 lbs. - 5 lbs.			
<b>Sewer Equipment</b> 1590 Dutch Rd. Dixon, IL 61021 888-477-7611 (f) 815-284-0453 www.sewerequipment.com sales@sewerequipment.com <b>See ad page 7</b>	Mini Missile	General Cleaning	3"-12"	18 to 80	0 - 4,000	5 lbs.	1	3	1/2", 3/4", 1"
	Weisel	General Cleaning	3"-15"	18 to 80	0 - 4,000	2 lbs.		8	1/2" - 3/4" - 1"
	Dual Degree	General Cleaning	4" -18"	18 to 80	0 - 4,000	5 lbs.		8	1/2" - 3/4" - 1"
	Tri-Star	Penetrating	3" -24"	18 to 80	0 - 4,000	3 lbs.	4	6	1/2" - 3/4" - 1"
	Avanti	Penetration - Rotational	3" -24"	18 to 80	0 - 4,000	4 lbs.		6	1/2" - 3/4" - 1"
	RDS	Heavy Cleaning	3" -28"	18 to 150	0 - 4,000	4 lbs.		6	1/2" - 3/4" - 1" - 1 1/4"
	Mega 5 & 6	Flushing	12" - 120"	18 to 80	0 - 4,000	35 lbs.		11	1/2" - 3/4" - 1" - 1 1/4"
	HW	Flushing	4" -18"	18 to 55	0 - 4,000	3 lbs.		8	1/2" - 3/4" - 1"
	Combi	Cutting	4" - 24"	18 to 80	0 - 4,000	6 lbs.	3	6	1/2" - 3/4" - 1"
	Patriot 1	Root & Grease Cutting	4" - 24"	40 to 80	0 - 3,000	25 lbs.		5	3/4" - 1"



# 2021 SEWER NOZZLES DIRECTORY \_\_\_\_\_ MANUFACTURERS

MANUFACTURER	NAME OF NOZZLE	APPLICATION	PIPE DIAMETER	FLOW RATE (GPM)	MAX OPERATING PRESSURE (PSI)	WEIGHT	NUMBER OF AVAILABLE FRONT JETS	NUMBER OF AVAILABLE REAR JETS	HOSE SIZE/ CONNECTING THREAD
 <b>SewerProShop LLC</b> 1061 Triad Ct. Marietta, GA 30062 877-864-9394 470-592-1717 (f) 770-984-2802 <a href="http://www.sewerproshop.com">www.sewerproshop.com</a> <a href="mailto:info@sewerproshop.com">info@sewerproshop.com</a> <b>See ad page 29</b>	Viper Chain Cutter	Roots, Grease, Scaling	10" - 48"	40 to 100	2,000 - 4,000	45 to 70 lbs.		8	1" - 1 1/4"
	Power Pull Nozzle	Mud, Sand, Silt	4" - 12"	18 to 80	2,000 - 4,000	1.5 to 9 lbs.		8	1/2" - 1 1/4"
	Spear Nozzle	Penetration of Clogs, Root Masses, Frozen Pipes	8" - 24"	50 to 80	2,000 - 4,000	6.2 lbs.	4	6	
	Emperor Nozzle	Flushing heavy debris from large lines	12" - 32"	80 to 120	2,000 - 2,500	19.8 lbs.		12	
	Penetrator Nozzle	Flushing heavy debris in lines with offsets.	6" - 16"	50 to 80	2,000 - 4,000	15.4 lbs.	1	8	
	Stealth Nozzle	Flushing heavy debris	8" - 24"	60 to 80	2,000 - 4,000	17.6 lbs.		8	
	Raptor Nozzle	Penetration of clogs, Root/Grease Masses, Frozen Pipes	4" - 24"		2,000 - 4,000	2.4 to 5.5 lbs.	3	3 (1/2") 6 (1")	
	Big Foot Nozzle	Flushing debris from the floor of large pipes	16" - 48"	40 to 120	2,000 - 3,600	33 to 56 lbs.		6 - 14	
	Twister Nozzle	Cleaning grease, roots, mineral deposits, etc.	4" - 24"	18 to 120	2,000 - 4,000	3 to 15.4 lbs.	5	4	
 <b>SPARTAN</b> <b>Spartan Tool</b> 1618 Terminal Rd., Niles, MI 49120 800-435-3866 <a href="http://www.spartantool.com">www.spartantool.com</a> <a href="mailto:sales@spartantool.com">sales@spartantool.com</a>	Milling Cutter	Removal of concrete, tuberculation failed liners	4" - 20"	60 to 120	2,000 - 2,500	18 to 44 lbs.	4	4	1" - 1 1/4"
	Warthog	Roots, Grease	2" - 18"	12 to 35	2,000 - 4,000	1 - 5 lbs.			3/8", 1/2"
	Sandshoe	San, Dirt and Rocks	4" - 18"	12 to 18	2,000 - 4,000	7 lbs			3/8", 1/2"
	Rotating	Scrubbing Pipe Walls	2" - 12"	4 to 18	2,000 - 4,000	1 - 3 lbs			1/4", 3/16", 3/8", 1/2"
	Q Nozzle	Downstream Jetting	4" - 12"	12 to 18	2,000 - 4,000	1 - 2 lbs			3/8", 1/2"
	Rocket Nozzle	Long Distance Jetting	4" - 12"	12 to 18	2,000 - 4,000	2 lbs			3/8", 1/2"
	Closed Nozzle	Standard Jetting	2" - 12"	4 to 18	2,000 - 4,000	1 lb			3/8", 1/2"
	Open Nozzle	Standard Jetting	2" - 12"	4 to 18	2,000 - 4,000	1 lb			3/8", 1/2"
	Brass Ball	Stainless Steel Hose Jetting	2" - 8"	4 to 18	2,000 - 4,000	1 lb			3/16"
<b>USB-USA LLC</b> 7565 Owl Creek Dr. Douglasville, GA 30134 844-285-5770 <a href="http://www.usb-usa.com">www.usb-usa.com</a> <a href="mailto:usbussallc@gmail.com">usbussallc@gmail.com</a> <b>See ad page 8</b>	Chain Scraper	Roots, hard grease, scale	2" - 8"	8 to 50	5,075				3/8", 1/2", 3/4"
	Primus 3D	Grease, Crusts, Light Roots	4" - 24"	18 to 120	2000 - 4,000	2.6/7.0/8.3/20.1	1	3/4/5/6	1/2 - 3/4 - 1 - 1 1/4
	Rocket 3D	Sand, Silt, Large Debris	4" - 24"	12 to 120	2,000 - 4,000	.6/2.6/4.85/11.4/44		6/8/10/12	1/2 - 3/4 - 1 - 1 1/4 - 1 1/2
	Pipe Wolf 3D	Total Blockages from Roots, Grease & other Organic Matter	4" - 24"	14 to 120	2,000 - 4,000	2.4/5.7/11.9		6	1/2" - 3/4" - 1" - 1 1/4"
	Bagger Max 3D	Sand, Silt, Solids, Sludge & other Heavy Debris	18" - 96"	50 to 120	2,000 - 3,000	33/53/66/114.5	5	6/8/10/12	3/4" - 1" - 1 1/4" - 1 1/2"
	Chisel	Total Blockages from Roots, Grease, etc.	2" - 15"	8 to 120	2,000 - 4,000	.22/.33/.66/1.54	4		1/4" - 3/8" - 1/2" - 3/4" - 1" - 1 1/4"
	FS 3D	Total Blockages from Roots, Grease & other Obstructions	2" - 15"	8 to 80	2,000 - 4,000	.22/.44/.66/1.54/3.7	4	6/5/6/8	1/4" - 3/8" - 1/2" - 3/4" - 1"
	Tri-Jet 3D	Mud, Sand, Silt - Everyday Cleaning	4" - 48"	60 to 120	2,000	4.8/12.1/17.6/23.1/44		12/15	1" - 1 1/4"
	FD 2 3D	Half-Open or Complete Open Drains - Mud, Sand, Silt	4" - 12"	14 to 120	2,000 - 4,000	2.6/4/8.3/14.3		6/8	1/2" - 3/4" - 1" - 1 1/4"
	3D Extreme	Mud, Sand, Silt	6" - 15"	40 to 120	2,000 - 3,000	9.4	1	8	3/4" - 1" - 1 1/4"
	3D Cleaning	Everyday Cleaning - Sand, Mud, Silt, Grease	4" - 15"	14 to 80	2,000 - 4,000	.6/12.1/17.6/23.1	1	6/8/10/12	1/2" - 3/4" - 1" - 1 1/4"

