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Engineers' Connection

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CAST IRON THE CAUSE OF BREAKS IN LA

The Los Angeles Department of Water and Power has concluded that corrosion of cast iron pipes was the cause of an exceptionally high number of recent water main breaks and leaks that plagued the city and puzzled officials.

In its Summer 2009 Water Main Leaks Preliminary Investigation Report, issued Nov. 17, 2009, the LADWP directly attributed water main breaks to "corroded pipe." It said of street blowouts, "Cast-iron breaks tend to cause greater street damage than do breaks on other types of pipe."

"The department has come to the same conclusion as many other studies: cast-iron pipe corrodes and breaks over time," says Hank Jones, regional sales manager for JM Eagle, who is in close contact with the LADWP. "Choosing the right product in the future will save residents from having to endure this kind of inconvenience and expense, as well as conserve a precious resource."

One of the areas studied was a 579-foot service zone that had suffered more leaks than others over the summer. A cluster of leaks between late July and mid August coincided with a normal-range increase in elevation in the nearby reservoir and a rise in static pressure. The experts concluded that, "corroded and deteriorated pipe is susceptible to breaks when subjected to minor increases in pressure."

Approximately 77 percent of those pipe leaks in a sample study conducted between July 1 and Sept. 9 occurred in cast-iron pipe, according to the report. Steel accounted for 17 percent, aggregated concrete 4 percent, and ductile iron 2 percent. Plastic pipe incurred no leaks or breaks during the period studied.

"Available pipe condition data revealed that the failed pipe sections were corroded and deteriorated," the report reads. "Physical examination of the pipe samples showed rust, corrosion pits, microfractures and graphitization."

The LADWP, while recognizing that age is not always the best indicator of how long a pipeline will last, estimates water infrastructure to last 70 to 100 years. By 2010, the report says, about 7.5 million feet of the infrastructure will fall into that range. Plans are to ramp up the replacement schedule by 2012 to 200,000 feet per year, but officials estimate it will still take 180 years to replace all the pipe in the city. Cast-iron pipes that have suffered the most corrosion and that are located in the most corrosive soils will be first on the list for replacement.

"It is our strongest hope that the LADWP this time selects a pipe that resists corrosion and doesn't break," says Jones. "With its proven lifespan of longer than 100 years, the obvious choice is plastic."

For a complete copy of the report, **click here.**