



Fact Sheet

Aquifer Protection Permit
Place ID 129326, LTF 45919
INDIVIDUAL
COPPER CREEK DEVELOPMENT

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. This document gives pertinent information concerning the issuance of the permit. 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.

I. FACILITY INFORMATION

Name and Location

Permittee's Name:	Redhawk Copper, Inc.
Mailing Address:	6868 North 7 th Avenue, Suite 204 Phoenix, AZ 85013-1150
Facility Name and Location:	Copper Creek Development Rock Disposal Facility East Copper Creek Rd. Mammoth, AZ 85618

Regulatory Status

The APP Application for this site was received on October 24, 2007. It was considered administratively complete on December 3, 2007. There was no previous regulatory activity including permits or compliance.

Facility Description

The applicant proposes to place approximately 353,000 tons of development rock on the land surface with no liner. Redhawk proposes to complete approximately 19,000 feet of underground tunneling to provide access to the Childs-Aldwinkle, Mammoth, Old Reliable, Copper Prince and other local ore bodies for the Copper Creek Project. This APP is for the development phase of the Copper Creek Project as a Development Rock Disposal Facility (DRDF).

The 353,000 tons of development rock consists of 291,000 tons predicted to be “inert” generated from constructing access tunnels, vent raises and ramp areas. This inert development rock is predicted to have neutralization potential. The remaining 62,000 tons is predicted to have some mineralization and will be generated from excavating ore body cross cuts and access drifts. The 62,000 tons will be temporarily stockpiled on top of the inert development rock.

The DRDF is within the historic Bunker Hill Mining District and is located approximately 8 miles west of the town of Mammoth, Arizona, and is accessed by existing improved and unimproved gravel surfaced roadways. The DRDF is located on the northeast ¼ of Section 10 and a portion of the northwest ¼ of Section 11, Township 8 South, Range 18 East, Gila and Salt River Meridian, Pinal County, Arizona. The DRDF is located over the groundwater of the San Pedro Basin at Latitude 32° 45' 16.85" North and Longitude 110° 29' 08.38" West. Elevation ranges from 3,900 to 4,100 feet above mean sea level (amsl). The DRDF is located adjacent to the east side of Saloon Gulch approximately 0.5 miles above and north of the confluence of Saloon Gulch and Copper Creek.

The Copper Creek mining district was heavily mined for copper and silver from 1880 until the mid 1940's. In the mid 1970's, Ranchers Exploration operated an in-situ copper leaching operation in the Old Reliable deposit. The remnants of the in-situ leach operation lie immediately west of Saloon Gulch and the DRDF and north of Copper Creek.

Hydrogeologic Setting

The Copper Creek mining district hosts numerous breccia pipes in addition to deep seated porphyry-style, stockwork copper mineralization and local lead-silver veins. The breccia pipes are confined to the late Cretaceous/early Tertiary Copper Creek Granodiorite cemented by quartz, chalcopyrite, bornite, anhydrite, and calcite. The project is focused on the Mammoth, Childs-Aldwinkle, and Old Reliable breccias, which are hosted entirely within the granodiorite.

Age dating suggests a minimum age of 62.1 to 60.8 million years ago (Ma) for the Copper Creek Granodiorite. Recent testing of hydrothermal minerals indicates an age of 60.0 ± 0.9 Ma for the copper mineralization.

Soils at the project site are thin or non-existent. Granodiorite outcrops over most of the project area, with soil accumulations limited to a few inches or less. Minor amounts of alluvial material occur in the local water courses.

Local groundwater occurs in fractured crystalline bedrock. There are no extensive alluvial deposits in the vicinity of the DRDF and groundwater resources are limited. Monitoring wells were installed adjacent to Copper Creek (MW-2), and Saloon Gulch (MW-3). Saloon Gulch is ephemeral stream adjacent to the western edge of the DRDF. Saloon Gulch is a tributary to Copper Creek. In MW-3 the static water elevation was 3,995 feet amsl or 15.8 feet below ground surface (bgs). In MW-2 the

static water elevation was 3,625 feet amsl or 24.4 feet bgs. MW-2 is roughly southwest of MW-3. These two wells are located parallel to the expected regional groundwater flow direction towards Copper Creek. Based on the data from these two wells, the regional gradient beneath the DRDF is 0.17 feet/foot to the south-southwest. Locally, the gradient can be expected to vary as groundwater flow in the granodiorite is fracture controlled. Permeability in the granodiorite can be expected to be low; however, fracturing and geologic structures may result in locally high secondary permeability.

Several historic mine openings can be found in the vicinity below the elevation of the DRDF in Saloon Gulch, in tributaries to Saloon Gulch and adjacent Copper Creek. Existing openings appear to be dry, suggesting there is no local groundwater mound in the vicinity of the DRDF.

II. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY

The BADCT requirements for the associated facilities are listed below:

ADEQ FACILITY NO.	FACILITY NAME	LATITUDE	LONGITUDE	BADCT REQUIREMENT
PERMITTED DISCHARGING FACILITIES				
1	Non-stormwater Pond	32° 45' 16"N	110° 29' 16"W	Design to prescriptive BADCT requirements for a 100-year, 24-hour storm event. Site shall be cleared, grubbed, and graded with 6" of 3/8" bedding fill compacted to ASTM D698. The geomembrane 60-mil liner shall be placed and anchored in trenches with all work performed under QA/QC program. Freeboard of 2 feet included below spillway shall be designed to discharge into Saloon Gulch for storms in excess of the design storm.
2	Development Rock Disposal Facility Lower portion 291,000 tons below 4,080 elevation Upper portion 62,000 tons above 4,080 elevation	32° 45' 17"N	110° 29' 10"W	Disposal of development rock assumes material received does not become a source of acid mine drainage. This will be controlled by close monitoring during mining to direct only non-sulfide bearing material to the lower portion of the stockpile. Contents of the upper portion of the DRDF is limited to the sampling plan and sorting to assure placement of only visibly mineralized (sulfides and oxides) material. Retention time is limited to 3 years from date of stockpile beginning. Within this time frame, material is either moved off-site for sampling and testing or returned underground for long-term storage.

ADEQ FACILITY NO.	FACILITY NAME	LATITUDE	LONGITUDE	BADCT REQUIREMENT
FACILITIES REQUIRING FURTHER COMPLIANCE SCHEDULE EVALUATION				
3	Maintenance Shop	32° 45' 18"N	110° 29' 17"W	Design report for construction is pending in the Compliance Schedule. Exemption under A.R.S. §49-250(B)(21) rests with ADEQ approval of the design report as a non-discharging facility.
4	Vehicle Wash Bay	32° 45' 18"N	110° 29' 17"W	Design report for construction is pending in the Compliance Schedule. Exemption under A.R.S. §49-250(B)(21) rests with ADEQ approval of the design report as a non-discharging facility.
5	Warehouse	32° 45' 18"N	110° 29' 17"W	Design report for construction is pending in the Compliance Schedule. Exemption under A.R.S. §49-250(B)(21) rests with ADEQ approval of the design report as a non-discharging facility.
6	Dry/Washroom Trailers	32° 45' 18"N	110° 29' 17"W	Design report for construction is pending in the Compliance Schedule. Exemption under A.R.S. §49-250(B)(21) rests with ADEQ approval of the design report as a non-discharging facility.
7	Generators	32° 45' 18"N	110° 29' 17"W	Design report for construction is pending in the Compliance Schedule. Exemption under A.R.S. §49-250(B)(21) rests with ADEQ approval of the design report as a non-discharging facility.
8	Compressors	32° 45' 18"N	110° 29' 17"W	Design report for construction is pending in the Compliance Schedule. Exemption under A.R.S. §49-250(B)(21) rests with ADEQ approval of the design report as a non-discharging facility.
9	Fenced Yard	32° 45' 18"N	110° 29' 17"W	Design report for construction is pending in the Compliance Schedule. Exemption under A.R.S. §49-250(B)(21) rests with ADEQ approval of the design report as a non-discharging facility.
10	Facilities Area Drainage Ditch	32° 45' 18"N	110° 29' 17"W	Design report for construction is pending in the Compliance Schedule. Exemption under A.R.S. §49-250(B)(21) rests with ADEQ approval of the design report as a non-discharging facility.

ADEQ FACILITY NO.	FACILITY NAME	LATITUDE	LONGITUDE	BADCT REQUIREMENT
11	Underground Sewage Storage Tank	32° 45' 18"N	110° 29' 17"W	Design report for construction is pending in the Compliance Schedule. Exemption under A.R.S. §49-250(B)(21) rests with ADEQ approval of the design report as a non-discharging facility
12	Surface Installation for Ventilation & Escape Way	32° 45' 11"N	110° 29' 04"W	Design report for construction is pending in the Compliance Schedule. Exemption under A.R.S. §49-250(B)(21) rests with ADEQ approval of the design report as a non-discharging facility.
13	Surface Installation for Ventilation & Escape Way	32° 44' 57"N	110° 28' 52"W	Design report for construction is pending in the Compliance Schedule. Exemption under A.R.S. §49-250(B)(21) rests with ADEQ approval of the design report as a non-discharging facility.

