

**WWE**  
**MEMORANDUM**

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**To:** Jessica Wilczek, P.E.  
Mountain Coal Company  
**Via Email**

**From:** Wright Water Engineers, Inc.  
Jonathan Kelly, P.E.

**Date:** June 14, 2024

**Re:** Hydrologic Consequences of Pillaring in the Sunset Mains

Wright Water Engineers, Inc. (WWE) has evaluated the hydrologic consequences of pillaring in the Sunset Mains, north of longwall panel E14. WWE had previously analyzed the subsidence associated with the longwall mining in the adjacent panels and found that the mining would not have adverse effects on the hydrology of the overlying stream channels. Our findings were documented in Exhibits 55B and 60E of the mine permit.

Agapito Associates modeled the projected subsidence resulting from the pillaring in the mains. Their results indicate that the maximum subsidence would be up to 2.5 feet, and this would be limited in areal extent. WWE overlaid the Agapito modeling results to analyze the potential impact on the stream channels in the vicinity of the pillaring activity.

The headwaters of Deer Creek are within the influence of the projected subsidence resulting from the pillaring activity. The areas where maximum subsidence is projected are not overlain by stream channels, and the maximum subsidence underlying the stream channels is limited to 1 to 1.5 feet.

WWE evaluated the potential for the projected subsidence to impact the stream channels within these drainages and found that there should not be hydrologic impacts. Importantly, these streams have previously been undermined by longwall mining that resulted in significantly larger subsidence without experiencing any change in flow characteristics. The steepness of the channel grades and the ability of the alluvial and colluvial materials to heal and/or seal following differential subsidence has resulted in no observable impacts to these streams. The small amount of projected subsidence resulting from the pillaring in the Sunset Mains is not expected to adversely affect the hydrology of Deer Creek drainage.

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