

Construction leaders come together to advance the water and wastewater treatment market, including at this 130-MGD lift station.

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Water/Wastewater II

Smart Water Strategies

A market perspective for improved technology and advancements

By Kate Gawlik

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Advocating for Solutions

How to Improve Maintenance, Reduce Footprints and Expand the Lifespan of Structures

To some in the construction industry, it is ironic that we need water to survive and wastewater to be removed properly to live healthily, yet the water/wastewater market is filled with temporary fixes and cost-saving shortcuts. Crisis in Flint, Mich., and droughts throughout the country are in the news daily. Alternative methods to address these and other problems have landed cities, companies and ultimately residents in hot water.

The other side of the news stream is filled with stories of organizations advocating for the improved treatment of water and the release of new technologies. The following market leaders shared their perspectives with us about these and other topics.

ENR: How can the water/wastewater market respond to aging infrastructure and outdated technology?



Roy Epps, Vice President, The Walsh Group: When it comes to aging infrastructure, it's not a matter of if, it's a matter of when.

Unfortunately, I've seen a lot of water and wastewater facilities respond to aging pipelines and structures with temporary solutions. There are many new and emerging products and methods that can help correct these problems and develop lifetime solutions for the facility and operations staff, resulting in easier maintenance, smaller environmental footprints and longer lifetimes of equipment. The use of flat plate membranes in existing aeration basins increases capacity, improves the process and reduces facility footprint.

Water and wastewater facilities can think about long-term investments, such as pipe lining techniques, which are becoming more common. There are improved liners for existing tanks or new tanks. Advanced oxidation

processes and ion exchange are becoming more common in the wastewater market due to their many benefits. There have been significant advances in membrane technology for wastewater treatment to provide higher-quality effluent.



Sean Lammerts, Business Development Manager, U.S. Pipe, a Forterra Company: We can respond by providing

products and services that anticipate future infrastructure requirements and most efficiently implement available technology into infrastructure replacement. We must prioritize strategic infrastructure replacement to realize maximum benefits on investment.



A. Grant Lee, Marketing Director, American Concrete Pipe Association: The best way to mitigate issues related to aging

infrastructure is to specify and construct sanitary and sewer pipeline systems and culverts under major roadways, railways and airport facilities with products and materials that have proven service lives that match the design life of the infrastructure asset.

ENR: What are current trends in water/wastewater?

Epps: With the recent droughts seen nationwide, the public is more aware of how precious a resource water is. In terms of water and wastewater, it's all about reuse. Advanced technologies will purify water with significantly less effort than in the past. Reusing water has become a cost-effective way to supplement our water use. Alternate delivery is becoming the delivery method of choice.

Lammerts: With shrinking budgets and the current water crisis in Flint and with PFOA, the industry is focusing on risk, accountability and life-cycle cost. We have seen the market moving away from the new, faddish and lower first cost materials in favor of tried and true materials that last longer and have a history of reliable service. In the West, the current trend is toward seismically resilient potable water systems to enable water at critical facilities for post-earthquake recovery.

Lee: Current trends have increased attention to post-installation inspection to ensure that owners of buried infrastructure systems are taking delivery of projects into their asset base that have been built according to specifications and standards.



Dr. Leslie Shoemaker, Executive Vice President of Water, Environment and Infrastructure, Tetra Tech: We

have seen an increased emphasis on water projects that address multiple objectives simultaneously. In Detroit, we are working with the City to address stormwater needs, revitalize communities, and convert properties to parks and beneficial use. This convergence of community engagement, urban revitalization projects and water management provides long-term social and economic benefit.

ENR: How do your products or services contribute to the trends?

Epps: The Walsh Group has continued to improve knowledge of water and wastewater treatment by researching the latest treatment process equipment. Our goal is to bring ideas to owners and to be a key contributor on our alternate delivery projects.



Christy Krone, Florida Representative, Xypex:

Many of the water/wastewater structures in the United States were built in the late

1950s and early 1960s. Many of these structures are now in poor condition due to the failure of membranes over time from water or harsh chemical intrusion. The use of Xypex repair mortar materials today provides an excellent means to restore the concrete structures and protect them for many decades to come.

Lammerts: Iron pipe has a long history of success, providing safe drinking water and sewer service for hundreds of years without needing to be replaced. When you add today's corrosion protection like zinc coating and enhanced polyethylene to a pipe that already has a proven track record, you get a reliable system with a lower life-cycle cost without the unknown

risk of plastic chemicals leaching into the water supply at some unknown time in the future. Many municipalities utilize earthquake-resistant ductile iron pipe to accomplish seismic design requirements.