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 <b>Super Products LLC</b> 130 Boxhorn Dr., Mukwonago, WI 53149 800-837-9711 • 262-784-7100 <a href="http://www.superproductsllc.com">www.superproductsllc.com</a>	<b>Storm Surge 3D, PRIMUS III, S200 Turbo Cutter, Recycling Grand Slam, USB-USA LLC</b>



# RECLAMATION IN THE RIO GRANDE VALLEY

McAllen utility jumps on opportunity to deliver reclaimed water to residential customers

By Giles Lambertson



McAllen Public Utility heavy-equipment operator Manuel Peña Jr. (left) and lift station operator Andres Zamora flush out a sewer line with a Vactor 2100i jet/vac truck. (Photography by Verónica G. Cárdenas)

**M**cAllen Public Utility believes in second chances. Specifically, the south Texas community is fully committed to the notion that wastewater shouldn't be wasted as a resource.

In 2020, the utility broadened its vision and applied the principle to a new category of reclaimed water customer: residential property owners.

McAllen is a Rio Grande Valley community across the river from Reynosa, Mexico. The semiarid region mostly has an agriculture and border-trade economy. Neighboring farm fields and the green spaces inside the city are irrigated during long, hot summers to supplement the 22 inches or so of annual rainfall.

The catalyst for the expansion of reclaimed water use was Tres Lagos, a new and growing residential development on the north side of the city. Opened three years ago, the master-planned community eventually will contain 5,000 residences along with such amenities as a 1,000-student IDEA public school and a satellite campus of Texas A&M University, College Station.



## “When the Tres Lagos developer approached us, everything got turned around.”

David Garza

Developer Mike Rhodes, co-founder of McAllen-based Rhodes Enterprises, approached the city in 2014 about using reclaimed water to irrigate private and common properties in the 2,500-acre development. The city was immediately interested in supplying the reclaimed water for a new residential population that eventually will number 80,000 people. In 2015, McAllen decided it wanted to be the first in Rio Grande Valley to offer reclaimed water to residential properties.

Yet the Tres Lagos proposal posed difficulties. “The issues were that the development was on the north side near the north wastewater treatment plant and most of the wastewater flowed to the south treatment plant,” says David Garza, McAllen’s director of wastewater systems. The other problem was that the bulk of reclaimed water at that time was already spoken for. For two decades, some 1.5 billion gallons per year had been routed to cooling towers at a Calpine electrical power company plant.

The utility was distributing its treated water according to a master plan completed in 2016 that focused on south-side utilization. Other than the cooling tower destination, treated water flowed to parks and a 200-acre municipal golf course — all on the south side. Says Garza: “When the Tres Lagos developer approached us, everything got turned around.”

### Diverting flow

The master plan that focused on the south plant nevertheless remained key because it contained ideas about how to divert water north. Reducing the flow to the south treatment facility had been on the minds of planners because the plant needed upgrading. “The south treatment plant needed major repairs and the less wastewater it received the better,” Garza says.

So, McAllen Public Utility engineers pursued the idea of rechanneling a million gallons of collected wastewater per day from south to north to more easily serve the proposed Tres Lagos project. The first step was laying 6 miles of 12-, 16- and 24-inch gravity line. The new line rerouted the wastewater to a lift station that could feed it northbound. Four other stations were eliminated by the redirection.

A Texas Commission on Environmental Quality requirement that reclaimed wastewater for residential property meet the standards of Type I water created a second obstacle. Up until that point, McAllen had distributed only Type II second-hand water.

The difference in the two types is the acceptable level of turbidity and E. coli. Most E. coli strains are harmless, but some cause diarrhea, cramps and a low-grade fever. To remove that threat, the north plant was fitted with an Aqua-Aerobic filtration system to reduce the volume

**Lift station operator Israel Ortiz installs Sensus data collection equipment on a water meter from Badger Meter at a reclaimed water service connection.**

**Lab technician Eligio Alfaro takes a sample from the reclaimed water system in a new subdivision in McAllen, Texas.**

of matter suspended in the water.

### Fortunate funding

All this work to redirect wastewater began in 2016 and was completed three years later. The price tag for the new collection line and treatment plant upgrade along with the new distribution pipeline running to Tres Lagos was \$8.3 million. The utility secured a low-interest loan from the Texas Water Development Board, with \$1.25 million of that being forgiven because it was a green project. Because the utility was partnering with Tres Lagos, which had qualified as a Tax Increment Reinvestment Zone, another \$4.5 million was reimbursed to the utility.

“The reimbursement and forgiveness accounted for nearly 75% of the cost of the project,” Garza says. “That was great for McAllen Public Utility. It now would have two major customers accepting reclaimed water and increasing the utility’s revenue stream, and it all would happen without creating a financial burden for our ratepayers.”

Residents got a water rate increase last October, but the rate remains relatively low. Rates are tiered for potable and reclaimed wastewater. For example, the base rate for all water is \$9.95 per month. Potable water costs \$1.45 per thousand gallons used up to 8,000 gallons, with rates increasing according to usage. Reclaimed wastewater is \$1.16 per thousand gallons regardless of volume used.

### Paying dividends

The rest of the story, of course, is the amount of potable water not used. Two pipelines run about 5 miles from the north plant to Tres Lagos, one carrying potable water, the other reclaimed wastewater. When all 5,000 homes are built and occupied,



### PROFILE:

**McAllen (Texas)**  
**Public Utility / Wastewater**

**SERVICE AREA:**  
4,900 square miles

**WASTEWATER DIVISION EMPLOYEES:**  
81

**WASTEWATER ACCOUNTS:**  
41,565

**MILES OF SEWER LINES:**  
570

**COLLECTIONS SYSTEM:**  
55 lift stations, 8,500 manholes

**TREATMENT PLANT CAPACITY:**  
Two facilities, 25 mgd combined capacity

**RECLAIMED WATER DISTRIBUTED ANNUALLY:**  
2.2 billion gallons

**WEBSITE:**  
[www.mcallenpublicutility.com](http://www.mcallenpublicutility.com)





**The McAllen Public Utility team handles much of its infrastructure maintenance in-house. A construction crew is responsible for repair work, but employees are generally cross-trained to handle any task.**

some 180 million gallons of reused water will be piped to the development each year to irrigate lawns, parks and ballfields. That is in addition to the 1.5 billion gallons of reclaimed water utilized by the Calpine power plant and 530 million gallons soaked up by the city golf course.

In other words, millions and millions of gallons of drinkable water would be growing that grass and cooling that electricity production process if reclaimed water was not available. Garza estimates that 20,000 gallons of potable water is saved per month at each home in Tres Lagos because reused water is available for irrigation.

