

# Forward: MWRA Executive Director's Perspective

**Frederick A. Laskey<sup>1</sup>**

<sup>1</sup> MWRA Executive Director, Boston, MA USA

E-mail: fred.laskey@mwra.com

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The Massachusetts Water Resources Authority (MWRA) MWRA is an independent authority that provides wholesale water and sewer services to its customer communities and funds its operations primarily through user assessments and charges. MWRA was created by the legislature in 1984 and inherited operations and facilities beginning in 1985 from the Metropolitan District Commission, a century-old department of state government. Although best known for the successful clean-up of Boston Harbor, MWRA has also modernized the region's drinking water system; curbed daily water demand; invested in on-site, renewable energy sources; has ongoing plans to mitigate the effects of sea level rise; and is committed to developing and retaining a high-performance, diverse workforce that reflects our service area.

In the late 1980s, the Boston area faced the unfortunate reality of having the most polluted harbor in America. Falling into the Charles, Mystic, or Neponset Rivers meant a trip to the hospital for disinfection, while urban beaches remained closed for extended periods due to water pollution. Dry weather sewage overflows further marred the beaches and waterways, leading to a virtually lifeless harbor floor with a thick, black mayonnaise-like substance. The foul smell emanating from the harbor forced waterfront residents to keep their windows closed, becoming a source of national embarrassment for the region.

The situation on the drinking water side was not much better, although it might not have been as visually or odorously apparent. The single-barrel Hultman Aqueduct experienced numerous leaks, and the demand for water consistently exceeded the daily safe yield of the reservoirs. Outdated treatment methods involving gaseous chlorine posed concerns, while storing treated water in open distribution reservoirs left them susceptible to pathogens and pollution.

Fast forward 37 years and the results of our efforts are an indisputable success. Our beaches are now considered the cleanest urban beaches in the country. Boston Harbor has healed itself and is swimmable – even in wet weather. The drinking water is so good that we were named 'Best in the Country' in 2014 and 2021, and this summer when the entire Commonwealth was in a drought, the Quabbin Reservoir never dropped below 90 percent full. So how did we get here and where are we going? The papers in this volume

will describe how the work we have done since MWRA took over operations in 1985 have turned the tide.

But we cannot take all the credit. Our predecessors left us with one of the country's greatest water systems. Even through decades of neglect, the water always got to the tap. The engineers who designed each stage – from the Cochituate Reservoir in the 1840s, the Sudbury Reservoir in the 1870s, the Wachusett Reservoir in the 1890s and finally the Quabbin in the 1930s – knew precisely what elevations would get the water east by gravity to provide for an ever-growing population. And all without the aid of computers. Boston also had some of the earliest sewer infrastructure in the country, but it did not take very long before population and progress outpaced the ability to just send it off with the outgoing tide. To make matters worse, this was followed by decades of underfunding and lack of maintenance as it was difficult to convince legislators to fund operations that were out of sight and therefore out of mind.

Enter MWRA. The first order of business for the new authority was the clean-up of Boston Harbor by building a state-of-the-art wastewater treatment plant on Deer Island, with its 9.5-mile deep-rock outfall tunnel. Eleven years and \$3.8 billion later, the plant was completed in 2001 and continues to operate better than envisioned. This was followed by a \$900 million plan to control combined sewer overflows (CSOs) that discharged raw sewage into Boston Harbor's tributary rivers, the Charles, the Mystic and

the Neponset, during heavy rains. In 2015, completed 35 separate projects that included sewer separation, storage, and treatment. To add to the urgency, this work was competed under the oversight of the federal district court.

In 1995, we embarked on a mission to revitalize the drinking water system through the ambitious \$1.7 billion Integrated Water Supply Improvement Program. As part of this initiative, we constructed a 17.6-mile-long tunnel to bolster the aging Hultman Aqueduct. In addition, seven covered water storage tanks were built, and a cutting-edge water treatment plant was established, initially utilizing ozone and later adopting ultraviolet light technology. Thanks to these endeavors, our valued customers now enjoy some of the finest water quality in the entire country.

It is crucial to acknowledge that the ratepayers within the MWRA service area played a significant role in funding these critical projects. They have shouldered the majority of the \$9 billion cost, highlighting their unwavering commitment to safeguarding the water supply and investing in the well-being of the community. Their support and dedication have been instrumental in the success of this extensive modernization effort.

The burden on the residents and businesses we serve is substantial, and MWRA must remain diligent to guarantee that the ratepayers' funds are invested wisely. We are committed to keep up proper maintenance of the systems we have inherited and the projects we have built; to protect those investments and continue reliable service for generations to come.

And what does the future hold? We are in the early design stages of another massive tunnel program to provide redundancy for the metropolitan water tunnels, and we are working on a second phase of the CSO control program to end sewage discharges in the last remaining, and most difficult areas. And challenges are endless: Climate change and PFAS, just to name two. But we will face these future challenges head on, like we have in the past, and hope for the same good results.

### Acknowledgements

I extend my heartfelt appreciation to the dedicated women and men of MWRA, who truly embody the spirit of environmentalism. Each day, they labor tirelessly to uphold the safety and security of our water supply, ensuring that Boston Harbor will never again bear the shameful title of "The Dirtiest Harbor in America."



**Figure 1: The Deer Island Wastewater Treatment Plant, Boston MA (MWRA, 2023)**



**Figure 2: The Quabbin Reservoir, Belchertown, MA (Mass, 2023)**

I am also grateful for the unwavering support and invaluable guidance provided by our esteemed Board of Directors. Their commitment has been instrumental in driving our efforts forward. Equally deserving of recognition is the MWRA Advisory Board, who tirelessly advocate on behalf of our ratepayers, ensuring their voices are heard and their interests protected.

A special tribute goes out to the visionary engineers who laid the foundation of our water systems. In their era, individuals like Ellis Chesbrough on the sewer side, and Frederic Stearns and Henry Goodnough on the water side, designed masterful facilities that continue to serve us to this day. We are fortunate to have continued this legacy with exceptional engineers like Dick Fox,

Walter Armstrong, and Charlie Button, who played vital roles in the Boston Harbor Clean-up. Additionally, we owe much gratitude to professionals such as Mike McBride, Frank DePaola, Jae Kim, and John Shawcross, who have contributed significantly to restoring our exceptional water system. Of course, countless others within our organization and partner engineering firms have also played pivotal roles in designing these critical facilities that safeguard public health and protect the environment.

With the dedication and talent exhibited by our current engineers, I am confident that the future holds even greater promise. If our good fortune persists, the great engineers of tomorrow may very well be among us today, continuing the legacy of excellence in service to our community and the environment.

## References

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