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# Coming Full Circle: Craft Brewers Demonstrate Potable Reuse Acceptance

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Some 20 years ago, a well-known American beer brewer decided that a Southern California water district would damage its reputation for a quality brew—aided and abetted by competitive beer makers—if that district succeeded in its plan to build a recycling plant that would return purified water to the local groundwater basin that the brewery obtained its water from and, eventually, to the drinking water supply. Two decades later, a seemingly clever but ultimately inaccurate description of this forward-looking process of potable reuse, namely “toilet to tap” (T-to-T), still resurfaces among scare mongers and sensationalists who use it as pejorative shorthand in a hearts-and-minds battle for reliable water supplies.

T-to-T remains a phrase that haunts potable reuse projects more than 20 years after it was first coined. Cartoons still appear, showing the choice of drinking from your toilet, along with pithy captions. Yet if you believe that all bad things must come to an end, in large part that’s what is happening today: there are more potable reuse projects than ever being planned and implemented. And whether it’s drinking from a water tap or beer tap, public acceptance is becoming more prevalent than ever.

Starting with home brewers in the Northwest who introduced their beer brewed with purified recycled water in 2013 at the WaterReuse Symposium in Seattle, to the groundbreaking effort by Stone Brewing with its Stone Full Circle Pale Ale in 2017, beer brewers have become a vital symbol of

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acceptance of potable reuse that water purveyors can drink to.

Encouraging the public's acceptance of water reuse projects, even when backed with incontrovertible science, has not been an easy journey. The San Diego (Calif.) water purification program was nearly stillborn during the late 1990s when politics and unsubstantiated fears seemed to outweigh the science. Like San Diego, Los Angeles (Calif.) experienced a similar backlash to water reuse in 2000. The Los Angeles Department of Water and Power had completed the lengthy process to design and construct its East Valley Water Reclamation Project, complete with a public outreach program to inform customers and garner support from local city council members. Both the *Los Angeles Times* and the *Los Angeles Daily News* had printed positive articles about the project before its completion. In April 2000, however, the *Daily News* headline "Tapping Toilet Water" appeared with a story alleging the public had not been informed about the project. This launched a political free-for-all in the Los Angeles mayoral race, as well as stories on every major television news outlet and late night comedy shows. It took until 2008 for the City of Los Angeles to begin to seriously explore new opportunities for potable reuse.

Times have changed, however, and now Pure Water San Diego is a beacon of progress that is expected to supply one-third of the community's drinking water by 2035. Likewise in Los Angeles, both the City of Los Angeles and the Metropolitan Water District of Southern California are in various stages of evaluating how to incorporate potable reuse without as much prejudice as in the past. To appreciate this change in mindset, one must first acknowledge the deep-seated human aversion to any contact with wastewater. With that in mind, it's easy to understand how improving the public's opinion of reuse was only achieved with hard work, a knowledgeable team

armed with facts and science, and a consistent commitment to communicate the truth.

### HUMAN NATURE EXPLAINS THE "YUCK FACTOR"

A recent article, titled "Psychological Aspects of the Rejection of Recycled Water: Contamination, Purification

and Disgust" (Rozin et al. 2015), explores the public's resistance to reuse and concludes its basis lies in psychology. From a sample of 2,000 adults from five major metropolitan areas, it was reported that approximately 13% would definitely refuse to drink recycled water, 49% are willing to try it, and 38%



Stone Brewing and the City of San Diego, Calif., partnered in 2017 to create a new beer using 100% advanced treated recycled water.



San Diego mayor Kevin Faulconer (left) and Stone Brewing chief operating officer Pat Tiernan toast the first glasses of Stone Full Circle Pale Ale. The March 2017 Pure Stone event was covered by nearly 90 local, national, and international news outlets.

are uncertain, though it is likely that the “willing to try” percentage has risen in recent years. The authors found that “both disgust and contamination sensitivity predict

Stated another way, even though the science around reuse is settled, the psyche of some people just won’t allow them to accept it. Psychologically, an irrational lack of

reinforcement through loaded language like “T-to-T” and other slogans.

