

Copper World Project  
Aquifer Protection Permit No. P-513690  
Place ID 217930, LTF No. 90620  
Individual Permit

## 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) ensure that pollutants discharged will not cause or contribute to a violation of an Aquifer Water Quality Standard (AWQS) at the applicable Point of Compliance (POC) monitoring locations, or further degrade the aquifer for an applicable constituent if already above an AWQS at the time of issuance of the permit; 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 practicable (considering the factors set forth in A.R.S. § 49-243) before they reach the aquifer or to prevent pollutants from reaching the aquifer.

## I. Permittee, Facility Name, and Location:

Copper World, Inc.

## II. Facility Name & Location:

Copper World Operations  
9025 E. Santa Rita Road  
Sahuarita, Arizona 85629  
Pima County  
GPS Coordinates: 31° 51' 43.2" N / 110° 46' 26.4" W

## III. Facility Description:

The Copper World Project (Project) is located approximately 28 miles southeast of Tucson, Arizona in Pima County and about 12 miles southeast of Sahuarita, Arizona.

The Copper World Project will be developed as an open pit mining operation. Both sulfide and oxide ore will be mined and beneficiated. The Project will include a milling and flotation circuit (mill) for the processing of sulfide ore along with conventional tailings disposal. A heap leach facility (HLF) is planned that includes a lined heap leach pad (HLP) and associated lined ponds for the leaching of copper from oxide ore. The Project also includes a solvent extraction and electrowinning (SX-EW) plant for processing of copper rich solutions from the heap leach circuit and from a separate copper concentrate leach circuit. Additionally, the Project will have a precious metals recovery circuit along with an acid plant.

Six (6) open pits will be mined in a general west to east progression. From west to east these pits include: Peach, Elgin, Heavy Weight, Copper World, Broadtop Butte, and Rosemont. The beneficiation facilities will be located on the west side of the Santa Rita Mountains along with the tailings storage facilities (TSFs) and the HLF. Waste rock storage will occur on both sides of the range in a Waste Rock Facility (WRF); some waste rock will also be used for backfilling select pits. Utilities (power and water) will come from the west to service the Project. Fresh water for the Project will come from well fields near the Town of Sahuarita and potentially from pit dewatering wells or other onsite wells.

The first recorded mining activity in the Helvetia-Rosemont mining district occurred in 1875, and the mining district was officially established in 1878. Production from mines on both sides of the Santa Rita ridgeline supported the construction and operation of two smelters. Copper production from the district generally ceased in 1951.

The mine life for the Copper World Project is currently anticipated to be approximately 15 years. Production will be phased according to the mine plan. The approximate tonnage of sulfide ore to be mined and beneficiated is currently estimated to be about 277.4 million tons (Mt) at a rate of about 60,000 tons per day (tpd). The total tonnage of oxide ore beneficiated is currently estimated to be about 103.8 Mt (ranging from about 20,000 tpd to 45,000 tpd based on the mine plan). The total tonnage of waste rock generated is currently estimated to be about 477.4 Mt. The WRF, as currently designed, has a capacity of about 528 Mt. These quantities are based on current projections and may change over time based on additional delineation of the ore body, changes in technology and economic conditions, or other factors.

The Copper World Project facilities include: 55 facilities not regulated by the APP program (i.e., non-discharging or exempt), 6 facilities that will secure coverage under a general APP permit, (3 ore stockpiles, an equipment wash facility, Type 4 sewage treatment facilities (septic systems), and large truck tire disposal area); and 16 facilities regulated under the area-wide individual APP. A full listing of permitted facilities is listed in Table 1: DISCHARGING FACILITIES of Individual APP under Inventory Number 513690 and LTF 90620 (Individual APP). The facility description and BADCT description for each permitted facility are contained in the following table.

Facility Name	Facility Type	Latitude (North)	Longitude (West)
Tailings Storage Facility 1 (TSF-1)	Tailings	31°52'39.9"	110°48'09.82"
Tailings Storage Facility 2 (TSF-2)	Tailings	31°50'56.24"	110°47' 21.93"
Primary Settling Pond (PSP) (includes two cells)	Process Solution Pond	31°51'25.58"	110°48'06.00"

Facility Name	Facility Type	Latitude (North)	Longitude (West)
Heap Leach Pad / Facility (HLF)	Heap Leach Pad	31°50'55.48"	110°47'56.01"
Pregnant Leach Solution (PLS) Pond	Process Solution pond	31°50'58.17"	110°48'21.93"
HLF North Stormwater Pond	Non-Stormwater Pond	31°51'3.20"	110°48'21.88"
HLF South Stormwater Pond	Non-Stormwater Pond	31°50'53.59"	110°48'21.90"
Raffinate Pond	Process Solution Pond	31°51'17.25"	110°48'2.09"
Reclaim Pond	Process Solution Pond	31°51'17.27"	110°47'58.76"
Process Area Stormwater Pond	Non-Stormwater Pond	31°51'20.72"	110°47'59.01"
Waste Rock Facility (WRF)	Waste Rock Facility	31°51'38.77"	110°46'08.09"
Peach Pit	Open Pit	31°51'46.28"	110°47'37.88"
Elgin Pit	Open Pit	31°51'37.13"	110°47'19.62"
Heavy Weight Pit	Open Pit	31°51'42.08"	110°46'41.07"
Copper World Pit	Open Pit	31°51'36.81"	110°46'00.23"
Broadtop Butte Pit	Open Pit	31°51'04.65"	110°45'33.67"

