2.7.5.2d Ground Water Quality, I and J Pits, including the PR-11 Expansion Area

The relevant geologic units for the I and J Pits area are the same as those present mine wide. Sections 2.7.5.2 and 2.7.5.2a both contain relevant information to the area, particularly Section 2.7.5.2a. Table 2.7-22aaa gives historic and current ground water quality data for the I and J Pits area, including for the PR-11 expansion area, from the water wells discussed below.

Four new monitoring wells, (CYA, CY1, CY2 and CY3) were completed in alluvium and the First, Second and Third White Sandstones, respectively, near Coyote Dam to monitor these aquifers during future operations.

The water quality in the First White Sandstone aquifer downgradient of the mining in the area of the I Pit will be monitored at well CY1 and was previously monitored in the GLUX-1 well. The water quality in the GLUX-1 well was steady for the period of monitoring from 1988 to 2006 with chloride concentrations varying only from 10 to 20 mg/l over this nearly twenty years of monitoring. The water quality in the First White Sandstone aquifer at well GLUX-1 had not been affected by the upgradient mining because its outcrop is roughly 2000 feet north of the northern limit of the previous mining in the A and B pits. The water quality data from well GLUX-1 is thought to be a good baseline for this portion of the Trapper mining area for the First White Sandstone aquifer. The previous mining in the A and B pits to the south of the I and J pits has not affected the First White Sandstone aquifer in this area.

The TDS and sulfate concentrations in the ground water for the GLUX-1 well downgradient of the proposed I Pit are presented in time plots in the AHR. These plots show that the water quality in the First White Sandstone aquifer has not been affected farther downgradient of the previous mining in this area.

Water quality in two additional wells in this area of the Trapper Mine has been used to define historical concentrations downgradient of the A and B pits in the Second and Third White Sandstones aquifers. Well GE3 was completed in the Second and Third White Sandstones while well 81-03A was completed in the Third White Sandstone aquifer. The TDS plot from well 81-03A, given in the AHR, shows a very slight increasing trend from 1988 through 2006 which could be a very small impact from the historical mining in the A and B Pits on the Third White Sandstone aquifer. The TDS plot shows variations with time from historical monitoring in well GE3 but all of these values are less than the pre-mine values defined in well GE3. The completion of well GE3 is in both the Second and Third White Sandstone aquifers could be the cause of varying TDS concentrations from this well. The very slow movement of the ground water in these two aquifers will greatly limit the distance to where water quality changes are observed. The voids where the F and G coal seams are highwall mined should initially be filled with ground water from the Second and Third White Sandstone aquifers instead of water from the boxcut backfill area due to the depression in the water-level elevation in these two aquifers from the HWM in the I and J Pits. The recovered water levels in these two aquifers are not expected to extend into the backfilled boxcut areas due to the increased transmissivities in these two aquifers in the HWM area. Increases in TDS in the highwall mined area are not expected to be much above the adjacent aquifer water quality. Only partially saturated water movement should occur in the backfill area of the boxcut which should not

affect the water quality in the northern highwall mined zone. The movement of the ground water in this northern zone is expected to be controlled by the small permeability of the adjacent aquifers and therefore movement to the north is expected to be very slow. Wells CY1, CY2 and CY3 will be used to monitor any changes in the three White Sandstone aquifers in this area.

Mining is not expected to change the water quality in the First White Sandstone aquifer downgradient of the I Pit because the outcrop of the First White Sandstone exists to the north of the I Pit and saturation will not likely develop in the I boxcut area due to increased transmissivity in the HWM area of the I Pit. No historical water quality changes were observed in downgradient First White Sandstone well GLUX-1. The I Pit HWM will increase the transmitting ability of the Second White Sandstone but is not expected to affect the water quality in the Second White Sandstone aquifer because the recovered water level is expected to be north of the boxcut area in the I Pit. The Third White Sandstone aquifer's transmitting properties will also be increased in the J Pit HWM area and its water quality is also not expected to be affected by the J Pit because its recovered water level is expected to be north of the boxcut area in the J Pit.

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