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## SAN ELIJO LAGOON HDD FOR CITY OF SOLANA BEACH

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**ABSTRACT:** In the 1940's, a County wastewater treatment plant was situated within tidal San Elijo Lagoon. In the 1960's the plant was replaced with a pump station and 12-inch diameter forcemain. The City of Solana Beach incorporated in 1986. By 2006 the 12-inch asbestos cement forcemain had exceeded predicted service life. Replacement with a new 13-inch polyethylene forcemain was scheduled. The new forcemain will have improved resistance to corrosion and improved hydraulic efficiency.

A design report and State and Federal environmental documents were prepared. Federal funding was obtained. Coastal Development Permits and a Federal 1602 Streambed Alteration Agreement were obtained. Subsurface easements were negotiated with the State, County, City of Encinitas, and the San Elijo Lagoon Conservancy. Future impact avoidance was provided between the forcemain project and a likely future lagoon dredging project.

Final design included a 3,000 feet long and 45-foot deep section of forcemain installed with Horizontal Directional Drilling (HDD) construction methods. Open trench installation extended 1,000 feet further on the south end of the HDD segment and structural PVC rehabilitation for 1,000 feet on the north end.

The project bid opening was August 23, 2006. Construction within the lagoon must be completed between September 1, 2006 and February 15, 2007 per environmental and permitting requirements. Only two widely different bids of \$2.3 million and \$5.3 million were received. The project was awarded to the low bidder. Design, permitting, easement, cost savings, and construction experiences will be described in the final paper.