

Lion Mining Borehole Project: Drilling a Flowing Artesian Water Well into a Mine Pool¹

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Mine discharges in the coal regions do not always issue at locations with sufficient area to facilitate the construction of treatment systems. Obstructions such as highways, dwellings, streams, or unworkable topography often necessitate the construction of a system in areas far removed from the initial point of issue. This was the case of the Lion Mining Grove #1 Mine where a 200 mm (8 inch) water well was drilled to a depth of 180 m (600 feet) into a flooded underground coal mine in 2003. The flowing artesian well was situated adjacent to a newly constructed active system to avoid the need for pumping of the 50 L/sec (800 gal/min) alkaline-iron discharge. The mining company subsequently closed, and the Pennsylvania Department of Environmental Protection (DEP) assumed operation of the well and treatment system in 2006. Leaks developed around the top of the well and several measures were taken to prevent a major uncontrolled discharge. DEP replaced the active system with a wetland-based passive treatment system in 2011 but corrosion of the mild-steel casing and related appurtenances continued to raise concerns. DEP assembled a project team and installed a new well in 2016 using stainless steel casing and plugged the original well. This case study will discuss design and construction aspects and obstacles overcome during the Lion Mining Borehole Project from the planning process, through drilling and new well construction, and the decommissioning of a failing flowing artesian water well.

Additional Key Words: Mine drainage treatment, well plugging and abandonment.

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