

Harquahala Mine
Aquifer Protection Permit No. P-512944
Place ID 718, LTF No. 77980

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. Facility Location:

8 miles north of the Hovatter Road exit off of Interstate -10, and 8 miles south of Salome, Arizona
Latitude: 33° 40.131'N
Longitude: 113° 35.177'W

III. Facility Description:

Bonanza Mining Company (Bonanza) will operate the Harquahala Mine to reprocess historical (pre-1986) surface gold bearing ores and tailings. The operation will collect the historic ores and tailings to extract and recover the gold.

Approximately 242,000 cubic yards of historic ores and tailings will be consolidated in controlled areas prior to being sized and placed onto a newly constructed double-lined heap leach pad (approximately 314,000 square foot (sq ft)). The gold will be extracted within a newly constructed 242,000 cubic yard heap leach pad by conventional cyanide leaching. The pregnant leach solution will flow into a 4,126,239 gallon double-lined pregnant solution pond, with a maximum operational storage requirement estimated to be 3,965,780 gallons. The extraction operation will consist of loading and hauling; primary and secondary crushing; agglomeration and stacking; heap leaching using cyanide solution, storage of process solutions in a pond; and precious metals recovery using granular activated carbon (GAC). The final phase of the gold extraction from the GAC will be performed off-site. The facility will also include an intermediate stockpile that will be permitted under a Type 2.02 general permit.

IV. Regulatory Status:

The facility has never been inspected.

V. Best Available Demonstrated Control Technology (BADCT):

Facilities regulated by this permit shall be designed, constructed, operated, and maintained to meet requirements specified by A.R.S. §49-243(B) and A.A.C. R18-9-A202(A)(5).

Heap Leach Pad:

This facility will cover an area of approximately 314,000 square feet, and contain approximately 242,000 cubic yards of existing gold bearing ores and tailings. The ore and tailings will be consolidated into controlled areas prior to being sized and placed on the lined leach pad. The liner system for the leach pad shall be placed on 6 inches of prepared subgrade. The bottom liner shall consist of 30-mil scrim laminated low-density polyethylene (LDPE) with LDPE film geomembrane that is equivalent to 60 mil HDPE geomembrane. The upper liner shall consist of an ultra violet (UV) resistant 45-mil double scrim high-density polyethylene (HDPE) with LDPE coating geomembrane. A uniaxial geonet shall be placed between the two liners. The liners shall be secured around the perimeter of the leach pad in an anchor trench that is 2 feet wide and 2 feet deep. A minimum of 18 inches of ¾-inch minus drain rock shall be placed on upper liner. To promote pregnant solution transfer, 3-inch and 6-inch perforated collection pipes will terminate adjacent to the 12-inch pipe, and solution will pass through the drain rock and into the 12-inch collection pipe. Two 12-inch HDPE perforated pipes shall be located in a solution collection channel near the center of the leach pad to convey solutions to the Pregnant Solution Pond. A containment berm shall be constructed 12 feet from and 2 feet higher than the adjacent toe of the leach pad. The containment berm shall be capable of containing run off a 100-year, 24-hour storm and solution drain down and routing the fluids to the Pregnant Solution Pond. Liquid collected in the containment berm will flow by gravity over the double-lined liner system before cascading over this double liner system into the pregnant solution pond. Surface water run-on shall be collected in channels capable of handling stormwater from a 100 year, 24-hour storm event and diverted around the facility. The finish grade (maximum elevation) of the heap leach pile shall not exceed 1,760 feet above mean sea level (AMSL).

Pregnant Solution Pond:

This facility shall be located adjacent to the west side of the Heap Leach Pad. Pregnant solution shall be collected in a double-lined pond having a capacity of 4,126,239 gallons including 2 feet of freeboard. The liner system for the lead pond shall be placed on 6 inches of prepared subgrade overlaid by a 6 inches of geosynthetic clay liner. The bottom liner shall consist of 30-mil scrim laminated LDPE with LDPE film geomembrane that is equivalent to 60 mil HDPE geomembrane. The upper liner shall consist of an UV resistant 45-mil double scrim HDPE with LDPE coating geomembrane. A uniaxial geonet shall be placed between the two liners. The liners shall be secured around the perimeter of the pond in an anchor trench that is 2 feet wide and 2 feet deep. An LCRS sump shall be constructed between the two liners near the southeastern portion of the pond. The LCRS shall be equipped with a dedicated, automatic, fluid-level activated pump capable of pumping 15,500 gallons per day. Surface water run-on shall be collected in channels capable handling stormwater from a 100 year, 24-hour storm event and diverted around the facility.

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

To ensure that site operations do not result in violation of Aquifer Water Quality Standards, the point of compliance well located 200 feet west of the Leach pad shall be sampled and analyzed for the parameters listed in Section 4.2, Table 4.2.4 in the permit.

Facility inspection and operational monitoring shall be performed on a routine basis in Section 4.2, Table 4.2.1, in the permit for the Pregnant Solution Pond and the Heap Leach Pad.