Lee: Concrete pipe and precast concrete boxes are rigid products that arrive onsite as engineered structures. Precast concrete pipe and precast boxes arrive onsite as both a conduit and structure ready for assembly into a pipeline or culvert, with much less risk to the contractor or design engineer of performing as specified.

Shoemaker: We are focused on making sure that our approach to projects incorporates smart water strategies, including data and analytics-based solutions. By leveraging and integrating technologies, communications platforms and equipment, we can now design systems to include real-time controls to fully optimize performance.

Protecting the Engineer's Right To Choose

The American Concrete Pipe Association (ACPA) was a driving force behind the congressional adoption of Section 1525 of the Map-21 legislation that provided for autonomy for state engineers to determine the pipe material to be used on projects in the national highway system. That legislation changed misguided language introduced in SAFETEA-LU (by manufacturers of flexible material) that forced states to include all available products in their specifications. The right to use engineering judgment in making critical structural decisions is paramount in protecting the safety of the traveling public.

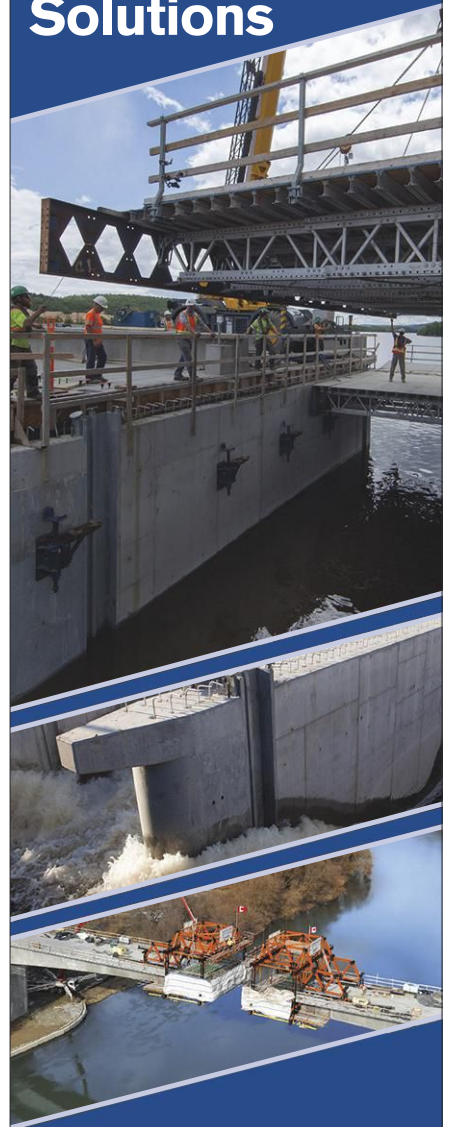
Individual states are being targeted by those same special interests that are supporting bills to force state, county and municipal engineers to



ACPA works with state Depts. of Transportation and local governments to supply products for sewers and culverts.

include all pipe products in publically funded projects. While these bills are being publicized as open competition pipe bills, they are direct attacks on engineers. Passage of such legislation would severely erode the ability of engineers to make engineering decisions. ACPA opposes these assaults on engineers and supports the engineer's right to choose. ♦

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barges are being used to allow increased maintenance to be performed on the aging structures. Contractors can access areas for repair that in the past would have possibly required total replacement of a structure.

ENR: What challenges do you currently face?

Epps: The biggest problem in the market is the availability of quality construction trades. We see an increasing number of projects, and the industry needs quality builders specializing in water and wastewater treatment.

Lammerts: The largest challenge in the market is that consumers and politicians

do not realize how valuable water is as a fundamental resource. We have become so efficient at limping along, providing service on a shoestring budget, that the public expects it.

Shoemaker: Technology continues to change very rapidly, but residents, business owners, and customers of water and wastewater utilities continue to expect infrastructure investments to last decades or longer. It's important for owners to understand the risks and benefits of investing in new technologies but also consider how to implement and integrate those technologies.

ENR: How can the construction industry address sustainability of the market?

Epps: Reuse is a priority, and we need to find better ways to store water for future use. The water and wastewater market also must use the correct treatment processes to avoid any more

instances like in Flint. The methods and technologies are available to treat water and make sure that there is enough water. We need to invest more to improve the infrastructure to protect this resource.

Lammerts: Sustainability of critical water supplies requires a holistic approach where the public consciously makes water-saving choices, utilities are proactive to identify and fix leaks, and engineers choose materials that are strong and resistant to breaks.

Shoemaker: Within the U.S. municipal water market, there's an increasing appreciation of the critical interrelationships between water, wastewater, stormwater, recycled water and all related water resources. This one-water mindset will have a significant impact on the industry as we provide a comprehensive, integrated approach to planning for the future. ♦



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