### HOW PURE WATER OPPONENTS HAVE EMBRACED THE T-TO-T MENTALITY

San Diego, we have a problem: one of America’s most beautiful and coveted cities lies in a cul-de-sac at the southern end of California, a semiarid community that has long depended on outside water sources for survival. These sources are hundreds of miles away, require significant energy to transport the water long distances, and have become less reliable for a host of reasons, including droughts in these distant watersheds or political decisions made equally far away.

Returning to our story, at about the same time the well-known beer brewer was fighting the local water district’s plans for potable water recycling, the San Diego Water Utilities Department (as it was then known) began dreaming of a local, drought-proof, less expensive way to serve more than one million thirsty inhabitants. That dream—a nightmare at times—crossed well over the turn of the century before it even approached reality.

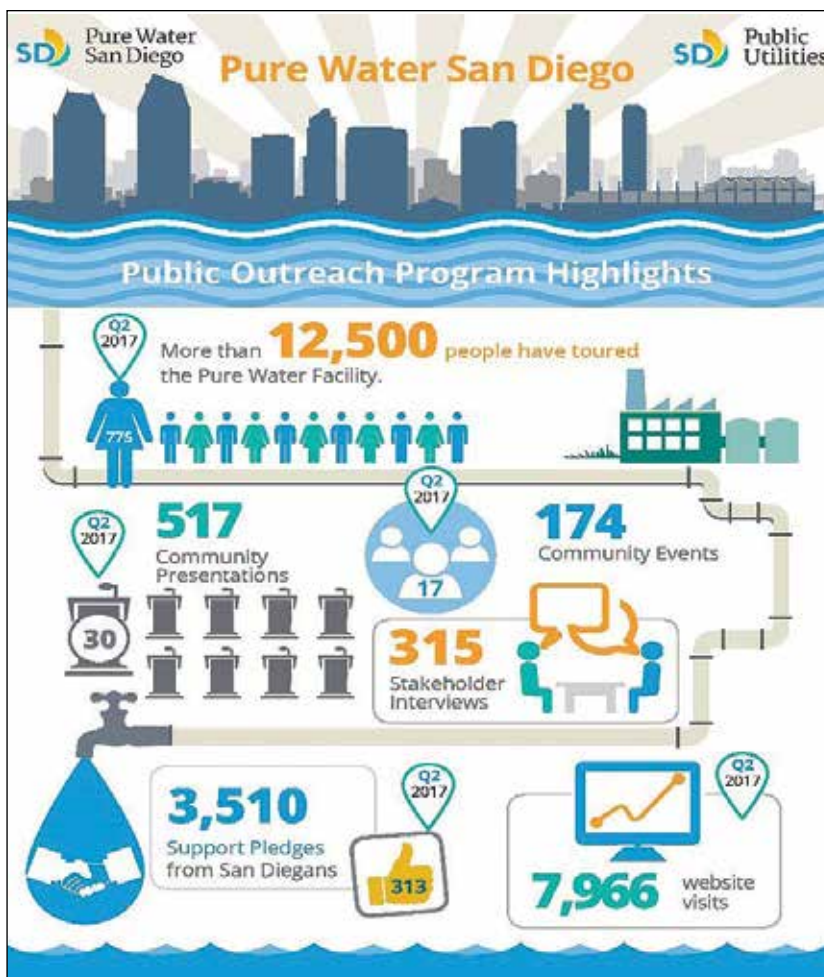
If you have a political race to fight, the T-to-T mentality is a gift that has kept giving for years, the stuff of headlines generated in local media with frenzied regularity. While the city launched proactive and accurate communication about the project and earned public support from key stakeholders and regulators, T-to-T was used to promote public distaste for potable reuse. Even talk show host Jay Leno mocked L.A.’s idea as T-to-T, instantly reinforcing negative connotations through his choice of words.

