



Waterline Replacement Program Update

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The Municipal Utilities Department’s Water Utilities Division (WUD) has partnered with the Engineering and Transportation Department, Engineering Division, over the past five years to implement waterline replacement projects.

These projects are part of WUD’s greater asset management program. This program aligns with City Council’s Strategic Priority for Safe and Secure Communities.

The City has approximately 850 miles of water transmission and distribution system piping (water mains). To date, approximately 28 miles

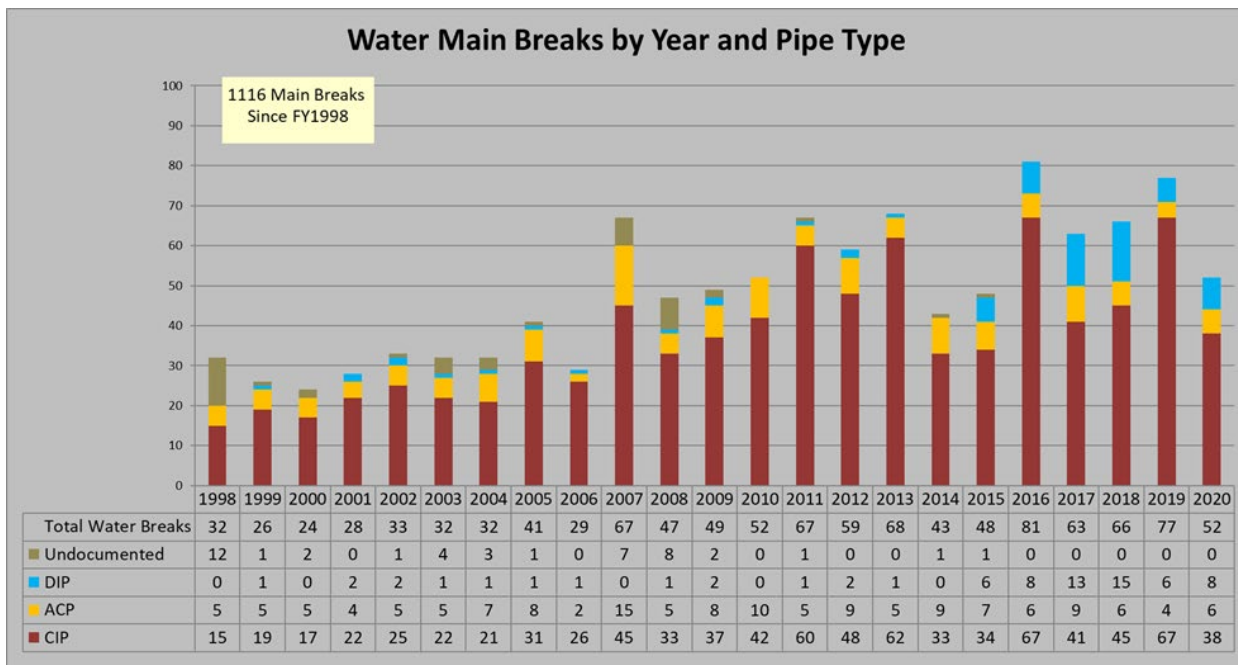
of water mains have been replaced, with another 9.5 miles currently being replaced and scheduled for completion in spring of 2022.

Tempe’s water mains are comprised of varying pipe materials, as summarized in the table below. Cast iron pipe (CIP) is the oldest and ductile iron pipe (DIP) is the newest. The trend of increasing water main breaks from 2011 through 2013, which taxed resources and increased the inconvenience to residents, businesses and the traveling public, led WUD to develop a formal water main replacement program to proactively replace water mains before breaks occur.

Pipe Material, Length and Percentages			
Type	Miles	Percent of Total Pipe (%)	Percent of Total Breaks (%)
Cast Iron Pipe (CIP)	196	23	76
Asbestos Cement Pipe (ACP)	360	42	13
Ductile Iron Pipe (DIP)	264	31	7
Steel Transmission Main (ST)	30	4	-
Total	850	100	96*

*Approximately four percent of water main breaks involve pipes with undocumented material type.

Water main breaks have been tracked and documented since 1998, as part of WUD’s asset management program planning. While CIP comprises only 23 percent of the City’s water mains, this type of pipe accounts for 76 percent of water main breaks, as illustrated in the table above. The graph below depicts water main break frequency by pipe material type. Since the majority of water main breaks occur in CIP, WUD is prioritizing replacement of CIP over other types of pipe. However, ACP and DIP are also being replaced in locations that are justified by a high number of water main breaks. These water main locations are in close proximity to areas with a high percentage of CIP breaks and are being considered for concurrent replacement.



Water main breaks throughout the City are mapped and this information is used to determine the locations of waterline replacement projects. The table and map on the next page show the projects completed to date and planned projects through 2027.

The waterline replacement program has included linear projects, such as the Farmer Avenue Water Line Replacement, as well as replacement of water mains in neighborhoods. This flexibility has lent itself to expediting construction in certain locations where water main breaks have been excessively high and to lower the unit cost, maximizing the value of capital expenditures through larger projects where possible. The majority of waterline replacement projects are concentrated north of the US-60, due to the large number of CIP pipes and water main breaks. This area also contains some of the oldest developments in the City, which still have the original waterlines installed.

Water main break history and mapping are updated annually and adjustments are made, as needed, to ensure that WUD is focusing its efforts in areas with the highest concentrations of water main breaks. WUD reviews its planning, annually, with the pavement management program to coordinate projects and maximize the value of capital expenditures for both programs.

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Waterline Replacement Program Summary		
Map Location	Project	Construction Year (Completed or Planned)
1	Weber Dr. - Stadem Dr.	2015
2	McClintock Dr. - Concorda Dr. to Broadway Rd.	2016
3	Tempe Gardens Neighborhood and Superstition Springs Neighborhood	2016
4	College Ave. - Southern Ave. to Alameda Dr.	2016
5	Dorsey Ln - 8th St. to University Dr.	2016
6	Farmer Ave. - Broadway Rd. to 1st St.	2017
7	Brentwood Manner and Tempe Royal Palms	2018
8	Taylor St. & Sunset Dr.	2018
9	5th St. - Farmer Ave. to College St.	2018
10	University Heights Neighborhood and Hudson Manor Neighborhood	2020
11	Ash Ave. & Hudson Ln. - University Dr to Mill Ave.	2020
12	ASU Campus Phase 1 (Future Phases are being Planned with ASU Staff)	2021
13	Clark Park, University Park and Daley Park (Under Construction)	2022
14	North Tempe Neighborhood and East Rio Neighborhood	2023
15	Gililland Neighborhood and Broadmoor Estates	2025
16	Meyer Park North Neighborhood and Hughes Acres Neighborhood	2027