**IV. Permit Description:**

The purpose of this permit is to authorize a new facility by Copper World, Inc., which will be named the Copper World Project. The Copper World Project anticipates over two (2) years of construction and pre-production stripping followed by approximately 15 years of operations. Closure activities are anticipated to take between one (1) to two (2) years. Post-closure activities/monitoring are anticipated to occur for about 30 years.

**V. Best Available Demonstrated Control Technology (BADCT):**

Under A.A.C. R18-9-A202(A)(4), the characterization of discharge is required and includes the discharge rate, volume, frequency, and location, as well as the chemical, biological, and physical characteristics of the discharge. The estimated discharge rates for the Copper World Project APP regulated facilities were also used, as appropriate, for the BADCT demonstrations. Depending on the facility type, discharge rates were calculated based on different discharge control technologies (DCTs) associated with the facility type, such as liner systems.

Tailings slurry will be pumped to the top of the TSFs for deposition. Water in the slurry will either evaporate, be entrained in the tailings, or seep to the bottom of the impoundment and be collected in a seepage collection system. Water collected in the seepage collection system, or from the decant

water pond on the tailings surface, will be pumped back to the process circuit for reuse. A small portion of the seepage is expected to bypass the system and infiltrate into the underlying soil or rock. Water that infiltrates into the underlying soil or rock has the potential to affect groundwater. The rate at which water percolates into the ground from a tailings facility depends on the facility's configuration and the site's hydrogeologic characteristics. As designed, the effectiveness of the seepage collection system is around 98 percent.

The HLP and associated ponds are lined facilities. Liners have the potential to leak due to defects, etc., and therefore have the potential to affect groundwater. The rate at which liquid discharges from the bottom of the HLF, and the ability to reach groundwater, depends on the facility's configuration and the site's hydrogeologic characteristics. The Potential Leakage Rate (PLR), or potential discharge from the bottom of the HLF pad and ponds, is based on the configuration of the liner system. The liner system for the HLF pad and ponds incorporates a geosynthetic clay liner (GCL) into the design to limit potential leakage.

Rock excavated from the open pits having metal concentrations too low to be economically processed as ore will be placed in the WRF. The placement of waste rock in the WRF will follow a Waste Rock Management Plan developed for the Project. The intent of this plan is to prevent the development of acid-mine drainage. The majority (>94 percent) of waste rock mined from the open pits is classified as non-acid generating or NAG. Waste rock that is classified as potentially acid generating (PAG) will be encapsulated with NAG materials.

The Peach, Elgin, Heavy Weight, and Copper World pits are located on the west side of the Santa Rita Mountains. Broadtop Butte Pit straddles the ridgeline. Rosemont Pit is located entirely on the east side of the ridgeline. The west side pits, including Broadtop Butte, are sometimes referred to as the "Satellite" pits, and Rosemont as the main or primary pit. The passive containment created by the Rosemont Pit has been deemed to satisfy the requirements of A.R.S. § 49-243(G). The passive containment created by the open pit is hydrologically isolated to the extent that it does not allow potential pollutant migration from within the capture zone. The remaining pits are not anticipated to create a hydrologic sink and have been identified as potentially discharging facilities in the permit. Three of the Satellite pits will be backfilled with waste rock: Heavy Weight, Copper World and Broadtop Butte.

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

Compliance with AWQS (or a showing of no further degradation for any pollutants that exceed AWQS at the time of permit issuance, as determined by the ambient monitoring program) is required at the POCs listed in Table 2 Point of Compliance (POC) / Monitoring Locations of the Individual APP. The facility shall monitor groundwater quarterly or biennially for the parameters listed in Tables 19 and 20, respectively, in the Individual APP.

For the ambient monitoring program, Copper World will perform either eight monthly or eight quarterly rounds of groundwater monitoring for each of the 10 POC wells listed in Table 2 of the Individual APP. Copper World must specify its preference for either 8 monthly or 8 quarterly samples as part of compliance schedule item (CSI) No. 12 to be submitted prior to POC well

installation. The selected monitoring schedule applies to all POC well locations and encompasses constituents listed in Section 4.2, Table 18 of the Individual APP.

If a designated Point of Compliance (POC) well becomes unusable or inaccessible, a replacement well must be constructed and installed with ADEQ approval. If the replacement well is within 50 feet of the original well, the original Alert Levels (ALs) and/or aquifer quality limits (AQLs) apply. However, the permittee can request a review and possible recalculation of ALs and AQLs if a technical demonstration shows they are not suitable for the replacement well. If not, ALs and/or AQLs are determined according to the provisions in Section 2.5.3.3 of the Individual APP for Alert Levels and Section 2.5.3.4 for Aquifer Quality Limits.