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July 11, 2025

Arizona Department of Environmental Quality
Water Quality Division
Aquifer Protection Program
Attn: Ardy Sharifabadi
1110 W. Washington Street
Phoenix, AZ 85007

Submitted electronically via: <https://azdeq.commentinput.com/?id=bRHQMdB4>

Re: Comments on Draft Aquifer Protection Permit No. P 514791 for Antler Mine

Dear Mr. Sharifabadi:

We appreciate the opportunity to comment on the draft Aquifer Protection Permit (APP No. P 514791) for the proposed Antler Mine in Mohave County. The Sierra Club Grand Canyon Chapter is a passionate and dedicated group of individuals deeply committed to the protection and preservation of Arizona's natural resources and public health. Sierra Club is one of the nation's oldest and most influential grassroots environmental organizations. Our mission is to explore, enjoy, and protect the wild places of the earth, to practice and promote the responsible use of the earth's ecosystems and resources, and to educate and enlist humanity to protect and restore the quality of the natural and human environments. We represent more than 3.7 million members and supporters nationwide, including over 35,000 in Arizona as part of the Grand Canyon Chapter. On behalf of those members, we offer the following comments and recommendations to ensure the proposed permit fully protects groundwater resources, promotes long-term environmental stewardship, and upholds public accountability.

1. Groundwater Protection and Point of Compliance Wells

The facility will discharge to several sources with potential aquifer impacts, including tailings storage, process water ponds, and a waste rock storage area. We are particularly concerned about the assumption of de minimis seepage, defined in the permit as one gallon per day or less, from the unlined Waste Rock Storage Area (WRSA). Even at low rates, persistent seepage of stormwater contact runoff in the vadose zone over the mine's eighteen-year lifecycle, including post-closure, presents cumulative risk to the underlying aquifer, especially where toxic metals may be present.

Recommendations:

- Require updated hydrogeologic modeling to account for cumulative, long-term contaminant transport from all discharge points.

- Increase the monitoring frequency at downgradient Point of Compliance wells during active operation and early post-closure.
- Include specific contingency requirements for corrective actions if Alert Levels or Aquifer Quality Limits are exceeded, rather than only allowing for recalculation of thresholds. Recalculating thresholds based on updated data may be appropriate in some cases, but it should not be used as a substitute for corrective action when contamination is detected. This practice effectively shifts the benchmark rather than addressing the underlying cause of pollution, and may undermine the protective intent of the monitoring framework. Simply raising the allowable limits in response to exceedances amounts to moving the goalposts, rather than fixing the problem.

2. Best Available Demonstrated Control Technology (BADCT) Requirements

The BADCT determinations for several of the proposed discharge facilities, particularly the unlined WRSA and intermittently used stormwater ponds, rely too heavily on assumptions about high evaporation rates and arid climate rather than on engineered containment or treatment technologies. This approach does not provide sufficient assurance that pollutants will be controlled before reaching the aquifer, particularly over an eighteen-year mine life followed by post-closure monitoring.

Recommendations:

- Require engineered containment systems, including synthetic liners where appropriate, to ensure consistent BADCT compliance.
- Install real-time leak detection systems for all lined process ponds and underdrain collection systems to improve accountability.
- Include annual engineering performance audits of BADCT infrastructure.

3. Cumulative Impact Analysis

The draft permit does not clearly present a cumulative impact analysis evaluating the combined effects of all discharging units on groundwater quality over time.

While the permit provides individual discharge estimates for various facilities, such as the WRSA, tailings storage, and process water ponds, it evaluates each source in isolation. For example, the WRSA is expected to generate up to one gallon per day of seepage, and the combined leakage from lined ponds is estimated at over 200 gallons per day. However, there is no integrated analysis modeling how these discharges may interact or accumulate in the subsurface environment throughout the full lifecycle of the mine, including post-closure. The presence of multiple Point of Compliance wells is important, but the permit does not explain whether or how these wells are being used to assess site-wide cumulative risk.

In particular, the draft permit does not include a site-wide water balance. Without a quantitative accounting of all water entering, stored within, and leaving the facility over time, including precipitation, process water, evaporation, infiltration, and seepage, it is difficult to assess how water and associated pollutants move through the facility as a whole. This limits the ability to predict cumulative groundwater risks that may result from the interaction of multiple discharging

units. Given the volume of material being managed on site and the complexity of the facility, a comprehensive cumulative assessment is necessary to ensure long-term protection of groundwater resources.

4. Climate Resilience and Emergency Planning

Although the process ponds are reportedly designed to contain a one hundred-year, twenty-four-hour storm event, the permit does not adequately address more extreme weather patterns that are now increasingly common in Arizona due to climate change. There is also little information about emergency response planning in the event of liner failure, overtopping, or structural damage from flooding.

Recommendations:

- Require a detailed climate risk assessment and emergency response plan that includes flooding, equipment failure, and storm damage scenarios.
- Incorporate adaptive performance standards and triggers for inspection and corrective action during extreme weather or flood events.

5. Monitoring Transparency and Public Access to Data

Groundwater monitoring and compliance data will be essential to ensuring environmental safety throughout the life of the mine. However, the draft permit does not specify how the public will access these data.

Recommendations:

- Require all groundwater monitoring results to be published on a centralized and searchable public platform in a timely manner.
- Include a public reporting mechanism for any permit violations, Alert Level exceedances, or enforcement actions.

6. Post Closure Stewardship and Financial Assurance

The permit anticipates ten years of post-closure monitoring. Given the large volumes of mine waste to be stored onsite and the possibility of slow contaminant migration, we believe ten years is insufficient to detect and respond to long-term risks.

Recommendations:

- Extend post-closure groundwater monitoring to a minimum of twenty years, with periodic review of monitoring results to determine whether additional time is needed.
- Require a robust financial assurance package that fully accounts for closure, long-term monitoring, and potential corrective action costs to protect public resources.

Conclusion

The Sierra Club Grand Canyon Chapter urges ADEQ to strengthen the draft Aquifer Protection Permit for the Antler Mine to ensure it fully protects Arizona's groundwater resources, addresses climate resilience, and provides transparent oversight for the public. Resource development must be guided by enforceable safeguards, rigorous technical review, and long-term accountability.

Thank you for the opportunity to provide these comments. We are committed to working with ADEQ and other stakeholders to protect Arizona's water for future generations.

Sincerely,

A handwritten signature in black ink that reads "Jennifer Lyn Martin". The signature is written in a cursive, flowing style.

Jennifer Martin-McLeod
Arizona Water Sentinels Program Manager
Sierra Club Grand Canyon Chapter
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