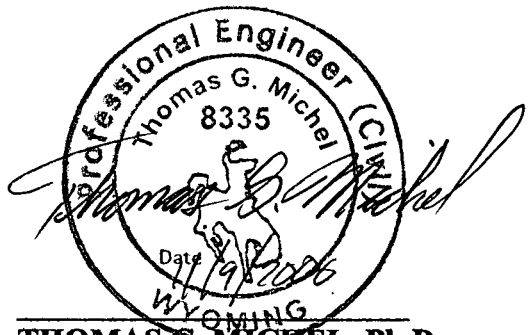
Evaluation of Water Quality Changes in Wells P-6 and RPI-20A

The recent water quality changes in the samples from well P-6 are consistent with the expectation that ongoing seepage from the tailings at a diminishing rate will result in moderate but eventually diminishing seepage impacts extending in an easterly direction from the toe of the tailings dam. The constituent concentrations in well P-6 are below the ACL Ground-Water Protection Standards for POC wells NP01 and RPI-19B. Because well P-6 was operated as a collection well in the Corrective Action Program (CAP), the seepage "front" has extended to well P-6 for many years, and the water quality prior to termination of system operation reflected a combination of seepage-impacted water from the tailings area and the fresh water that was injected into a recharge line located east of well P-6. When the CAP was terminated, the mound of fresh injection water east of well P-6 decayed and the natural eastward gradient was reestablished. The constituent concentrations reverted to levels similar to those measured prior to the installation of the newest fresh water injection recharge line in 1996. The present water quality in well P-6 is also very similar to the last (2003 to 2004) measured water quality in wells P-20 and P-21 which are located upgradient and west of well P-6 near the toe of the dam. A comprehensive compilation of the historic Surficial Aquifer water quality is presented in: ***Hydrologic Monitoring For Shirley Basin's Tailings Seepage Control Plan, by Hydro-Engineering L.L.C., February 2005.*** Although well P-6 was not evaluated as an indicator cell during the modeling, the anticipated post-CAP water quality changes should generally parallel those predicted for POC well RPI-19B. The post-CAP concentration increases in well RPI-19B will lag over those in well P-6 because there was a significant zone between well RPI-19B and the tailings where the Surficial Aquifer water quality was almost completely restored prior to termination of the CAP. In contrast, the seepage-impacted ground water was present just west of well P-6 prior to termination of the CAP.

Figure E.3-1 of the ACL Application presents the predicted uranium concentration for POC wells RPI-19B and NP01. At the time the document was produced, the anticipated termination of the CAP was in mid-2001, while the actual termination was in late 2005. Thus, the time scale for modeling prediction graphs should be shifted approximately 4 years for interpretation. In Figure E.3-1, the predicted uranium concentration in well RPI-19B increases dramatically soon after the CAP is terminated. A similar response is expected for well P-6 with the exception that the concentration increase should occur sooner for well P-6. Well P-6 is also closer to the tailings than well RPI-19B. Figure E.3-2 presents the predicted uranium concentrations at wells RPI-8A and RPI-20A. Well RPI-8A is located over 1000 feet to the west of well P-6 and the predicted uranium concentration curve in Figure E.3-2 can be viewed as a lagged and dramatically attenuated version of what is expected for well P-6. In short, the recent water quality changes in well P-6 are consistent with expectations and do not contradict or invalidate the modeling results.

The modest recent increase in uranium concentration in well RPI-20A is likely a result of the transitioning at this location from fresh injection water to natural Surficial Aquifer ground water. With the cessation of injection of fresh water with very small uranium concentration through recharge lines west of well RPI-20A, the uranium concentration at well RPI-20A is now approaching the average natural Surficial Aquifer background concentration of 0.083 mg/l as measured in well MC-14 (see Table 1.3-1 of ACL Application). Figure E.3-2 of the ACL Application presents the predicted uranium concentration for well RPI-20A and indicates that uranium concentration is predicted to increase dramatically over background levels. The time

shift due to the disparity between modeled and actual dates for termination of the CAP also applies for this graph. It should also be noted that no retardation of uranium migration was included in the modeling so there should be significant conservatism in this prediction. The recent and modest changes in uranium concentration that are still below natural background levels are not of concern.



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