not evident at every location probably due to movement of the clay in the swamp or not designated by previous geologists. A tonstein may also be evident in the Allen Seam based on past records in the southern part of the proposed permit area.

Many of the seams including the Apache and Allen Seams locally have an immediate roof consisting of carbonaceous mudstone that often contains slickensided fractures and coal laminations. This material is relatively weak and may be added on the run-of-mine product eventually becoming waste after preparation. Some thicker rider coals occur locally.

2.04.6(3a) (iii) (A)

Within the confines of the proposed permit boundary there are about 26 core holes and 32 CBM wells. These holes are used as data points in modeling the coal seams within the proposed permit area. The drill logs for these locations are contained in the confidential Exhibit 41. Many of the older core holes lack geophysical logs for verification but geologist's logs have been documented. Eight core holes are proposed to be drilled within the permit boundary in 2020, six of the proposed drill holes were drilled in 2021. Six core holes were drilled within the confines of the proposed permit area by New Elk Mine in 2010 and these holes consist of a suite of geophysical logs, geologist's core descriptions, geotechnical log, core photographs, coal quality data and geomechanical data. Gas desorption data was generated from coal core at NE-4-10. Core hole NE-1-10 was constructed as an Allen Seam monitoring well after extensive packer testing of the coal sequence. Northeast of the proposed permit area, two monitoring wells were completed in the Blue and Apache coal seams by New Elk Mine in 2010. The well numbers are NE-6-10A and NE-6-10B for the Apache and Blue seams, respectively. Geophysical logs for NE-1-10, NE-4-10 and NE-12-10 are equally spaced within the permit boundary and have been included as part of the permit submission. Information on the 32 CBM wells can be found on the State's oil and gas webpage.

2.04.6(3a) (iii) (B)

No significant aquifers were encountered during previous mining at the Allen Mine. In addition, no significant inflows were recorded in the various drilling campaigns including that completed by New Elk Mine in 2010. Historically, some groundwater had been encountered during mining but inflows were minor. As a result of previous mining and drilling, no significant inflows are anticipated within the unmined portion of the proposed permit area.

2.04.6(3a) (iii) (C)

Average chemical analyses (raw, full seam, as-received basis) of the Allen, Apache, Maxwell, and Blue seams from 2010 core obtained within and around the immediate confines of the proposed permit boundary are provided in Table 4A. Average moisture content ranges from 2.9 to 3.5% and thermal content ranges from 10,900 to 12,540 BTU/lb. A sulfur form analysis performed on the Allen Seam by Commercial Testing and Engineering in 1981 indicated a total sulfur content of 0.49%, which consisted of 0.06% pyritic sulfur and 0.43% organic sulfur.