

# PVC PIPE ASSOCIATION TECHNICAL BRIEF

## HISTORY VALIDATES AWWARF'S 1994 FINDINGS ON PVC PIPE PERFORMANCE: A LOOK BACK TWENTY YEARS LATER

In 1991 the AWWA Research Foundation (AWWARF) funded a research project on the performance of PVC municipal water pipe. Research was performed at Utah State University's (USU) Buried Structures Laboratory: Al Moser was the principal researcher, assisted by Kenneth Kellogg. The report was published in 1994 as AWWARF #90644 "Evaluation of Polyvinyl Chloride (PVC) Pipe Performance."

An article summarizing the study's assessment of PVC Pipe was published in the Spring 1994 edition of *PVC Pipe News* entitled, "Independent Study Sings the Praises of PVC Water Pipe." [Click here](#) to read. This year marks the 20th anniversary so we thought it was time to revisit the report's conclusions to see if history has proven them to be valid:

### PVC PIPE MAINTAINS STRENGTH OVER TIME

- "Material-related long-term problems occurring in PVC pipe are few and are decreasing with time. This finding is an indication that these problems are not a result of aging."

*True:*

- o *PVC is not subject to corrosion, so there is not a mechanism for material degradation over time.*
- o *The allegation that PVC "loses strength with time" has been thoroughly disproved.*
- o *A 2012 USU study showed PVC to have the lowest break rate of the commonly used municipal pipe materials.*

### NO PROBLEM TAPPING PVC PIPE

- "Tapping problems associated with PVC pipe are decreasing with time as utilities gain more experience in tapping."

*This was true 20 years ago and is even more true today, primarily due to:*

- o *Hardware: tapping machines, cutting tools, and tapping saddles and sleeves have seen major improvements since 1994.*
- o *Procedures: tapping methods have also improved.*
- o *Training: utilities and contractors have reduced tapping problems by training their personnel to use the correct hardware and procedures.*

### NOT VULNERABLE TO UV EXPOSURE OR CHEMICAL PERMEATION

- "Reported experiences with problems associated with exposure of PVC pipe to ultraviolet light or aggressive chemicals were low in number."

*True again:*

- o *UV exposure has been addressed most recently in "UV Exposure Has No Practical Effects On PVC Pipe Performance." [Click here](#) to read.*
- o *Chemical permeation (including hydrocarbon-contaminated soil) through PVC pipe has proven to be a non-issue as well.*

### PVC PIPE'S WIDESPREAD USE NOT AN ACCIDENT

This research and other studies since 1994 have provided valuable information for PVC users and non-users alike. The take-away message is that PVC pipe's widespread use is not an accident – the pipe is a well-engineered product that continues to provide exceptional service for water transmission and distribution systems.

References: *Evaluation of Polyvinyl Chloride (PVC) Pipe Performance*, 1994, AWWARF; *Water Main Break Rates in the U.S. and Canada: A Comprehensive Study*, 2012, USU; *UV Exposure Has No Practical Effects On PVC Pipe Performance*, Uni-Bell; *Impact of Hydrocarbons on PE/PVC Pipes and Pipe Gaskets*, AWWARF; "Independent Study Sings the Praises of PVC Water Pipe," *PVC Pipe News*, Spring 1994