

The Flint Water Crisis

Water is one of the most important resources on Earth, needed by every living organism to survive. Without water, life as we know it would not exist. For thousands of years the location of civilizations has been dictated by sources of water, not only for drinking but also for transportation, trade, and irrigation. In Michigan, we are fortunate to be surrounded by the largest body of fresh water on Earth. According to the Michigan Department of Environmental Quality (MDEQ), it is estimated that the five Great Lakes contain six quadrillion gallons (6,000,000,000,000,000) of fresh water (michigan.gov, 2017, p. 1). So, with such an abundance of water, how could something like the Flint water crisis (a public health crisis caused by water poisoned due to a combination of inappropriate water treatment and old, lead pipe infrastructure) happen here in Michigan? How it happened; a blend of historical, technical, and political factors, and the lessons learned for environmental planners are explored in this paper.

Cooperative Federalism

The 1970s “remains the most remarkably creative legislative period in the history of American environmentalism” (Rosenbaum, 2020, p. 10). Nearly all the major environmental laws and regulatory agencies, and environmental interest groups came into being during this decade. Beginning with Richard Nixon’s administration, both political parties recognized the national mood’s concern for environmental protection. A collaboration of Democrats and Republicans in both the Senate and Congress established the legal and political foundations of the U.S. environmental policy still in use today. Among the most relevant to the Flint water crisis are the National Environmental Policy Act of 1970, the Clean Water Act of 1972, the Safe

Drinking Water Act (SDWA) of 1974, and the Clean Water and Clean Air Act Amendments of 1977 (LaMore, 2020, slide 47). In 1970 Nixon established the U.S. Environment Protection Agency (EPA), the federal agency responsible for protecting, regulating, enforcing these environmental laws. The SDWA enabled the EPA to “(a) set national drinking water- quality standards; (b) require water quality monitoring, water treatment, and the public reporting of contaminants in drinking water systems; (c) fund source water protection programs to protect watersheds, aquifers, and wellheads from potential contamination; and (d) ban the underground injection of hazardous wastes” (Daniels, 2014, p. 157).

While the EPA is the ultimate authority, Michigan, like most states, possesses federal primacy which means the state has the primary enforcement authority for the SDWA. This authority is then passed down to regional and local governments who are responsible for ensuring safe drinking water for their residents. This is called cooperative federalism and is important to environmental planning as evidenced by the fact that nearly every chapter in Daniels (2014) has separate sections for federal, state, and local responsibilities. “This cooperative relationship between all levels of government is fundamental to making cooperative federalism work” (Fewell, 2016). As we will see, a breakdown in cooperative federalism had significant consequences for the Flint water crisis.

Before the Crisis

Flint experienced great prosperity between World War II and 1960s due to the presence of General Motors and a thriving automobile industry, but it did not last. In the 70s and 80s manufacturing jobs began to disappear, white residents fled the city to surrounding suburbs leaving behind the impoverished, mostly African American residents. Flint’s population shrank

from 200,000 in the 1960s to 98,000 by 2009 (Morckel, 2017). The result of population loss is a diminished tax base which then created a financial dilemma. Flint found itself having to maintain an old, oversized pipe network designed for 200,000. Flint water rates rank among the highest in the U.S. (Pauli, 2020). Local officials tried mightily to keep Flint afloat financially but faced with outside forces of globalization and suburban sprawl, eventually Flint was placed under the control of “emergency managers” appointed by the governor in 2011 and remained so during the crisis (Pauli, 2020). The primary responsibility of the emergency managers is to re-establish fiscal solvency which they accomplish by cost cutting.

The Switch

Since 1967 Flint has been purchasing treated water from the Detroit Water and Sewage Department (DWSD) at which time the Flint Water Service Center (FWSC) was switched to a backup treatment facility, treating Flint River water two to four times per year for a few days at a time (Masten, 2016). In 2013, with the goal of reducing treated water costs, Flint under the control of an emergency manager, decided to join the newly formed Karegnondi Water Authority (KWA) who was constructing a pipeline to transmit water from Lake Huron. In the meantime, Flint could have either stayed with DWSD or bring online the FWSC backup treating water from the Flint River. The decision to join the KWA caused tensions between Flint and the DWSD. The KWA was seen by some as an attempt to take control of water away from a majority-black city and give it to white, affluent suburbs and counties (Pauli, 2020). Agreements over a short-term contract with DWSD broke down and Flint decided to use water from the Flint River treated at the FWSC.