"The Tres Lagos project will pay future dividends, conserving more than 30 million gallons of potable water each month during the next three years. By 2035, it's estimated more than 67 million gallons will be conserved each month. This utility continues to set the example across the valley in water recovery and conservation."

## **"The reimbursement and forgiveness accounted for nearly 75% of the cost of the project."**

**David Garza**

### **Across the system**

Garza became wastewater director at McAllen Public Utility in 2016 after more than 18 years in similar work in Pharr, a neighboring Hidalgo County community. He oversees a department that handles much of its infrastructure maintenance in-house. Major system expansion and rehabilitation projects are bid out.

"Our employees generally are cross-trained but we have a construction crew, three or four guys, who do the repair work," he says.

They have a couple John Deere 310K backhoes to uncover leaking lines. Four Vactor 2100 hydrovac trucks are called to perform more delicate excavation or when a line needs a 2,500 psi blast to clear it.

Two crew members specialize in CCTV inspection work. To peer into clay pipes that average 40-plus years in age, or new HOBAS Pipe USA GRP (fiberglass-reinforced pipe) lines, they use a Trio-Vision USA TVT-300 steerable inspection crawler system. Pipelines in the system range from 6 to 54 inches. An Xplorer camera (also from Trio-Vision) on a telescopic pole is employed for brick or concrete manhole inspections.

The utility is methodically re-engineering the system's hydraulics wherever it can to allow for gravity flow of the wastewater. The biggest recent project of that kind eliminated two lift stations and abandoned a ductile iron force main. The \$4.6 million project replaced that infrastructure with 6,800 feet of 48-inch HOBAS GRP that was buried 30 feet deep at one point.

"Ductile iron is not the norm in this part of the country," Garza says, noting that the project likely eliminated the last of that type of pipe, which had not functioned well for the city.

## **BEATING PUBLIC PERCEPTION**

The thought of reusing wastewater — which necessarily includes flushed toilet water — on residential lawns sort of focuses the mind. David Garza, director of wastewater systems at McAllen Public Utility, tries to put people at ease by saying that reclaimed water is cleaner than water at the beach or in a canal.

"I say those things because a lot of people are afraid that, if they get splattered with reclaimed water, they are going to get sick," says the south Texas municipal official. "That's not true. It is the perception about where the water originally comes from that bothers people."

Texas environmental officials require treated wastewater going to residential properties to be Type I, which has little turbidity and very low E. coli content. McAllen goes to great

lengths to meet that standard for its residential customers.

"Our treated water passes through an ultraviolet system and chlorine is added as it enters a pipeline, which ensures that the water always is disinfected," Garza says. "We do everything possible to make sure the disinfectant is working, taking samples at the end point as well. We take E. coli samples and never have exceeded the standard. The utility does a lot of testing that is not required of us. We do it for ourselves so we can assure residents that the water is clean."

Reused water is, of course, delivered in its own pipeline system. Tres Lagos developers have run more than 8 miles of pipe to handle their end of the reclaimed water. Any visible part of the system in the development — irrigation sprayers or pipe above ground — is purple in color to designate that it is not potable water.

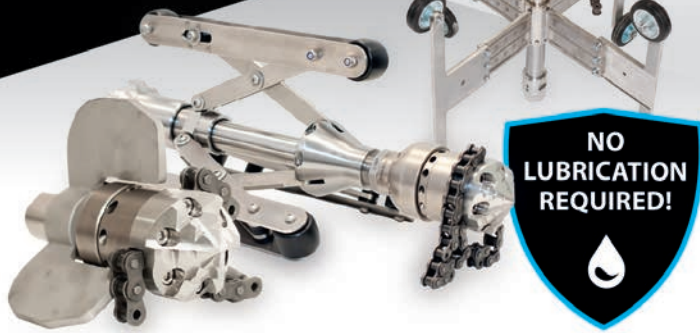
"We don't allow any kind of faucet," Garza points out, so that people who are unaware of the water source are not tempted to drink it. "The only thing it is to be used for is irrigation."

And if it is accidentally consumed or splashed on someone, Garza says it's not a great worry. "I used to swim in canal water and it was fine," the south Texas native adds with a laugh. "I am convinced that our water will not adversely affect anyone."



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**Edgar Villalpando operates a backhoe while Richard Belis (left) and Miguel Solis dig to expose a sewer lateral for repair.**

As for the Tres Lagos project, the wastewater director is satisfied not only with the outcome but the process that made it happen. "The public-private partnership was a fantastic deal for McAllen, for the developer and for ratepayers. The vision was there and the master plan was there. We will be able to serve close

**"This utility continues to set the example across the valley in water recovery and conservation."**

David Garza

to 80,000 people out there and avoid using millions of gallons of potable water in serving them." ♦



**Mechanic Miguel A. Treviño fixes the impeller from an ABS pump at the South Wastewater Treatment Plant in McAllen, Texas.**

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# PROBLEM SOLVERS

Logiball has been an innovator and solution provider to municipal utilities for nearly four decades

By Luke Laggis

Some people search for solutions. Some people create them.

Count Roger Bissonnette firmly among the latter. Bissonnette, a civil engineer and trenchless rehabilitation contractor, was searching for equipment that suited his needs back in the early 1980s. He attended trade shows and sought out other resources, but when he couldn't find what he was looking for, he decided to design and build the equipment he needed on his own. And so Logiball was born.

Since then, the company's product line has evolved to include pipe plugs, carriers for sectional liners, maintenance equipment and a complete line of test-and-seal injection packers.

*Municipal Sewer & Water* recently had the opportunity to talk to Logiball President Marc Ancil about the company's mission to solve problems for municipal utilities.

**MSW: What kind of solutions and capabilities does Logiball provide municipal utilities?**

**The economics of grouting can no longer be ignored.**

**Ancil:** In the beginning, Logiball focused on providing inflatable pipe plugs for low-pressure-pipe acceptance testing and the diversion and control of water flows in underground pipes. Still today, Logiball plugs are well known for their durability and versatility versus the alternatives available on the market today. From these designs, other innovations were created, including carriers for installation of sectional CIPP and mechanical locking sleeves. In the last 38 years, the knowledge and expertise, production equipment and materials were better leveraged to enhance the practice and performance of the pressure injection grouting industry to seal mainline and lateral pipes. With the aid of CCTV, Logiball remote packers perform air testing of joints and defects, inject grouting material with accurate pressures and volumes, and then validate a positive seal with final air test.

**MSW: Does being a part of the USL Group help the company leverage other technologies and resources to better serve customers?**

**Ancil:** The common denominator for all USL Group companies is infrastructure repair and preservation. This includes service brands, prod-



Logiball President Marc Ancil

uct brands in the U.S., UK, Dubai and Singapore. To say there is resource sharing among the brands is an understatement. Strength in both above-grade and below-ground technologies provides USL companies a full array of options and unique alternatives for solving problems, and that's exactly how Logiball views itself — *a problem solver*.

