



Katie Hobbs
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY



Karen Peters
Director

Inadequate Response to a Comprehensive Request for Additional Information

Via Electronic Mail

June 23, 2023

Copper World, Inc.
Attn: Mr. Javier Del Rio, Vice President
5285 East Williams Circle, Suite 2010
Tucson, AZ 85711

**Re: Copper World Project
New Aquifer Protection Permit #P-513690, LTF #90620**

Dear Mr. Javier Del Rio:

The Arizona Department of Environmental Quality received the above-referenced application September, 21, 2022. The application was submitted in accordance with Arizona Administrative Code (A.A.C.) R18-9-A211(B). At this time, the application is in the Substantive Phase of the Licensing Timeframe (LTF) for this application.

ADEQ sent you a Comprehensive Request for Additional Information letter on February 27, 2023. Your responses were received on April 21, 2023. After a review of your response, ADEQ has determined that your responses do not contain all of the required information. The following information is required to lift the suspension of the LTF for this application as per Arizona Revised Statutes (A.R.S.) § 41-1075.

This decision is an appealable agency action under A.R.S. § 41-1092. You have a right to request a hearing and file an appeal under A.R.S. § 41-1092.03(B). You must file a written Request for Hearing or Notice of Appeal within **30 days** of your receipt of this Notice. A Request for Hearing or Notice of Appeal is filed when it is received by ADEQ's Hearing Administrator as follows:

Hearing Administrator
Office of Administrative Counsel
Arizona Department of Environmental Quality
1110 W. Washington Street
Phoenix, AZ 85007

The Request for Hearing or Notice of Appeal shall identify the party, the party's address, the agency and the action being appealed and shall contain a concise statement of the reasons for the appeal. Upon proper filing of a Request for Hearing or Notice of Appeal, ADEQ will serve a Notice of Hearing on all parties to the appeal. If you file a timely Request for Hearing or Notice of Appeal you have a right to request an informal settlement conference with ADEQ under A.R.S. § 41-1092.06. This request must be made in writing no later than **20 days** before a scheduled hearing and must be filed with the Hearing Administrator at the above address.

Required Information

State law requires you to submit to ADEQ the following information to lift the suspension of the timeframe and continue processing of this application as per Arizona Revised Statutes (A.R.S.) § 41-1075:

General Items

Item 1: (Closure & Post-Closure):

- a. In relation to costs in Appendix N, please confirm that the cost of revegetation is covered under ASMI and the cost of soil cover placement is included in the APP cost.
- b. Please provide a table that lists the closure cost for each facility separately.

According to Page 8 (12 PDF) of Appendix M/Attachment 1, the HLDE (Hazardous Load Determination Equation) is a model that has been jointly developed by the Nevada Division of Environmental Protection, the Bureau of Land Management, and the mining industry in Nevada.

- a. Provide data to support the selection of the key assumption for the "HLDE Model Output for HLP" including:
 - Saturated Hydraulic Conductivity (Ks)
 - Residual Water Content (θ_r)
 - θ_s (saturated moisture content)
 - θ_{app} (active application moisture content)
 - θ_{hist} (moisture content of historic part at PFS start)
 - γ (empirical drainage parameter)

- b. It appears that there is a discrepancy between the weather data presented in the "HLDE Model Output for HLP" on PDF page 30 of Appendix M and the data in "20220921 APP Application_Copper World-Main Application" Table 3.01 (page 40 PDF) and 3.03 (page 42 PDF). In order to ensure the accuracy of the drawdown curve for Monthly Evaporation Data & Precipitation in the "HLDE Model Output for HLP", update the data to resolve this discrepancy. Similar discrepancy exists for the "HLDE Model Output for TSFs".
- c. It appears that the drawdown curve for the "HLDE Model Output for TSFs" on page 36 and on page 39 (drawdown curve reaches zero from year 7 to year 8) does not extend to an asymptotic line close to zero. Provide an explanation for the reason or update the model to reach an asymptotic line close to zero.
- d. The STANDARDIZED RECLAMATION COST ESTIMATOR model used is based on Nevada, as outlined in Appendix M / Attachment 1. The model is for September 27, 2017 at <https://nvbond.org/> "Standardized Reclamation Cost Estimator, <https://ndep.nv.gov/land/mining/reclamation/reclamation-costestimator>. Version 1.4.1." Please provide all of the adjustments that have been assigned to the model to be used for Arizona (track change and basis of the change - unit change).

