

2.7.5.2e Ground Water Quality, C Pit HWM

The relevant geologic units for C Pit area is the same as those present mine wide. Some of the upper overburden to be removed is regraded and reclaimed spoils. Sections 2.7.5.2 and 2.7.5.2a both contain relevant information to the area. Relevant baseline groundwater quality is contained within table 2.7-22.

A new water monitoring well, GX-1, was installed in 2022 within the QR aquifer north by northwest of C Pit. It will provide for future monitoring of ground water quality on the western edge of the permit boundary.

Proposed mining in C Pit will be immediately down gradient of previous, extensive, mining in C Dip Pit active from 1988 to 1993. The Q and L seams will be surface mined and high wall mined both north and south of the pit. Water quality in the backfill aquifers has been collected at wells GD-3 and GF-11 for many years. These wells are paired with monitoring wells GD-2 and GF-6, which are drilled in un-mined material immediately down-gradient of the endwalls of historic D and E Pits. The position of C Pit is similar in nature to these monitoring scenarios and the impacts of such are documented in Section 4.8.3.2. Historic water quality from the west panel of the mine is contained in Section 4.8.2.4 regarding operational ground water quality during mining in the C, D and E Pits. Further water quality information has been documented in the Annual Hydrology Report concerning the effects of D and E Pit on the QR aquifer. Discussions concerning the historic well GE-1 are relevant to potential current and future ground water quality down-gradient of the C-Pit area. The effects of mining C-Pit were found to be minimal at the GE-1 well before monitoring ceased and the well was abandoned in 2006. Mining in C Pit will be within the historic assumed plume below C Dip Pit.

The TDS and sulfate concentrations in the ground water for the wells GD-2 and GD-3 have fluctuated over time as they are located near the north end of the historic D Pit mining and east of the historic C Pit and future C Pit. These values and analysis of water quality changes is discussed in the annual hydrologic report. These fluctuations have been minimal and have fallen within the natural background range of TDS on the site. Similar fluctuations are expected to occur because of renewed mining in the C-Pit area but should have minimal effect of the overall water quality in the area due to the previous mining. With time these TDS levels have appeared to stabilize and even decline in some areas of the QR aquifer and backfill aquifers.

C-Pit should not influence the upper aquifers such as the 3rd White Sandstone due to its location up-dip and south of the actual cropline of the 3rd White Sandstone. This area was previously affected by B-Pit mining to the north of C-Pit and had minimal effect of the aquifer. Observed drawdowns and overall recovery should mirror that which has been monitored in the D and E Pit areas with minimal effect on the QR aquifer at this location. It has been observed the backfilled pits help to aid water level recovery. Spoil springs have not occurred in the historic C-Pit area and are not expected to occur in the new C-Pit due to water-level elevations in the QR aquifer being lower than the possible outlet of said pit.