

Silver Bell Mine
Aquifer Protection Permit No. P-100510
Place ID 2867, LTF No. 74984
Significant Amendment

I. Introduction:

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an Aquifer Protection Permit (APP) for the subject facility that covers the life of the facility, including operational, closure, and post-closure periods unless suspended or revoked pursuant to Arizona Administrative Code (A.A.C.) R18-9-A213. The requirements contained in this permit will allow the permittee to comply with the two key requirements of the Aquifer Protection Program: 1) meet Aquifer Water Quality Standards (AWQS) at the Point of Compliance (POC); and 2) demonstrate Best Available Demonstrated Control Technology (BADCT). BADCT's purpose is to employ engineering controls, processes, operating methods or other alternatives, including site-specific characteristics (i.e., the local subsurface geology), to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer or to prevent pollutants from reaching the aquifer.

II. Permittee & Facility Location:

The Silver Bell Mine is located approximately 17 miles west of Marana, Pima County, Arizona.

III. Facility Description:

The permitted facility is an open pit mining and copper leaching operation consisting of leach dumps and in-situ leaching of rubblized ore within the existing Oxide and El Tiro open pits, and in the new West Oxide and North Silver Bell open pits. Copper ore placed in rock heaps is leached with a dilute sulfuric acid solution. Solutions from leaching called Pregnant Leach Solution (PLS) are collected in sumps or ponds and pumped via pipelines to a solvent extraction/electrowinning (SX-EW) plant for increasing the concentration of copper from which copper cathode is produced. Solutions stripped of copper (called raffinate) are recycled back to the leaching circuits.

IV. Amendment Description:

The purpose of this amendment is to expand waste rock dumping on top of and into the space between, the following permitted facilities: Overburden Dump (Facility No. 63), ET III Leach Facility (Facility No. 49), ET Leach Facility 6 (Facility No. 53) and ET Leach Facility (Facility No. 55). The facility name for the expanded waste rock dump is "Corridor Overburden Dump".

The amended permit also includes a Compliance Schedule Item to provide a report that presents findings on the cause of the radium exceedance at point of compliance well MW-07R.

V. Regulatory Status

No enforcement actions at this time.

VI. Best Available Demonstrated Control Technology (BADCT):

The facility BADCT relies on a combination of engineered design and site-specific hydrogeologic characteristics. For facilities constructed prior to 1986, special consideration is allowed for the age of the facility as it relates to the evaluation of alternative demonstrated control technologies

and their cost effectiveness for additional discharge reduction. None of the existing facilities will be modified in this amendment.

The Corridor Overburden Dump will be constructed using the end-dumping method over moderate to steeply sloping topography, which minimizes the potential for discharge. Natural channels within the footprint are underlain by low hydraulic conductivity bedrock. Slope stability analysis indicates the facility meets acceptable factors of safety. Sideslopes will be maintained at the angle of repose for the materials and will include benches and haul roads to maintain stability.

VII. Compliance with Aquifer Water Quality Standards (AWQS):

The Corridor Overburden dump is located within the existing pollutant management area (PMA) for the Silver Bell Mine, therefore the existing Points of Compliance meet requirements. The discharge impact area (DIA) is not expected to change as a result of this facility.