Item 2: (Contingency Plan):

- a. This item does not require any further action at this time. ADEQ will include the Compliance Schedule Item (CSI) that mandates the submission of the following updated documents to ADEQ at least once every three years or within 90 days of any earlier updates. The following documents must be approved by the Engineer of Record (EOR) for the facilities:
 - TSF Contingency Action Plan (Attachment 2A)
 - EPRP (Attachment 2B)
 - Failure Modes and Effects Analysis Report (Attachment 2C)
 - TSF Dam Safety Review (Attachment 2D)
 - Tailings Operation, Maintenance, And Surveillance (OMS) Manual (Attachment 3A) (EOR involvement and Input)
 - Heap Leach Facility Operation, Maintenance, And Surveillance (OMS) Manual (Attachment 3B)
- b. Provide a timeline for the development and implementation of the OMS, ERP, and CQA as outlined in Attachment 2C, "Failure Modes and Effects Analysis Report Copper World Project – TSF and HLF."

- c. As part of the ERP provided as the Attachment 2B April 21, 2023 submittal, please provide a dam breach analysis for the TSFs.

Item 3: (Operation, Maintenance, and Surveillance (OMS) Plan):

- a. To reduce the risk of failure, the instrumentation plan should consider the results of the failure model analysis. Given that the perimeter of TSF1 is approximately 6.5 miles and TSF2 is around 4 miles, please provide a revised plan or justification to ADEQ for why 6 piezometers for TSF1 and 8 piezometers for TSF2 are sufficient to monitor the approximately 10.5 miles of dam (see Item 26 regarding piezometers for cell2).
- b. Please provide a revised plan or justification to ADEQ for the location of the piezometers selected for TSF1 to support the Potential Failure Modes (PFM) provided in Attachment 2C "Failure Modes and Effects Analysis Report".
- c. Please provide a detailed annual monitoring plan (including depth and number of vibrating wire piezometer installations) for the Tailings Storage Facility (TSF) on the annual deposition plan / progression plan.
- d. The proposed piezometers are required to be assigned an alert level that corresponds to quantifiable performance objectives. This ensures their effectiveness in monitoring stability, consistency with the design assumptions, and detecting adverse conditions at an early stage. Provide alert levels for all of the proposed TSF piezometers.
- e. Provide a plan view of the pipelines that transport seepage from the collection trenches to the Primary Settling Pond for reuse in the sulfide ore processing circuit. As stated on page 12 of the tailing OMS manual PDF, "Seepage will be pumped from the seepage collection trenches to the Primary Settling Pond for reuse in the sulfide ore processing circuit."
- f. Please clarify the discrepancy with EOR receiving monthly reports and that dataloggers are reviewed quarterly as stated on Page 18 of the Tailings Operation, Maintenance, And Surveillance (OMS) Manual PDF "The piezometers are transmitted from the dataloggers automatically and reviewed quarterly or as needed. The piezometer measurements are transmitted to the EOR on a monthly frequency or as required."

Item 4-6: No further comments on these items

Engineering Items

Item 7-8: No further comments on these items

Item 9: (The WR Facility (WRF)):

- a. Based on the response to item 9a, provide a detailed annual progression of the mine life, including the location where various materials (NAG, AG and PAG) will be placed and a material mass balance for each type of material.
- b. Based on the information provided, there seems to be a discrepancy between the amount of waste rock mined listed in Attachment 5 (Page 10 of PDF) and G.3 App (Page 11 of PDF). On Attachment 5 mentioned every 1,000,000 tons of waste rock mined will be tested and G.3 App mentioned every 500,000 tons of waste rock mined. Provide explanation of the discrepancy and the correct value for the waste rock mined will be tested.
- c. In order to adequately characterize the waste rock within each respective geologic unit, please indicate the geological units that will be assessed with respect to the quantity of waste rock to be mined.
- d. This item does not require any further action. ADEQ will include the Compliance Schedule Item (CSI) to provide the data to ADEQ and require approval before changing the testing amount as mentioned in "The amount of testing will vary thereafter based on the trend that is identified and proven by our model, or if we see a change in waste material based on blasthole testing". (Page 11 of PDF Attachment 5)
- e. Provide the cross-section of the proposed waste rock material placement for NAG, PAG, and AG in the pit, as well as the method used for their placement. Additionally, please explain how you would ensure the placement and thickness of the NAG in relation to AG and PAG material are maintained.

