

# Abandoned Coal Mine Mitigation in High Pressure Artesian Conditions <sup>1</sup>

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**Abstract:** As an extension of an AML Pilot Program conducted during the Summer of 2019, there was question as to whether or not void fill grouting as a means of subsidence mitigation was feasible in an area known to exhibit high artesian head pressures. This pilot program provided the foundation and methodology to create a design approach to alleviate any potential risk of abandoned coal mine mitigation to the densely populated overlying sub-division. These potential risks associated with the injection and pressurizing high mobility grout included; displacement of groundwater into building foundations, inducing structural collapse of the mine, infrastructure sub-grade failure through the over saturation of soils and reduction in effective stress and shear resistance leading to additional settlement under footings, and ground surface movement. After extensive analysis of this pilot study, an elaborate and specially designed mitigation program was established for mitigating the mine subjacent to sub-development and took place during the Summer of 2021. This presentation covers surface and subsurface controls to handle high artesian head pressures while mitigating underground abandoned coal mines in a densely populated sub-division.

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