III. COMPLIANCE WITH AQUIFER WATER QUALITY STANDARDS

The permittee is required to show that pollutants discharged will not cause or contribute to a violation of AWQS at the POCs. The location of POC(s) which show compliance with AWQS is determined by an analysis of the pollutant management area (PMA), the discharge impact area (DIA), and locations and uses of groundwater wells in the area. The POC locations are selected to protect off-site uses of groundwater, to verify BADCT performance, and to allow early detection of potential impact from the potential discharges at the site.

The PMA is described in A.R.S. §49-244 as the limit projected in the horizontal plane of the area on which pollutants are or will be placed. The PMA includes horizontal space taken up by any liner, dike or other barrier designed to contain pollutants in the facility. If the facility contains more than one discharging activity, the PMA is described by an imaginary line circumscribing the several discharging activities. The ADEQ accepts the PMA on file. The PMA is shown on Figure 2 DEVELOPMENT ROCK DISPOSAL FACILITY PLAN dated January 14, 2009. The PMA is 10.99 acres in area.

The DIA is defined by A.R.S. §49-201(13). The DIA means the potential areal extent of pollutant migration, as projected on the land surface, as the result of a discharge from a facility. The DIA of the DRDF was determined to be within the bounds of PMA, due to the design and location of the discharging facilities. The ADEQ accepts the current DIA on file. The DIA is also shown on Figure 2 DEVELOPMENT ROCK DISPOSAL FACILITY PLAN dated January 14, 2009. The DIA is estimated to be 7.17 acres in area. There are no water supply wells located within the DIA.

Point(s) of Compliance

MW-3 is less than 750 feet from the footprint of the 353,000-ton development rock stockpile. MW-3 is screened from 27 to 57 feet bgs and the static water level is typically above the top of screened interval. Water quality samples collected from this well shall be considered representative of the water quality in the uppermost aquifer beneath the DRDF.

Well #	Descriptive Location	Latitude	Longitude
MW-3	MW-3 is located at the western end of the PMA and adjacent to the eastern side of Saloon Gulch.	32° 45' 15.88" N North American Datum of 1983	110° 29' 16.89" W North American Datum of 1983

Only one POC is required at this time. The Director may designate additional POCs, if information on groundwater gradient(s), use, or quality indicates the need.

Monitoring Requirements

Discharge monitoring and characterization are required for this facility. Sampling is required at the non-stormwater pond. An initial grab sample from the non-stormwater pond shall be collected at the first opportunity when water is present. Thereafter, an annual grab sample shall be collected at any time during the year when water is present.

Groundwater monitoring is required to establish ambient groundwater quality in MW-3 and the eight rounds of sampling have been completed. A total of eight rounds of sampling and testing shall be required to establish the ambient groundwater quality for selected pollutants listed in A.A.C. R18-9-406 and other pollutants that have no numeric AWQS, such as sulfate, TDS, and TPH. The list of pollutants and parameters required to be tested for during ambient and routine groundwater sampling are presented in Section 4.2 of the permit.

The permit compliance schedule shall require an ambient groundwater monitoring report to be submitted for POC well MW-3 along with proposed ALs and AQLs for pollutants that have ALs and AQLs designated as "Reserved" at the time of permit issuance. The report shall be submitted with an amendment application and the appropriate fee.

Routine groundwater sampling at POC MW-3 shall be required at a frequency of once every 3 months (quarterly).

Rock Inspection, Classification, and Monitoring

Rock inspection, classification and monitoring will be conducted as described in the document titled "Technical Memorandum September 12, 2008, RE: DEVELOPMENT ROCK MANAGEMENT AND CONTINGENCY PLAN FOR THE COPPERCREEK DEVELOPMENT PROJECT," from Gene Muller P.E., Golder Associates Inc. Acid Base Accounting (ABA) tests shall be done at a

frequency based on the blasting frequency as indicated in the permit. SPLP (Synthetic Precipitation Leaching Potential EPA Method 1312), shall be done monthly. Each quarter a summary of inspections and testing shall be reported on the Self-monitoring Report Form (SMRF).

IV. STORM WATER AND SURFACE WATER CONSIDERATIONS

Permanent stormwater diversion ditch(s) and the non-stormwater pond shall be installed prior to stockpiling of development rock. The diversion ditch(s) allow conveyance of stormwater around the APP facilities. The ditch(s) shall be founded in bedrock. The ditch(s) design has the capacity to divert the run-on associated with the 100-year storm event. The ditch(s) discharge near the northwest corner of the PMA as shown on Figure 2.

The planned facilities are located outside of the 100-year floodplain.

Monitoring of nearby drainages was not included as a permit condition because the facility does not directly discharge to any surface water. However, samples of the surface water present in Saloon Gulch were obtained and tested to document the water quality in Saloon Gulch prior to facility operation and discharge.

