



North American Society for Trenchless Technology
2007 No-Dig Conference & Exhibition



San Diego, California
April 15-20, 2007

Paper E-3-02

WILLAMETTE RIVER POSES HDD CHALLENGES

Kimberlie Staheli, Ph.D., P.E.¹, and Joseph Schrank, P.E., P. Eng.¹

¹ Bennett/Staheli Engineers, Seattle, WA

ABSTRACT: The City of Newberg installed a waterline beneath the Willamette River using horizontal directional to increase reliability of its water supply system. The river crossing measured 2,600 feet in length and consisted of a 30-inch DR 9 HDPE product pipe. The pipeline connected the City's well field system and treatment plant. A depth of cover 40 feet was maintained beneath the river. On the banks of the river, however, the depth of cover was greater than 180 feet. The HDD bore traversed through challenging gravels and beneath a wetlands area near the bore termination point on the north side of the river.

Horizontal directional drilling and microtunneling emerged as the two technically feasible alternatives for completing the new pipeline. Multiple alignments were established and the risks and costs of each alternative identified. Microtunneling alternatives offered the lowest construction risk but with substantially higher construction costs than the HDD alternative.

The HDD alignment was selected in an area that limited the extent of the installation through the aquifer materials to minimize construction risks. This paper presents design and construction issues associated with river crossing. It also presents lessons learned during construction.