

MINE & TAILINGS RECLAMATION AT BEAR CREEK URANIUM: A SUCCESS STORY¹

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Abstract. The Bear Creek Uranium open pit mining and milling operation is located in the southern Powder River Basin in Converse County, Wyoming operated from 1976 until 1985. Early termination of the uranium sales contract and closure of the mine required major modification of the approved reclamation plan. The approved plan included a lake in the final pit; however at the time of termination the pit sequencing had not progressed to the approved point and the USFS would not approve leaving a lake on their property. The plan was modified to include total backfill of all open pits. Final mine reclamation operations commenced in July 1985 and were completed in December 1999. The Wyoming DEQ has granted bond release on approximately 1800 acres of mine disturbance.

Tailings reclamation regulated by the U.S. Nuclear Regulatory Commission must satisfy 10 CFR 40, Appendix A and other NRC guidelines to ensure that radioactive emissions meet Criterion 6 levels for radon (20pCi/m²/sec), and gamma is at background levels. The long-term stability and containment of tailings must last for 1000 years without active maintenance. The tailings cover is designed with a three-foot compacted clay radon barrier, flat surfaces that reduce PMF runoff velocities to sub-erosive velocities of <2 fps. Rock riprap structures placed adjacent to the tailings control velocities through elevation drops as surface runoff exits the reclamation area. Placement of the reclamation cover commenced in 1997 and was completed in 1999. The tailings site is now ready for transfer to DOE for long term stewardship.

Additional Key Words: open pit reclamation, bond release, uranium tailings reclamation, radon barrier, erosion protection, DOE long-term stewardship

¹Paper was presented at the 2003 National Meeting of the American Society of Mining and Reclamation and The 9th Billings Land Reclamation Symposium, Billings MT, June 3-6, 2003. Published by ASMR, 3134 Montavesta Rd., Lexington, KY 40502.

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