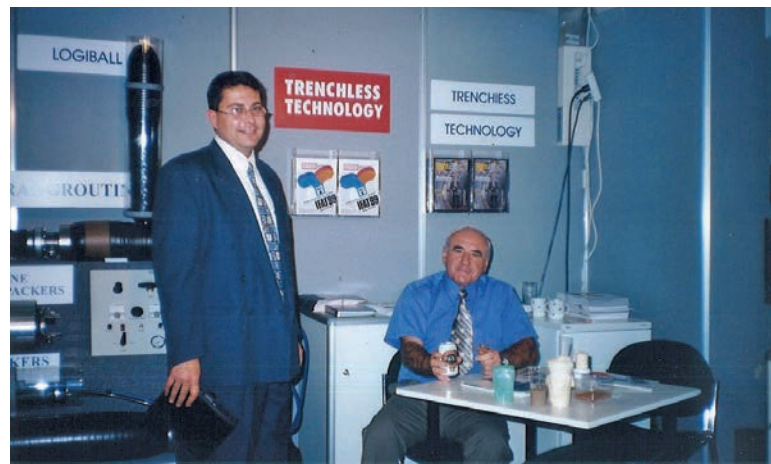
**MSW: What is the biggest issue you see municipal wastewater utilities facing?**

**Ancil:** Out of sight, out of mind is no longer an issue. Public works authorities and collections system managers inherited the current problems and are owning the responsibilities to rehabilitate because the cost to treat the excessive volume of I&I and its consequences is now higher than the cost to control. The biggest issue is funding and prioritizing a planned course of action based on condition assessment, flow monitoring data, and anticipated return on investment.

**MSW: Can you provide some insight on the company's product development process?**

**Ancil:** Currently, Logiball manufactures over 500 unique products

**Current Logiball President Marc Ancil and company founder Roger Bissonnette exhibiting at a European trade show in 1999.**



## THE SUPPLY SIDE

### NAME:

Marc Ancil

### JOB TITLE:

President

### YEARS IN THE INDUSTRY:

38



or SKUs. Some are manufactured complete, made-for-stock and ready to ship same day. Some are semicustomized with pre-built sub-assemblies for customer hybrid solutions. Finally, some devices are 100% custom-engineered and manufactured as customer problems are often one-of-a-kind. So, let's be honest, the process is the product. At a high level, the process is listen, understand, innovate. At a more detailed level, it's listen well, understand thoroughly, innovate like no other. Over time, Logiball has solved more problems, and earned confidence and trust among the municipal market to uniquely solve problems with quality, cost and speed to market.

**MSW: How does Logiball maintain the inventive and entrepreneurial spirit of company founder Roger Bissonnette?**

**Ancil:** Roger was a civil engineer with vision — find the need, supply the need at a reasonable cost. How can we make your life easier? Reduce downtime? Logiball is perceived as a much larger enterprise than we are because of the quality of products, volume of projects, and caliber of service. Fact is, we continue to operate as a well-oiled machine with a team of front-office and back-office personnel with lean production processes and a customer-centric work ethic.

**MSW: How has your product line evolved to meet the needs of utilities with aging infrastructure and limited budgets?**

**Ancil:** There was a time when certain pipe defects would appear in CCTV film and the only default answer was to dig up the pipe or line the pipe. Much of the innovation that's occurred in the last decade is with the conveyance of materials and the ability to overcome obstacles with unique packer solutions. Now, grout-first has taken flight and communities are learning that while stopping active I&I with injection grouting, their need for more-costly CIPP is less. So, the economics of grouting can no longer be ignored.

**MSW: What do you think are the biggest misconceptions about grouting as a means of controlling I&I?**

**Ancil:** One word: confidence. Injecting grouting has a history — in fact, an over 50-year history — of performance, and in the early days sub-standard practices were allowed to exist. Consequently, mainline grouting was viewed as a temporary maintenance solution with a misconceived belief of a limited life cycle of 5 to 7 years. Today, that's been upgraded based on science, based on new methods and techniques, and a unified education effort by vendors to train operators and technicians how to respond to conditions for a long-term, successful 25-plus-year rehabilitation.

The immediate challenge is building confidence within the engineering community on when and how to specify injection grouting to control I&I, when to specify CIPP for structural repair, and when to specify both.

**MSW: Do you sell direct to contractors and utilities or go through distributors?**

**Ancil:** At this point and time, there are probably fewer than 20 municipalities that are equipped and trained to self-perform injection grouting for mainline pipe, service laterals and manholes. The majority of grouting projects are performed by utility contractors specializing in the restoration of underground pipelines. Logiball leans toward a direct-relationship with the customer for all the right reasons: customized products, technical support and lowest possible cost to customer.

Our line of plugs and carriers are often sold direct or through system providers.

**MSW: What sort of training and support does Logiball offer?**

**Ancil:** Whatever it takes, depending on the product: phone, online, on site, video, user manuals. Logiball is big on education — teaching decision-makers and technicians what they need to know before they invest in equipment. Logiball is active and provides leadership in nassco.org., nastt.org., and WEF Collections in the U.S. and Canada. Logiball actively participates in municipal grouting classes with other vendors and virtual educational opportunities. We can only be as successful as our customers, so we work closely with them to get the job done right the first time.

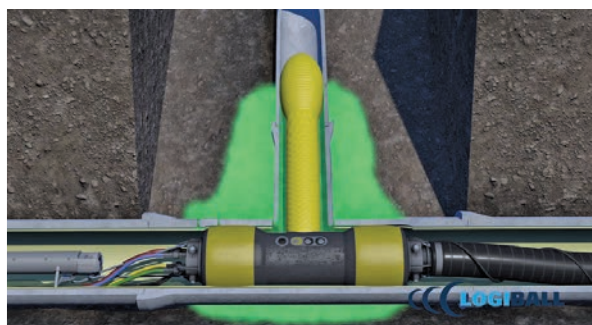
**MSW: Can the average municipal utility use your equipment and do this type of work in-house?**

**Ancil:** Great question. The answer is yes, but there's a "but" in my reply. Municipal workforces are responsible for many tasks and are rarely

**Logiball leans toward a direct-relationship with the customer for all the right reasons: customized products, technical support and lowest possible cost to customer.**

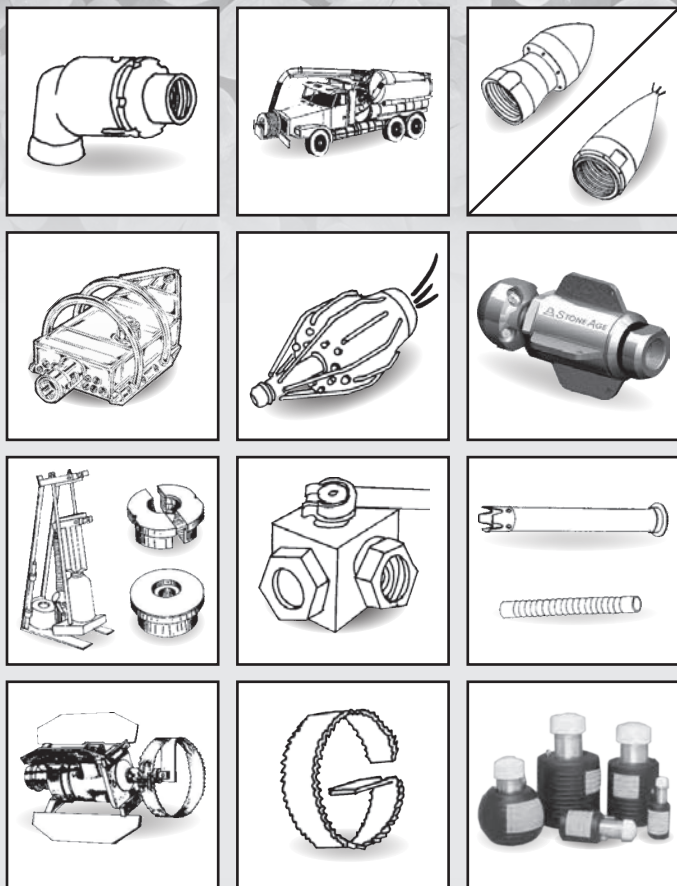


**A wastewater technician launches a Logiball push-pull packer at a cleanout.**





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## THE SUPPLY SIDE



**A Logiball team member moves a 96-inch test-and-seal injection packer from one side of the shop to the other.**

**We can only be as successful as our customers, so we work closely with them to get the job done right the first time.**

given the opportunity to be the best they can be at any one skill. Thus, outsourcing to private contracting firms who do specialize in honing skills and building teamwork may be the best source for the service — including both quality and economy. Many municipalities will decide to self-perform, and their level of success may depend on the tasks required and their frequency.