The sparingly used FWSC plant was ill-equipped to deal with the change. Upgrades fell well short of recommendations made by private contractors. The staff was underprepared, often untrained and inexperienced. And the Flint River was considered a challenge to treat because it was a variable water source, fluctuating with rain events. Many warnings and concerns were voiced. Mike Glasgow, plant laboratory and water quality supervisor warned on April 25, 2014 “I do not anticipate giving the OK to begin sending water out anytime soon. If water is distributed from this plant in the next couple weeks, it will be against my direction.” (Masten, 2016). The warnings were ignored, and The City of Flint switched its water supply to the Flint River on April 25, 2014 (Pauli 2019).

The Water Warriors

Within weeks of the switch, residents began complaining about the color, smell, and taste of the water. The city warned residents at the time of the switch that the water would take time to “level out” and people trusted this explanation and assumed the government agencies would alert the public if there was cause for concern (Pauli, 2019, p. 255). In May 2014 officials at the MDEQ were notified of rashes caused by the water, there was a spike in water main breaks, and in October 2014 General Motors announces it would no longer use Flint River water at its engine plant, citing the high corrosiveness of the water. Faced with denials and inaction by officials, Flint residents began to organize, forming groups like Water You Fighting For? and the Coalition for Clean Water to find answers and push for action. As the city officials continued to reassure the public of the water’s safety, laypeople engaged in “popular epidemiology” (Pauli, 2020), gathering evidence of contamination and charting it on maps. The situation was remarkably like that of the cross-disciplinary team lead by John Snow, the father

of epidemiology, in the 1854 Broad Street cholera outbreak in which an impoverished community's pleas for help were ignored by public officials (Johnson, 2006). A group of activists partnered with engineers from Virginia Tech University to perform a water sampling study. The results showed system-wide lead contamination. Data published by local pediatrician Mona Hanna-Attisha showed that blood lead levels in children had increased significantly after the switch (Pauli, 2020). The water warriors finally had enough evidence to convince officials of the public health crisis occurring.

The Failure

Why was there such a long delay in responding? Rosenbaum (2020) says, "Federalism introduces complexity, jurisdictional rivalries, confusion, and delay into the management of environmental problems. Authority over environmental issues inherently is fragmented among a multitude of governmental entities." (p. 41). Many of the things that could go wrong about cooperative federalism did during the crisis; time delays, miscommunications, misinterpretations, finger-pointing, bureaucratic competition. In addition, several outright illegal, unethical, and incompetent acts were committed. Loopholes were exploited in the SDWA Lead and Copper Rule (LCR) sampling procedure like pre-flushing pipes and using narrow-neck sampling bottles to minimize the presence of lead (Pauli, 2020). MDEQ dropped samples from its lead level report in order to bring results within the federally mandated levels. MDEQ officials casted doubt on the Virginia Tech results, the Department of Health and Human Services casted doubt Dr. Hannah-Attisha's data, claiming the high lead level results may be due to seasonal changes rather than the switch in water sources. MDEQ admitted to misinterpreting the LCR as its reason for not enforcing corrosion controls at the plant (Kennedy,

2016). In October 2015 the water supply was switched back to the Detroit water supplier. But the damage was done, not just to the pipes but to the long-term health of thousands and to citizens' trust of government agencies whose job was to protect that health.

In a rare move on January 21, 2016, the EPA issued a Section 1431 of the SDWA administrative order, stating the presence of lead in the city's water supply is primarily due to the lack of corrosion control treatment (orthophosphate) after the city switched water supplies. Section 1431 equips the EPA with broad emergency powers, authorizing the agency to take any action it deems necessary when it comes to contaminants causing health problems. Of 1,183 administrative orders issued by the EPA since 2009, only 3 involved the SDWA. This fact alone should scream "this is a big deal", but again delays occurred. Months of back-and-forth disagreements between the EPA and MDEQ over things like the LCR requirement, the legality of the emergency powers, and EPA deference to Michigan in enforcement actions caused delays (Fewell, 2016). Findings by the Flint Water Advisory Task Force (FWATF) of March 2016 overwhelmingly placed blame on state officials but also called out the EPA, "EPA failed to properly exercise its authority prior to January 2016. The agency's conduct casts doubt on its willingness to aggressively pursue enforcement" (p. 8).