Starting in 1993, project communications for San Diego’s water utility dutifully included textbook examples of how to do it right: sound scientific research; an independent advisory panel; a broad-based and large coalition of medical, scientific, business, academic, and environmental supporters; dozens of presentations,

Pure Water San Diego is a beacon of progress that is expected to supply one-third of the community’s drinking water by 2035.

resistance to consumption of recycled water,” and that “for a minority of individuals, no overt treatment of wastewater will make it acceptable for drinking, even if the resultant water is purer than drinking or bottled water.”

acceptance trumps reason—it’s called the “yuck factor.” So while reuse systems can reliably purify water, the challenge for its wider acceptance is to overcome this very real yuck factor, a task made all the more difficult by negative



Sustained outreach and communication helps ensure that Pure Water San Diego keeps the support of stakeholders and the community at large (outreach statistics through June 2017).



events, and issue-specific workshops; and an initially willing city council that funded the exploration for five years. That's right—five years!

By the time the city effectively killed the project in late 1997 (the council said it wasn't ready for the commitment), opponents of potable reuse framed it negatively at every opportunity, and taken together with several other events occurring at the same time, the stakes were just too high for the political decision-makers to get over. Specific instances included the following:

- The mayor, running for reelection, didn't see water purification as a comfortable companion on the ballot that fall.
- The usual blame game between the two leading political parties led to finger pointing that defied the potential value of the project.
- As a way to discredit the Republican San Diego mayor at the time, a Democratic state senator—with no jurisdiction on the issue of water or this specific project—organized a high-profile state committee hearing with his local San Diego Democratic colleagues to continue exposing the project (and the mayor) in a negative light.
- A San Diego California Assembly candidate surveyed his constituents, asking if they supported drinking their own toilet water, prompting the expected negative and widely highlighted response.
- A television consumer affairs reporter—who years later supported the Pure Water project as a city council person—staged a multi-part series on potable reuse, using a makeshift display with a toilet connected to a mysterious black box, then to a drinking faucet. The piece innocently asked, “Do you have confidence that magic happens in this box?”
- The San Diego County Water Authority, the regional



**Orange County Water District bottles its purified water and offers taste tests to community members throughout California and the United States.** *Photo courtesy of Orange County Water District*

wholesaler, was steeped in its own pursuit of a large-scale water transfer program and, as such, had limited involvement or ability to advance the city's potable reuse initiative.

- One city council candidate raised the issue of environmental justice, saying that wastewater from a wealthier area in the city would be distributed as drinking water to minority community areas. He organized a group of African-American ministers to attend a city policy committee to raise these concerns in a high-profile and dramatic manner. The story was the top item on all major news networks for two days.
- While the National Academy of Sciences declared that even though a study by preeminent scientists supported the technology to be used by San Diego and other jurisdictions—as if to reassure doubters—the executive summary included a reference that potable reuse should be an “option of last resort.”

- And finally, concurrent major issues, such as the staging of the 1996 Republican presidential convention and a critical vote to approve a new baseball park, sapped the electoral energy of the community. Potable reuse became an unwanted stepchild of the late 1990s.

### **BUT THAT WAS LAST CENTURY**

What has changed the mindset of a skeptical public in this new century? Possibly it's a recognition that all of California, not just San Diego, has a water supply issue dominated by an unruly Mother Nature. Likely the recent five-year, statewide drought had sufficient power to light a bulb above many a doubting head. And certainly the growing acceptance of the evidence that potable reuse can be safe, which has been consistently demonstrated through research and full-scale projects, is a factor.

An excellent example of success is the Orange County Water District's (OCWD's) water purification system, which has been so successful that the OCWD now passes out small bottles of its purified water to

spread the purification gospel. OCWD's Groundwater Replenishment System (GWRS) continues to be a game changer for potable reuse projects. Legislation was passed in California in 2016 that allows GWRS to produce 8 oz. bottles of its purified water, which means OCWD can now bring its taste

(in the form of fertilizer). Schools have also done a better job providing education on the water cycle and its limitations. That being said, the authors have found continued resistance in select multicultural audiences, especially those that have moved to the United States from a country that frequently

water may once have helped to flush a toilet.