The more you do something the better you get at it.

### **MSW: What's on the horizon for Logiball? Are new product lines or technologies in development?**

**Ancil:** At Logiball, solving problems in underground pipe is our purpose, therefore process is the product — listen, understand, innovate. There will always be new and improved products on the horizon. Some may have repeatable qualities and become a standard off-the-shelf solution, while others will remain one-off answers to unique conditions.

### **MSW: Is there anything else you'd like people to know?**

**Ancil:** The No. 1 cause of advancing structural decay of underground pipe is movement. The single most significant catalyst to movement in the wastewater collections system is infiltration. Infiltration is groundwater leaching into the system through joints and defects, bringing in fine particles and creating areas of loose soils. Injection grouting is engineered to do one thing better than any other method or technology — provide a positive seal outside the pipe by creating a matrix with the soil and protecting the sewer trench, allowing the existing infrastructure to extend its useful life and cut the cost of treating the influent in half. ♦



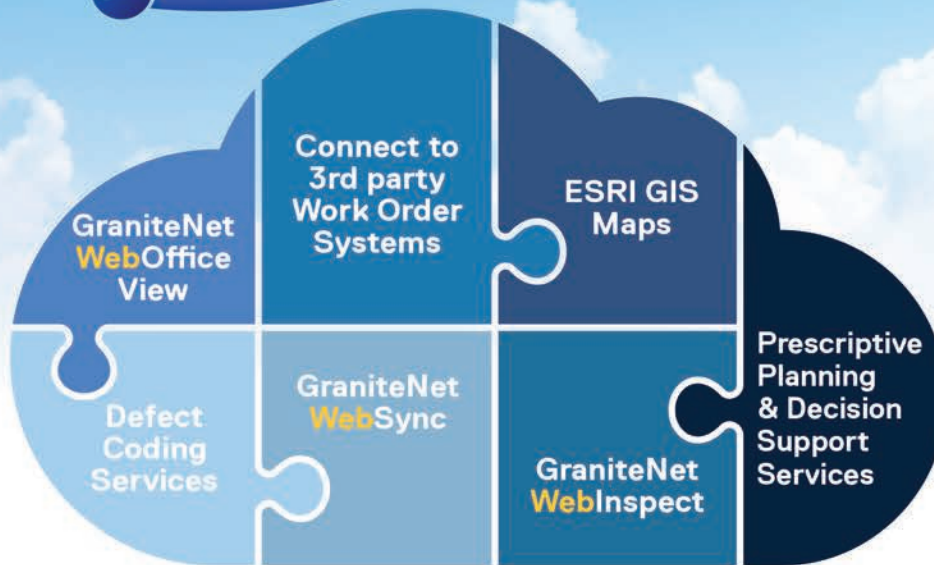
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# ALLEVIATE THE DANGERS OF DIGGING

Revisiting the fundamentals of a safe excavation site can protect your crew

By Chris Galloway

**S**afety and quality are two of the most inseparable components to success on a job site. You can't have one without the other.

And without a solid foundation of safe practices, you'll suffer from more than a deficit of quality. Safety isn't just a quota — it's the thing that keeps workers safe, happy and productive.

You should have a profound understanding of the tenets of excellent safety. It should be a pillar of your utility's identity. Most of all, you should know that there are always ways to improve upon what you already have. But without the fundamentals, you'll struggle to maintain consistent quality and high productivity.

## OSHA'S perspective

OSHA has already done the hard work to collect, organize and explain the various components to keeping a safe excavation site. For free on its website, OSHA even has a Trenching and Excavation Safety manual for anyone to download. In this manual, OSHA goes over the fundamentals of excavation and trench safety, such as understanding the various classifications of soil:

**Stable Rock** — Natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.

**Type A** — Cohesive soils with an unconfined compressive strength of 1.5 tons per square foot (tsf) (144 kPa) or greater. Examples include clay, silty clay, sandy clay and clay loam. Certain conditions preclude soil from being classified as Type A. For example, no soil is Type A if it is fissured or has been previously disturbed.

**Type B** — Includes cohesive soil with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf (144 kPa) and granular cohesionless soils (such as angular gravel, similar to crushed rock, silt, silt loam, sandy loam and, in some cases, silty clay loam and sandy clay loam).

**Type C** — Cohesive soil with an unconfined compressive strength of 0.5 tsf (48 kPa) or less, granular soils (including gravel, sand and loamy sand), submerged soil or soil

from which water is freely seeping, submerged rock that is not stable, or material in a sloped, layered system where the layers dip into the excavation or with a slope of four horizontal to one vertical (4H:1V) or steeper.

## Site safety checklist

For any excavation job, it's best to create a safety checklist to be completed by a "competent person."

A competent person is an individual, designated by the employer, who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous or dangerous to workers, and who is authorized to take prompt corrective measures to eliminate them.

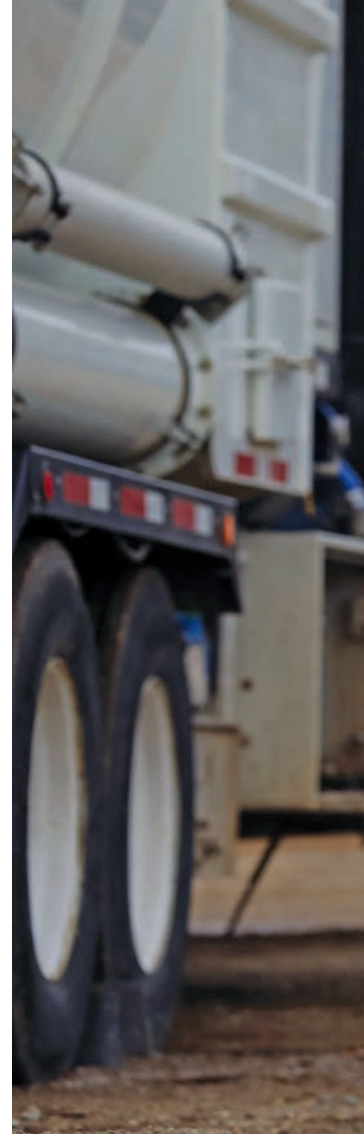
The types of tasks that a competent person should be performing on a job site include:

- Classifying soil
- Inspecting protective systems
- Designing structural ramps
- Monitoring water removal equipment
- Conducting site inspections

It's best to create a custom checklist based on your specific requirements and even tailor individual checklists to your various job sites.

## Use proper PPE

PPE, or personal protective equipment, is a term used for any protective equipment worn by a person for hazard protection. Equipment can include helmets, goggles, clothing, gloves and anything else that is worn to keep you safe at your prospective site.





**Any excavation project should include a safety checklist. Understanding soil classifications, shoring and bracing properly, and utilizing all applicable PPE are critical steps to ensuring the safety of your team.**



OSHA outlines the “general PPE” required for most excavation, but the more protected your crew is, the safer and more productive you’ll be. OSHA’s trenching and excavation worksheet outlines the following PPE:

- Hard hat for overhead impact or electrical hazards
- Eye protection with side shields
- Gloves chosen for expected job hazards (e.g., heavy-duty leather work gloves for handling debris with sharp edges and/or chemical protective gloves appropriate for chemicals potentially contacted)
- ANSI-approved protective footwear
- Respiratory protection as necessary — N, R or P95 filtering facepieces may be used for nuisance dusts (e.g., dried mud, dirt and silt) and mold (except mold remediation); filters with a charcoal layer may be used for odors

Two popular sources for hardy, cost-effective PPE are ULINE and Grainger.

