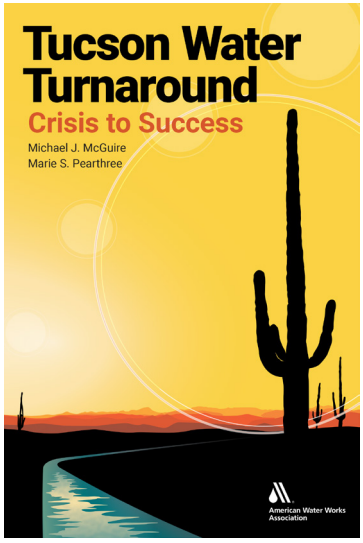
# From Outrage to Trust at Tucson Water

G. Tracy Mehan III




**A review of *Tucson Water Turnaround: Crisis to Success***

Michael J. McGuire and Marie S. Pearthree

Before Flint, there was Tucson.

Michael J. McGuire and Marie S. Pearthree have written what the military would call an "after action report" on one of the great crises experienced by an American water utility in the pre-Flint era absent a natural disaster. In *Tucson Water Turnaround: Crisis to Success,* they provide a deeply researched, well-sourced insiders' view of how, in 1992, Arizona's Tucson Water (TW) became embroiled in nonstop controversy for nearly a decade. The story reveals technical omissions and missteps, obtuse management, political interference, and the failure to realize just how customer-facing a water utility truly is. As consultants and, with Pearthree as a TW employee, the authors were intimately involved in this tale.

## A Tale of Errors

As in Flint, Mich., the Tucson crisis stemmed from the failure of corrosion control when water from a new source—in this case the behemoth Central Arizona Project (CAP)—was brought to Tucson, a city accustomed to high-quality groundwater. CAP is a 336-mile system that brings Colorado River water to Arizona and now serves 80% of the state population. CAP was to be the solution to groundwater mining and subsidence as well as the key to future growth. Pressure was also building for Arizona to use its full allocation of CAP or Colorado River water pursuant to western water law ("use it or lose it") rather than revert to California by default.

A crucial part of the story involves the 200 miles of aging galvanized steel pipe in the ground and in customers' homes. Budget cuts by Tucson's city council made it impossible to replace the water mains at a reasonable pace. When the CAP water was introduced in 1992, zinc orthophosphates were introduced at TW's new treatment plant to control corrosion; it had the opposite effect. Pipes corroded, creating rusty, red, orange, yellow, and brown water at the tap, which ruined clothing, damaged appliances, and flooded homes. From 1992 to 1996 there were 12,178 complaints made to TW, primarily for discolored water and foul tastes and odors. There resulted 5,700 damage claims; $1.9 million was paid out.

Acrimony ensued. Heads rolled at the highest levels of TW. Consultants, often giving good advice but ignored, were hired and fired. A new law was passed that restricted use of CAP water in limited circumstances (e.g., mining and agriculture), only to be delivered directly to people "if it was treated to resemble Avra Valley groundwater."

Through an agonizing, attenuated process, and investing in the necessary studies and testing of source water and potential treatment that should have been done before CAP was turned on, it was determined that elevated pH was the best approach. The use of zinc orthophosphates with chloramines, at a pH of 7.5, was exactly the worst colored-water control measure, given the elements of CAP water. It would result "in the greatest level of iron release and the most colored water from galvanized steel pipes." As one senior manager at TW observed, TW's tenacity in holding on to this treatment approach was "a death spiral . . . they were locked on it like a dog on a pork chop."

## An In-Depth Synthesis

The book's authors spent three years researching, interviewing, and writing this impressive synthesis of complex engineering, water chemistry, political, and governance challenges, along with savvy product development, marketing, and testing of new flavors of water to compensate or substitute for the loss of groundwater to which customers had become accustomed. In light of the

voluminous technical and chronological detail in *Tucson Water Turnaround,* the authors do their best to help the reader move through the material. The book contains two appendixes, one on key events and the other on the many dramatis personae ("Key People in the Tucson Water Turnaround"), including TW managers and personnel, politicians at the county and city levels, local business leaders, and activists.

In the preface, the authors provide a helpful shortcut to readers, with specific chapters identified to be read either by a "Reader of Stories," "Tech-Savvy Generalist," or "Water Geek." These abbreviated reading regimens hopefully will encourage managers, political scientists, and students of utility governance to venture into this substantial volume and the tangled controversies engulfing the City of Tucson. McGuire and Pearthree explain: "We discovered early in our research that the colored water problems in Tucson were not strictly a technical failure. Without a doubt, the technical failures could have been overcome if management failures had not compounded the problems."

At several points in the story, the authors cite the one thing water utility personnel should never, ever say to the public, but did, regularly, at TW: "Water throughout the system has been sampled and tested on a regular basis and *each time has meet [*sic*] all of the State and Federal water quality standards"* (emphasis added). Regarding a similar statement made by the city manager at one point, McGuire and Pearthree observe, "This statement will be made again and again for the next two years, and no matter how many times it was said, members of the public who heard it did not believe it . . . TW never learned that supplying water to customers that smelled, looked and tasted terrible overrode any Pollyannaish statement that the water met drinking water standards."

When TW tried to reassure customers that treated CAP water was safe because it met health standards, it fell flat. Only excellent technical studies and "a new approach to making the public a partner in the sharing of results" would temper the outrage and restore the trust of the community.

## Seeing the Light

The turnaround at TW is a story of an institution finally coming to grips with its failings, finding new leadership, and doing the hard technical work of analyzing source water and the means of treating and delivering it in a way customers prefer. TW undertook massive communications, public engagement, and outreach initiatives and—yes, marketing efforts—first to come up with water blends that customers liked and then promote the newly formulated, blended water through relentless and strategic communications. TW staff even bottled it to demonstrate how well it tasted at malls, meetings, and public gatherings. All this entailed more outreach and responsiveness to customer demands than was the case at TW pre-crisis.

A major contribution to the happy ending came about when TW's political masters finally saw the light and provided the necessary budget so that, by 2001, about 169 miles of corroded galvanized steel mains had been replaced.

As long as groundwater levels continue to recover and Colorado River water keeps flowing, Tucson is relatively drought-resistant. No one is complaining about water quality or aesthetics. But success came at a cost. For all the construction, consultants, technical and market research, recharge basins, pipelines, reservoirs, booster pump stations, chemical feed systems, and recovery wells, the final price tag came to US$80.5 million, an amount equal to the original water plant built but only used for two years before shutting down in the crisis.

The tragedy in Flint involved another failure to anticipate the consequences of switching source waters with consequences for human health—not just taste. As Mark Twain may or may not have said, "History doesn't repeat itself but it often rhymes." Hopefully, the water utility sector will not experience another Flint or Tucson fiasco, thanks to the labors of Michael McGuire and Marie Pearthree.

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