V. COMPLIANCE SCHEDULE

For each compliance schedule item listed below, the permittee shall submit the required information, including a cover letter that lists the compliance schedule items, to the Groundwater Section. A copy of the cover letter must also be submitted to the Water Quality Compliance Section.

Item	Due Date	Comments
Report with proposed ALs and AQLs	Within 3 months of permit issuance.	Submit a Report which proposes ALs and AQLs for the pollutants and parameters in Section 4.2, Table 2C listed as "Reserved" with a permit amendment request and fee.
Non-stormwater Pond Completion	Prior to blasting, excavating and stockpiling rock.	The non-stormwater pond must be completed prior to blasting excavating and stockpiling rock.
Facility Design Report	90 days prior to construction or erection.	For each of the facilities listed in the Facilities Requiring Further Compliance Schedule Evaluation in Table 2A, the permittee shall submit the design report with drawings marled "For Construction" and signed and sealed by an Arizona licensed professional engineer with appropriate credentials in the required disciplines to ADEQ for approval. Of particular concern is the design to minimize the potential for pollutants to reach the groundwater. Design drawings shall be used by ADEQ to determine if the facility is discharging or not. For discharging facilities, ADEQ shall use the design report to evaluate the demonstration of BADCT by considering features, such as but not limited to impermeable construction materials, sumps, and containment berms either alone or in combination. Each submittal shall be considered an APP amendment according to A.A.C. R18-9-A211.

Item	Due Date	Comments
Facility As-built Report	30 days following construction or erection completion.	For each facility in the Permitted Discharging Facilities and Facilities Requiring Further Compliance Schedule Evaluation except for the DRDF, the permittee shall submit an as-built report with QA/QC for each facility for ADEQ approval.
Implementation of a Report on Clean-up of Mine Yard Spills or Leaks	30 days prior to initiation of decline excavation.	The permittee shall submit a plan for generating the following report for ADEQ approval before excavation or mining begins. This report is to provide ADEQ with a quarterly compilation of the Redhawk daily report summarizing significant spillage and leakage of diesel fuel from equipment moving about the mine yard or potential pollutants from what ever source, and the corrective measures taken for clean-up and disposal.

VI. OTHER REQUIREMENTS FOR ISSUING THIS PERMIT

Technical Capability

Redhawk Copper has demonstrated the technical competence necessary to carry out the terms and conditions of the permit in accordance with A.R.S. § 49-243(N) and A.A.C. R18-9-A202(B).

ADEQ requires that appropriate documents be sealed by an Arizona registered geologist or professional engineer. This requirement is a part of an on-going demonstration of technical capability. The permittee is expected to maintain technical capability throughout the life of the facility.

Financial Capability

Redhawk Copper Inc., has demonstrated the financial responsibility necessary to carry out the terms and conditions of the permit in accordance with A.R.S. § 49-243(N) and A.A.C. R18-9-A203. The permittee shall maintain financial capability throughout the life of the facility. The estimated closure and post-closure cost is \$189,000. The financial capability was demonstrated through a Certificate of Deposit under A.A.C. R18-9-A203(C)(3). The permittee is expected to maintain financial capability throughout the life of the facility.

Zoning Requirements

Mining activity of greater than five contiguous acres is exempt from zoning requirements pursuant to A.R.S. § 11-830.

VII. ADMINISTRATIVE INFORMATION

Public Notice (A.A.C. R18-9-108(A))

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft permit or other significant action with respect to a permit or application. The basic intent of this requirement is to ensure that all interested parties have an opportunity to comment on significant actions of the permitting agency with respect to a permit application or permit. This permit will be public noticed in a local newspaper after a pre-notice review by the applicant and other affected agencies.

Public Comment Period (A.A.C. R18-9-109(A))

The aquifer protection program rules require that permits be public noticed in a newspaper of general circulation within the area affected by the facility or activity and provide a minimum of 30 calendar days for interested parties to respond in writing to ADEQ. After the closing of the public comment period, ADEQ is required to respond to all significant comments at the time a final permit decision is reached or at the same time a final permit is actually issued.

Public Hearing (A.A.C R18-9-109(B))

A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A public hearing will be held if the Director determines there is a significant amount of interest expressed during the 30-day public comment period, or if significant new issues arise that were not considered during the permitting process.

VIII. ADDITIONAL INFORMATION

Additional information relating to this proposed permit may be obtained from:

Arizona Department of Environmental Quality
Water Quality Division – APP & Drywell Unit
Attn: Steve Vevang
1110 W. Washington St., Mail Code: 5415B-3
Phoenix, Arizona 85007
Phone: (602) 771- 4621