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## VAL VISTA WATER TRANSMISSION MAIN REHABILITATION

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**ABSTRACT:** In 2003, the City of Phoenix initiated a state-of-the-art program to identify the condition of its large diameter water mains. The City's initial investigation focused on the high profile Val Vista Water Transmission Main. This 30-year-old pipeline supplies one-third of the water delivered to the City of Phoenix. The 15-mile long, prestressed concrete cylinder pipeline ranges in diameter from 72 to 108 inches with no redundancy. Although the pipeline once traversed largely undeveloped land, growth in the Phoenix Metro area in the past 30 years has crowded the alignment with residential and commercial development. A failure of this pipeline would be catastrophic.

Non-destructive and destructive testing was performed over several years to provide an understanding the pipeline's condition and rate of deterioration. Testing included:

- Electromagnetic surveys to identify broken prestressing wires
- Sounding and visual inspections to reveal failed pipeline segments
- Metallurgical analyses of the prestressing wire
- Petrographic sampling to identify carbonation of the concrete coating
- Extensive soils analysis along the alignment

Testing results revealed continuing deterioration along the entire pipeline alignment. This paper focuses on the long-term rehabilitation of the pipeline using steel slipliners. The program began with sliplining 6,300-ft of 72-inch diameter pipeline in 2005, and continues with sliplining an additional 3,300-ft of 72-inch diameter pipeline in 2006. Sliplining the remaining portion of the pipeline is planned for completion by 2011. Design, system shut-down and start-up, scheduling, and construction techniques for the 2005 and 2006 programs are discussed.