Item 10: (Based on the Preliminary Geologic Hazards Assessment report):

- a. Provide a description of a typical closure method and include drawings showing plan and cross-section views for adits and mine shafts that are known or will be discovered during operation.
- b. This item does not require any further action. ADEQ will include the Compliance Schedule Item (CSI) that requires providing closure data for each adit and mine shaft inside the TSF and HLF footprints to ADEQ.

Item 11: No further comments on this item

Item 12: (Water in the upstream stormwater collection):

The accuracy of the water elevation assumption on both the TSF and HLF can have a major impact on their stability. Alluvium is typically characterized as loose and unconsolidated sediment, and

is classified as a relatively young deposit in geologic time. To ensure the integrity of the storm water collection system under the HLF and TSF, the following items should be provided:

- a. Provide the annual pipe settlement calculation for the pipes located beneath the TSF and HLF that aligns with the annual progression plan/deposition plan.
- b. The provided settlement calculation is only considered elastic settlement in Attachment I.8, for example. Please provide the long-term foundation settlement due to loading of TSF and HLF during construction of these facilities.
- c. Provide site specific consolidation data such as coefficient of consolidation (C_v) and Compression Index (C_c) for the alluvium material.
- d. The Modulus of 2,000 kips per square foot (ksf) utilized in the calculation is a value obtained from a textbook. Provide site-specific tests or justify/confirm the relevance and accuracy of this value.

Item 13-15: No further comments on these items

Item 16: (Please provide the following regarding the tailings stacking height):

- a. Please provide a detailed annual deposition plan or progression plan that supports the information provided in Table 16-1 of the RAIS response. An example of such a plan can be found in Attachment 7 of the AMEC Dry Stack TSF Design Report, specifically on pages 73 through 95 of the report (Item 22a).
- b. Please provide a comprehensive plan for annual deposition throughout the life of the mine. This plan should include the location of the decant pond as well as the progression of the construction of the TSF.
- c. Please provide an annual mass balance for the TSF, which should include Cyclone sand, Fine tailings, and compacted berm materials. Additionally, please provide a filling curve to depict the progression of filling activities over time.
- d. The proposed monitoring instruments are required to be assigned an alert level that corresponds to quantifiable performance objectives. This ensures their effectiveness in monitoring objectives, consistency with the design assumptions, and detecting adverse conditions at an early stage. Provide the typical alert levels for the monitoring instruments in the TSFs. This may include but not be limited to vibrating wire piezometers, slope indicator, standpipe, prisms, InSAR etc.
- e. As stated on page 10 of the April 21 response letter, it is assumed that excessive pore pressures are unlikely to form during this stage of the TSF operation. To support these

assumptions and ensure the safety of the operation, please provide a comprehensive monitoring plan that verifies and tracks pore pressures during operation. This plan should include specific monitoring techniques and the frequency of monitoring (including but not limited to CPTs, drilling, etc.) , as well as contingency measures in case of unexpected pore pressure changes.

Item 17: (Provide an estimate of water content during tailings placement):

- a. There appears to be a discrepancy between the information provided in Table 17-1 of the April 21 and the Appendix J Site water balance for cyclone sand tailings. To address this discrepancy, please provide an updated water balance that includes separate columns for water releasing from cyclone sand tailings, fine tailings, and whole tailings. This updated water balance should provide a detailed breakdown of water release from each of these sources, allowing for a more accurate assessment of the overall water balance of the site.