Regardless, in 2011, a variety of factors and a newly persistent San Diego city council commissioned a demonstration Pure Water Facility to provide tours of the process and explain the underlying concepts. The facility also offers officially sanctioned tasting of the final product. This undeniable demonstration of success was sufficient to rally strong political support for the implementation of a full-scale water purification system, which is currently in development. Credit city leaders with strategically using this hands-on approach in combination with consistent messaging to build interest, support, and excitement about Pure Water's potential in their region. This resulted in a 2016 vote to move ahead with the \$1.2 billion first phase of the Pure Water program, which includes a full-scale purification facility (to be located across the street from the demonstration facility).

"Advancing Pure Water San Diego is a marathon, not a sprint. We work closely with our elected officials, our public utilities staff, our diverse group of regional stakeholders, the media, our wastewater member agencies and the consultant teams we have retained to keep the lines of communication open and current, as well as ensure stakeholders are still engaged," says Halla Razak, former City of San Diego Public Utilities Department Director. "Pure Water San Diego is a multi-year program with full buildout to be completed in 2035. A lot can happen over two decades, so keeping the public well informed and maintaining their support is a top priority" (Razak 2017).

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tests to a wide range of audiences in California and the United States. "We had over 4,000 people tour the GWRS facilities and taste our purified water in 2016, but being able to bottle this fabulous water allows us to reinforce how safe it really is and to support other projects no matter where they are located," says OCWD president Denis Bilodeau (Bilodeau 2017).

Also, younger audiences seem to have higher confidence in technology and have grown up recycling their trash, blood, and even excrement

experiences health issues due to questionable or contaminated drinking water. The drinking water situation in Flint, Mich., generally raised questions about a governmental entity's ability to operate its water system. Concerns are often raised by women in their 30s and 40s as they are primary child-care providers or are caring for aging parents with compromised immune systems. And returning to the previous discussion, a certain percentage of the general public just can't get over the fact this



Home brewers from the Quality Ale and Fermentation Fraternity served their beers to attendees of the Pure Brew event at the 2017 WateReuse California Annual Conference in San Diego.

## THE TIDE IS TURNING

In the decades since potable reuse was first proposed, San Diego's thinking has evolved to a surprising degree. Case in point, Stone Brewing was asked to turn T-to-T on its head by producing Stone Full Circle Pale Ale, mentioned earlier, for a City of San Diego event. The beer was

made with purified water from the city's demonstration facility, and its name is a full-on attack of that outdated trope.

And this isn't an isolated incident: a home brewing contest using recycled water was held at the 2017 WaterReuse California Conference. Members of the Quality Ale and Fermentation Fraternity, or QAFF, brewed beer with names such as I Pee Ale and Sweet Reclamation, made from San Diego's purified water. Ballast Point Brewing Company provided its Padre Dam Pilsner (brewed from water produced at Padre Dam Municipal Water District's East County Advanced Water Purification Program) for the 11th International Water Association International Conference on Water Reclamation and Reuse held in Long Beach, Calif., in 2017.

When one of the most respected technology leaders and philanthropists in the world, Bill Gates, cajoles the host of *The Tonight Show* to sample drinking water created from wastewater, it is a sure bet the tide is turning. More and more observers believe supporting water purification is the side of history to be on. For Gates, the mission is humanitarian: developing water purification technology to serve millions of third-world citizens without sufficient water.

Many in the public are willing to accept that wastewater can be purified to safely augment drinking water supplies, but there are some who will not or cannot. Groups that resist potable reuse still trot out tired terms like T-to-T, but when this occurs, it should be called out immediately and refuted with the truth. Agencies must not lower their guard by lessening their outreach and communication programs. At the same time, communicating about potable reuse is not the same as talking about traditional water supplies. Words are important! What you say, the words you use, how you frame the context, the need for a broader support base, and so on—all are necessary ingredients.

Negative attacks can erode support, and as San Diego's former director Razak said, these projects are a marathon, not a sprint. A lot can happen to derail projects that often take more than a decade for designs, environmental reviews, funding, and construction. Consistent, sustained, and comprehensive outreach is still the key, but communicating creatively can certainly help. The efforts of Stone Brewing and other intrepid craft brewers have created a great symbol of progress, changing the steady drip-drip-drip of T-to-T's irrational fear to a refreshing sip-sip-sip of malt-and-hop ingenuity.

## ABOUT THE AUTHORS



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