### **Safe tools**

Not every power tool is created equal. There are easy ways to increase your safety by being more mindful of the tools your crew uses.

For example, one easy way to reduce air compressor noise and the various other hazards that come with a compressor is to switch to a more portable gas-powered jackhammer. They’re more efficient than the standard



pneumatic variety of jackhammer and produce less noise, dust and vibration. With less equipment needed and less to haul to and from a site, making use of power tools with more portability will have a positive effect on the overall site safety.

### **Multifaceted approach**

The idea of “safety” is largely intangible. It’s a multifaceted effort that should constantly evolve on both the micro and macro levels.

As your utility evolves, so too should its understanding of safety. Day-to-day safety on a job site should accommodate the changing landscape, the different weather and the stage of construction. If you follow these basic tenets, you’ll be well on your way to a safer job site. ♦



## Vac-Con names new dealer for western Canada

Vac-Con announced that Westvac Industrial will be the exclusive dealer of Vac-Con products in western Canada, effective Jan. 1. Westvac, established in 1997, operates three divisions — lifts and automotive, fleet and fire — offering a range of products including heavy-duty lifts, wheel service equipment, sewer inspection equipment, hydroexcavators, refuse collection vehicles, street sweepers and fire apparatus. Westvac provides coverage from four locations all offering full maintenance, service, parts and training.



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## CLADLINER brand transitions to Epoxytec

Effective Jan. 1, Epoxytec's management will offer CLADLINER branded products with the following name changes and Epoxytec's branding: CLADLINER transitioning to Epoxytec Mortartec Cladliner; CLADSTOP 1 transitioning to Epoxytec Hydrxx-1; CLADSTOP 3 transitioning to Epoxytec Hydrxx-3; and CLADRESTORE transitioning to Epoxytec Mortartec Silicate. Also, CLADSEAL will transition to Epoxytec Urodeal 45V, and once transitioned to the Urodeal 45V, it will be available in gray only. The transition period is expected to take months to complete. Until all inventory is gone, there may be occurrences when the CLADLINER brand will still be sold.

## Composite Access Products wins ACMA award

Composite Access Products announced that its CAP-composite manhole cover and frame won the Award for Composite Excellence from the American Composite Manufacturers Association. In collaboration with CAP's raw material vendor, Lyondell Basell, CAP's composite manhole cover was recognized in the Market Growth category, one of seven ACMA annual honors.

## InfoSense approved vendor through Texas cooperative

InfoSense is now an approved H-GACBuy vendor through The Houston-Galveston Area Council Cooperative Purchasing Program. This allows participating member cities, counties and other local government agencies to eliminate the bidding process and save time and cost associated with placing bids. H-GAC vendors must go through the competitive procurement process and abide by competitive procurement laws to be approved.

## Orenco Systems announces company changes

The year 2021 marks four decades of protecting the world's water for Orenco Systems. After 40 years, founder Hal Ball announced his retirement from day-to-day involvement in the company. Co-founder and former executive vice president Terry Bounds will serve as both chairman of Orenco's board of directors and president over the research and development, operation and maintenance, and facilities departments of the company. In addition, the company will now operate in three distinct divisions to provide more focused service. Jeff Ball will serve as president of Orenco Water, while Eric Ball has been named president of Orenco Composites. Travis Wood, former president of Franklin Control Systems, is the new president of Orenco Controls. And former legal counsel Scott Sauls will serve as corporate president. Lastly, the company stated that its wastewater-focused operations will now be known as the Orenco Water division.

## Magers retiring from equipment industry after 45 years

Felling Trailers' Southwestern Regional Sales Manager Roger Magers, who has been a part of the equipment industry for more than 45 years, retired at the end of 2020. The 11-year Felling Trailer vet joined the company in 2009 as the Western U.S. regional sales manager. He provided dealer support for 11 states spanning from Montana to New Mexico, and from California to Washington. In fall 2019, Magers reduced his coverage area to the Southwestern U.S. to be able to focus on the growing dealer base in the New Mexico, Arizona, California and Nevada regions. ♦



**Roger Magers**





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# HYDROEXCAVATION AND INDUSTRIAL JET/VAC SERVICES

By Craig Mandli

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The **Dynablast HV420F-12VRED** hydrovac water heater produces 420,000 Btu with an output temperature of 175 F at 5 gpm, making it suitable for colder climates and improved digging in clay-filled areas. All models come with ETL certification for safety, which also includes certification on the coil for higher efficiency and heat transfer, a stainless steel target plate for increased coil life and a design with serviceability in mind with momentary override control. A 19-by-19-inch footprint makes it suitable for compact installations. 905-867-4642; [www.dynablast.ca](http://www.dynablast.ca).



### Enz USA HydroX nozzle

The **HydroX** nozzle from **Enz USA** is available in 3/8-inch NPT or 1/2-inch connecting threads, and it can function at up to 5,000 psi with flow as low as 8 gpm. It combines a powerful, oscillating water jet with the high removal rate of debris. A tungsten carbide front jet ensures a longer life than ceramic jets can offer. For quick and easy maintenance, a repair kit is available. Due to the nozzle's simplicity, repairs can be made quickly and efficiently in the field with little downtime. For the operator's safety, a plastic cover provides protection against harsh and sensitive environments. 888-369-8721; [www.enz.com](http://www.enz.com).



### Hydra-Flex Machete

The **Machete** hydroexcavating nozzle from **Hydra-Flex** channels water in an oscillating motion, creating a small spray angle and a direct stream with a forceful impact. This premium penetration will allow faster digging and more precise trenching capabilities. Its durable, replaceable cover allows for quick change while increasing the nozzle's life span. It is available in three sizes, with operating pressure ranges from 1,000 to 3,200 psi and a heat rating of 180 F. It will last in excess of 500 hours, improving digging times and replacement costs. 952-808-3640; [www.hydraflexinc.com](http://www.hydraflexinc.com).



### Soil Surgeon hydroexcavating tool

The **Soil Surgeon** hydroexcavating tool fits any sewer combination truck equipped with a telescoping 6- or 8-inch boom. The tool has a 1-inch water connection. The operator controls water pressure and power through truck controls. It has a 6-foot Tuff Tube with handles to guide the unit down for potholing or side to side for trenching. Six jets boring inward cut the soil, while six boring outward bring the tube down. 949-363-1401; [www.soilsurgeoninc.com](http://www.soilsurgeoninc.com).



## HYDROEXCAVATION TRUCKS/TRAILERS

### Ditch Witch HX30G

The **HX30G** vacuum excavator from **Ditch Witch** boasts high-profile power in a low-profile design that eases navigation in congested and height-restricted areas. It is powered by a 31 hp Vanguard gas engine for optimal suction power and water pressure. To boost efficiency on any job, it comes with a powerful 542 cfm blower, 3,000 psi water pressure and 4.2 gpm water flow. It is offered with the choice of a 500- or 800-gallon tank for a variety of job requirements. The machine is available in multiple trailer configurations, including the VT9 trailer that, when equipped with the 500-gallon tank, does not require a CDL to transport. 800-654-6481; [www.ditchwitch.com](http://www.ditchwitch.com).