Aftermath

The FWATF was appointed by Governor Rick Snyder and charged with conducting an independent review of the crisis. The FWATF found the state primarily responsible for the water contamination because of its agencies' failures and its appointed emergency managers' misjudgments, with the bulk of the blame on the MDEQ. "Emergency managers charged with financial reform often do not have, nor are they supported by, the necessary expertise to

manage non-financial aspects of municipal government” (p. 8). It also stated, “The Flint water crisis is a clear case of environmental injustice” (p. 9). Despite this in 2019, all criminal and civil charges against officials and companies involved in the crisis were dropped.

Flint received millions of dollars in state and federal aid, mostly for the replacement of the aged lead and galvanized steel pipes, now nearly complete. Citywide lead levels were below the EPA action level by the end of 2016, and in April 2018 the State of declared Flint’s water fully restored. The financial cost of the Flint water crisis is incalculable, as it is still being paid for. To date the state has provided \$350 million, the federal government \$100 million (Michigan.gov, 2020), and just this August the state agreed to pay \$600 million to affected Flint residents (Chappell, 2020). As a result of the crisis, Michigan water standards are now the strictest in the nation (Pauli, 2020).

Planning Solutions

Morckel (2016) says “true origins of the Flint water crisis can be found in U.S. failures to address the consequences of large-scale population loss, a general lack of regional planning, and a lack of care for infrastructure and shrinking cities”. Planners need to acknowledge shrinking populations and try to make cities experiencing them more sustainable. She says the cities should adopt right-sizing strategies to address population loss and budget concerns. Right-sizing attempts to match size of services with size of population but has, in the past, been unpopular. Another approach she suggests is to share infrastructure and resources with the surrounding communities to help provide more equal services. Census data shows that Genesee County population grew from 1960 to 2015, despite the city’s decrease. People just all moved out of the city to developed surrounding land, a process known as “the housing

disassembly line". Other regional approaches include annexation, shared services, consolidation, and tax-sharing. Planners also need to draw attention to the importance of largely behind-the-scenes infrastructure. Water infrastructure gets less attention than other types such as roads or schools. We take it for granted but the Flint water crisis brought to the forefront the issue of aging infrastructure and the need for funding to upgrade it. Flint is a warning for other shrinking cities, we can either wait for crisis to occur and pay heavily for the fallout, as is happening with the Flint water crisis, or we can be proactive and invest in infrastructure before something goes wrong. As Pauli says, "infrastructure is far more than the sum of its material parts: it is infused with political, social, and cultural meaning" (2020, p. 70). Cooperative federalism is not doomed, and we need to leverage it for the future of these cities and all of us.

Conclusion

A combination of factors caused the Flint water crisis. Historical factors, like population loss, degraded infrastructure, and economic disinvestment. Technical factors, like the failure to implement corrosion control. And perhaps the most significant of all, political factors, such as appointing emergency managers who prioritize cost savings over public health, and power grabs for control of the region's water. The crisis has aroused calls for renewed commitment to funding public infrastructure, greater attention to environment justice, and for recognition of water as a fundamental human right. We as planners play a central role in making sure the lessons learned from the Flint water crisis are heeded for the good of our future and that of the planet.

Abbreviation Key

DWSW - Detroit Water and Sewerage Department, currently called Great Lakes Water Authority
EPA – U.S. Environmental Protection Agency
FWATF – Flint Water Advisory Task Force
FWSC – Flint Water Service Center or the “plant” that was treating the Flint River water
LCR – Lead and Copper Rule
MDEQ – Michigan Department of Environmental Quality. MDEQ was renamed the Michigan Department of Environment, Great Lakes and Energy (EGLE) by Gov. Gretchen Whitmer on April 22, 2019
SDWA – Safe Drinking Water Act

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