### GapVax HV33

Designed to safely transport water and debris in urban areas, the **GapVax HV33** is shorter, smaller and more compact than its predecessor. It is 30 feet long overall on a medium-duty chassis and includes a 600-gallon water tank, 6-cubic-yard debris body, 6- or 8-inch top-mounted telescoping boom with a 14- to 17.5-foot reach, 4,000 cfm power and an inverted, full-opening tailgate. 888-442-7829; [www.gapvax.com](http://www.gapvax.com).





## HotJet USA Vac 'n Jet Series

The **HotJet USA Vac 'n Jet Series** of vacuum trailer jetters are rugged and compact; are engineered to haul equipment and spoils loads; and can clean valve boxes and storm drains, and hydroexcavate and/or clean drainlines and sewer lines. They offer hot- and/or cold-water operation with a choice of engine options ranging from 13 to 66 hp and gas or diesel operation. They are equipped with premium triplex pumps, a 500-gallon spoils tank, 200-gallon water tank, Gardner Denver vac/blowers, 4-ton hydraulic dump and centriclean filter system. They can also be custom engineered and designed to meet specifications. **800-624-8186; [www.hotjetusa.com](http://www.hotjetusa.com).**



## Kaiser Premier TerraVac

The **TerraVac** hydroexcavation trailer from **Kaiser Premier** packs the power of the CV Series Hydrovac truck in a compact footprint. Equipped with an 800-gallon debris tank and 400-gallon fresh-water capacity, it is engineered for most common applications. It measures 21 feet long and 8 feet, 6 inches wide and just 8 feet, 8 inches tall. The debris body is lined with a welded stainless steel floor insert for long-term durability. A bolt-on deflector plate can be quickly replaced during maintenance. Operating power is supplied by a 49 hp diesel engine. It easily cuts through soil and clay with up to 4,000 psi of pressure at 4.5 gpm. The blower is rated for 960 cfm of suction, capable of 15 inches Hg vacuum with 5 psi positive pressure. It has a 30-foot suction hose. The digging tool is a 6-foot dig lance. Also included are 4- and 6-foot suction extensions and a 36-inch wash gun. **970-542-1975; [www.kaiserpremier.com](http://www.kaiserpremier.com).**



## Presvac Systems Hydrovac

The **Presvac Systems Hydrovac** is designed for versatility and cold-weather operation with optional full compliance with U.S. Department of Transportation specifications for collection or transportation of hazardous materials. The high-vacuum blower allows extraction of all types of soils, gravel, rock, clay, water and silt material, with knockout features in the debris tank minimizing carryover. Modular filtration configured to blower size provides blower protection and minimal maintenance, according to the maker. It comes with a heavy-duty, 8-inch boom that extends up to 25 feet with six-way hydraulic power and wireless controls for all boom functions, a soft-start water pump, vacuum breaker and truck engine speed. **800-387-7763; [www.presvac.com](http://www.presvac.com).**



## Rival Hydrovac T7 Tandem

The **T7 Tandem** hydrovac from **Rival Hydrovac** was designed primarily to be loaded with debris and driven within



legislated road limits with most types of debris on board. The unit comes standard with a scale that reads real-time weights both in the cab and on the wireless remote to confirm weights prior to travel. It is operator friendly, and the operating system is engaged through one PTO switch. The remainder of the operation occurs from the rear panel or the wireless remote. **403-550-7997; [www.rivalhydrovac.com](http://www.rivalhydrovac.com).**

## Super Products Mud Dog

The **Mud Dog** vacuum excavator from **Super Products** provides a safe and efficient alternative to traditional digging. It is designed for operator convenience and consistent performance even in the harshest environments. Units come standard as hydroexcavators with an optional air excavation package, which allows an operator to always choose the best application, water or air, for the job. It is available with 12- or 16-yard debris capacity and has a 1,500- to 2,000-gallon water tank capacity. Each model comes standard with tilt ejection unloading, and a rear-mounted boom that reaches 27 feet, has 335-degree rotation and can move in a 45-degree upward and 25-degree downward pivot. This allows for versatility within dig areas so that units do not need to be constantly readjusted into position. **800-837-9711; [www.superproductsllc.com](http://www.superproductsllc.com).**



## Tornado Global Hydrovacs F4 ECOLITE

The **F4 ECOLITE** from **Tornado Global Hydrovacs** has a 12-cubic-yard mud tank and holds 1,550 gallons of fresh-water. The unit is more than 7,000 pounds lighter than the company's older models and offers more than double the payload. The boom has a 342-degree rotation and 26-foot reach. The smaller F3 ECOLITE is a 10-cubic-yard, 1,250-gallon tandem-axle unit that more than doubles older payload capacities. It features an 8-inch boom and 3,800 cfm blower. **877-340-8141; [www.tornadotrucks.com](http://www.tornadotrucks.com).**



## Transway Systems Terra-Vex HV38

The **Transway Systems Terra-Vex HV38** has a 12-yard debris tank with onboard scales for efficient hauling and off-loading, complete with a 26-foot by 8-inch telescoping boom. It has a one-touch-operated hydraulic half-door with a 3,800 cfm at 27 inches Hg hydraulically driven blower. Water pressure is achieved with a hydraulically driven triplex pump, delivering 10 gpm at 3,600 psi from a 1,000-gallon HDPE baffled water tank. The water is heated with a 420,000 Btu diesel-fired burner for cold-weather operation. **800-263-4508; [www.transwaysystems.com](http://www.transwaysystems.com).**



(continued)



### TRUVAC by Vactor Paradigm

Designed for utility, municipal and contractor customers involved in the installation, maintenance and repair of underground water, sewer, gas, electric and telecommunications lines, the **Paradigm** sub-compact vacuum excavator from **TRUVAC by Vactor** can dig holes with water or air; vacuum, contain and dispose of drill mud; power pneumatic, hydraulic or electrical tools; and provide transport and storage of replacement parts, equipment and tools. The truck's Park-n-Dig design minimizes time between job site arrival and excavation, including the ability to dig up to 6 feet without additional pipe and hose. The air compressor powers utility tools such as jackhammers and tampers. The truck offers tool storage space, including a long-handle toolbox. The truck can tow up to 20,000 pounds. **800-627-3171; www.truvac.com.**



### Vac-Con X-Cavator

The **X-Cavator** hydrovac from **Vac-Con** includes a cold-weather enclosure for the water systems and control panel, as well as an interior area for operator seating and workspace. Unit filtration is based off of the Titan combination machine, with a single-cyclone design and final cartridge-style filter. The redesigned boom is lightweight and flexible, rotating 310 degrees around the unit and moving 45 degrees and negative 22 degrees vertically. The durable rubber hose material can withstand harsh environments and has a reach of 26 feet. **904-284-4200; www.vac-con.com.**



### Vacall AllExcavate

**AllExcavate** models from **Vacall** efficiently remove dirt around utility lines, as well as foundations where mass excavation is not practical. Water pumps generate 24.5 to 120 gpm and pressures to 3,000 psi. The water system, wand, control panel, tools and worker apparel are protected in a heated compartment. Its standard AllSmart-Flow CANbus intelligent control system has a programmable LCD display that monitors engine, water-flow and vacuum performance, allowing for precise boom and reel adjustments. Aluminum water tanks carry 1,000 to 1,300 gallons. Options include a remote control high-dump system that raises the debris tank 76 inches and then slides it back 21 inches for dumping into roll-off containers. **800-382-8302; www.vacall.com.**



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The **Guzzler Liquid Ring** has a powerful and efficient industrial vacuum system designed to clean up and recover a full spectrum of materials — from solids and dry bulk powders to liquids, slurries and thick sludge, while providing the additional capability of reclaiming hydrocarbons. The filtration system keeps the pump operating liquid clean, resulting in a longer pump life. It can operate effectively in remote or inaccessible locations more than 1,000 feet away, through suction lines up to 8 inches in diameter. Its design reduces maintenance and provides quiet operation. **815-672-3171; www.guzzler.com.**



## JET/VAC COMBINATION TRUCK/TRAILER

### Sewer Equipment Model 900 ECO

The **Model 900 ECO** from **Sewer Equipment** is available in 6-, 9-, 12- or 15-yard debris capacities, equipped with Duraprolene water tanks carrying 900 to 2,100 gallons of onboard water. Its Hydro Drive powertrain system eliminates the need for a transfer case. Both single-piston and triplex pump options are available at 55 to 80 gpm at 2,000 to 3,000 psi with a 4,400 cfm blower and 18 inches Hg, and they are built on an eco-friendly platform that provides greater fuel efficiency and offers noise reduction. **888-477-7611; www.sewerequipment.com.** ♦



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## CASE STUDY

### HYDROEXCAVATION AND INDUSTRIAL JET/VAC SERVICES

By Craig Mandli

## Equipment provides a dig rate to success



#### Problem:

Managing excavations for infrastructure upgrades in residential areas can be a difficult task. When it's necessary to close streets down and limit access to homes, timelines tighten up and the stress level rises. Safety is always a critical consideration. A job in London, Ontario, required non-destructive excavation for a new street installation, but the nature of the project necessitated something more efficient than hydroexcavation. They didn't want to have to worry about a wet excavation site, couldn't afford to wait for hydrovac disposals and refills, and had over 100 cubic yards of material that needed to be moved (which would normally equate to about four or five disposal trips).

#### Solution:

By utilizing advanced suction excavation from **Ox Equipment**, the vacuum excavation service provider was not only able to get the job done in just two days, it saved the client thousands of dollars by reusing the excavated spoils. The dig rate of advanced suction excavation reached over 4 cubic yards per hour, and provisions were made to dump on site, which meant there was no downtime, no hauling or disposal fees, and no compromise to the safety or integrity of the underground infrastructure.

#### RESULT:

The total estimated productivity time that was gained by the client was 7.7 days. The contractor was happy to have this equipment on site. 888-290-4044; [www.ox-equipment.com](http://www.ox-equipment.com).

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# Product Spotlight

System alleviates pump fouling caused by flushable wipes

By Craig Mandli

**D**espite repeated warnings about flushable wipes not really being flushable, they are still flushed, gumming up wetwell and manhole locations and causing pump fouling.

Answering an industry need, Duperon has launched the Dual Auger System, a solution that utilizes three separate technologies to remove flushable wipes at or near where they enter the collections system, before downstream equipment can be impacted. It can be installed in manholes as small as 17 inches.

“By installing the DAS at high-ragging locations such as nursing home discharges, hospitals, prisons, campgrounds, truck stops, industrial applications and certain residential areas, debris is removed before it becomes a system-wide risk,” says Steve Dill, a mechanical engineer at Duperon Corp.

Vertical dual augers lift wipes and other debris at the source. Then a flexible bar screen captures debris, cleaning itself without the need for additional brushes or liners. Finally, a discharge extension chute conveys solids to the surface, where an operator can easily transport the solids for safe disposal. With the system, emergency maintenance is replaced with simple and infrequent solids pickups.

The DAS captures, dewateres, compacts and conveys solids in a single system. It features completely contained screenings for odor control and aesthetics. Above- or below-grade discharge options offer flexibility for each application, and a built-in bypass eliminates sewer backup during power outages.

According to Dill, work on the project began in 2017 when one of Duperon’s customers complained of several small lift stations in its collections system that were experiencing pump fouling due to an insurge of flushable wipes. A majority of the pump stations were operating satisfactorily, but there were a handful of problematic sites.

“After many more conversations with customers, we found this scenario was common,” Dill says. “Each municipality had a few sites that required the majority of their time and resources to address pump clogging and maintenance.”

According to Dill, initial customer feedback has been positive, pointing out that one site in particular revealed a potential cost savings of up to \$40,000 in annual labor. “Before installing the DAS, the city serviced clogged pumps two to three times per week, which entailed operators working in a confined space to manually remove debris,” he says. “After installing the DAS, they had zero instances of clogged pumps. We’re now evaluating a broad range of opportunities from small manhole applications to campgrounds, cruise ports and industrial projects.” **800-383-8479; [www.duperon.com](http://www.duperon.com).**



## 1. McElroy TracStar iSeries fusion machines

McElroy’s TracStar iSeries fusion machines have improved mechanical, hydraulic, electrical and control systems. The iSeries is powered by the new FusionGuide Control System that offers three levels of control, from operator-controlled to completely automatic, machine-controlled operations. The DataLogger 7 is completely integrated with the iSeries, ensuring that each fusion joint is recorded and complies with the fusion standard.

The TracStar 630i, 900i and 1200i cover three size ranges from 8-inch iron pipe to 48-inch outside diameter. All are equipped with a new and quieter Perkins (Caterpillar) engine that meets U.S. Tier 4 environmental regulations while providing greater torque. The system pressure was raised to more than 3,000 psi for more powerful ground drive, pipe lifts and other functions that use higher levels of pressure. **918-836-8611; [www.mcelroy.com](http://www.mcelroy.com).**



## 2. Reed CPDWW compact, cordless power drive

The lightweight yet powerful CPDWW cordless power drive from Reed adapts to drilling and tapping machines or attaches to exercise valves. Around 15 pounds, the cordless power drive is easy to handle and provides impressive torque. For operator safety, there is a power kick-off feature. The Reed VOKUCLUTCH utility clutch can be added for valve work, or the Reed TMPDA

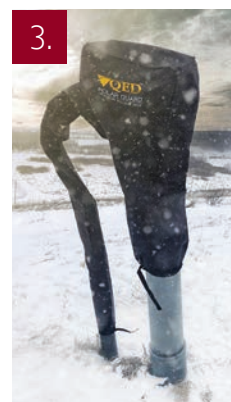
adapter can be added to connect to Reed and other common tapping or drilling machines. Since it is cordless, there are no tangles in tight spaces from power cords or air lines. Battery power eliminates the need for extra equipment on the truck, and the compact unit fits easily into ditches. **800-666-3691; [www.reedmfgo.com](http://www.reedmfgo.com).**



### 3. QED Environmental PolarGuard insulating wellhead cover

QED Environmental Systems' PolarGuard insulating wellhead cover protects and prevents frozen condensation on wellheads and gas collection hoses by tightly wrapping them. The PolarGuard cover allows for quick and easy installation using Velcro closures and web buckle straps, allow-

ing for convenient monitoring and maintenance. The covers are available for both Precision Control and Accu-Flo wellheads and can accommodate wellheads of up to 3 inches. **800-810-9908; [www.qedenv.com](http://www.qedenv.com).**



### 4. Franklin Electric VR SpecPAK Pressure Boosting System

Franklin Electric's VR SpecPAK Pressure Boosting System is a pump and drive package that combines the benefits of its high-performance VR Series Vertical Multi-Stage Pump with an efficient TEFC motor and variable-frequency drive specifically designed for pump applications. It is ASHRAE 90.1-2010 compliant and is designed with NSF/ANSI 61 and 273 certified isolation

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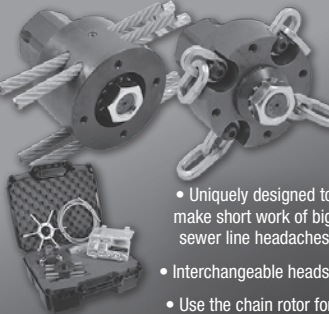


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