Item 18: No further comments on this item

Item 19: (Provide more information on the materials):

- a. Provide a detailed material specification and gradation that is acceptable for use as cover material. An example of such specifications can be found in Attachment 7 of the AMEC Dry Stack TSF Design Report on page 183, specifically in Appendix C.1.
- b. Based on Attachment 6, it appears that the majority of borrowed material will be sourced within the footprint of the TSF1. Additionally, Attachment 13 of the April 21 response letter indicates that the Cell 1 and 2 area will be covered with tailings within the first year, with Cell 3 being covered by the end of the second year. To facilitate the efficient use of borrowed material and cover the designated areas within the specified timeframe, please provide the location of the stockpile(s) for cover material as well as the geometry of the stockpile(s).
- c. Provide the results of tests conducted to determine the availability of required quantity and suitability of the borrow material for use as cover material.

Item 20: (Has the water management plan considered):

- a. As mentioned on page 8 of Appendix E, the water balance for the Project site is based on an annual average rainfall of 19.73 inches from the Helvetia Weather Station data. However, it is important to take into consideration both wet and dry years to ensure the

integrity of the water management system. “Wet and Dry year water balance is to maintain the integrity of our water management system during a wet year and ensure sufficient sources of water during a dry year.

- b. To improve clarity and facilitate the movement of water flow through our system, please provide a simplified site-wide water balance flow chart showing inputs and outputs for each APP facility as applicable. An example can be found in the Attachment 18 Tetra-tech-leaching facilities design (pdf Page 57 of the report).
- c. Please provide a water balance demonstrating taking into consideration all inputs and outputs to demonstrate appropriate sizing of each proposed pond to be permitted in the APP such as Pregnant Leach Solution (PLS) Pond, HLF North Stormwater Pond, HLF South Stormwater Pond, Raffinate Pond, Reclaim Pond, Process Area Stormwater Pond and Primary Settling Pond.
- d. The application included the following statement “Some of the critical mine facilities are designed to withstand an extreme storm event such as storms with a return frequency of 1:1,000-year”. Provide clarification regarding the response to Item 20 in the 20220921 APP Application_Copper World-RAIS PDF, as to the specificity of the facilities that are designed to withstand extreme storms.

Geotechnical Engineering Items

Item 21: (Potential Failure Modes (PFM)):

- a. Please provide a justification for using three categories for consequence and likelihood instead of five categories. Alternatively, you may provide an updated Attachment 2C that explains the rationale behind using three categories? For reference, please see the example provided in <https://www.resolutionmineeis.us/sites/default/files/references/gannett-fleming-2020.pdf>.
- b. Regarding Potential Failure Mode 2 - TSF Upstream Raise Failure (PFM 2) mentioned on page 4 of Attachment 2C (page 7 of PDF), please provide a rationale for not proposing any site investigation, such as Cone Penetration Testing (CPT).
- c. Regarding Potential Failure Mode 9 - Saturation of Heap Leach Ore (PFM 9) described on page 5 of Attachment 2C (page 8 of PDF) which states “Deterioration of heap leach ore resulting in reduced percolation/permeability of the ore could result in saturation of the heap material. This could result in stability of the heap leach material being compromised“. This statement appears to contradict the response to Item 37. Please provide a general mitigation plan to resolve in case of saturation of the heap material.

Item 22: No further comments on this item

Item 23: (Provide TSF deposition planning and material balance):

The assumption of a 400 ft beach distance is critical for conducting the seepage analysis and piezometric line conclusion in the stability analysis, please provide following items:

- a. Please provide the annual progression of the Tailings Storage Facility (TSF) for the entire life of the mine. A sample of this information can be found on pages 69 to 96 of the AMEC Dry Stack TSF design.
- b. Please provide a tailings mass balance that includes sand and borrow source material for the Life of Mine (LOM), matched with the expected mine production. A sample of the required information can be found on page 95 of the AMEC Dry Stack report.

Item 24: No further comments on this item

Item 25: (Provide information for the starter dam design):

- a. Please provide the definition and material specifications, such as gradation and plasticity index, for the soil-like material. A sample of this information can be found on page 185 of the AMEC Dry Stack TSF design.
- b. On page 88 of the 20220921 APP Application_Copper World-Main Application, it states that the Alluvium material in the project area consists of unconsolidated sand and gravel deposits that are variable in nature due to the formation. The document also mentions that water in the shallow alluvium occurs temporarily during or following substantial and prolonged storm events. Please provide justification as to why limited laboratory test data is considered sufficient for the selection of materials for the TSF start dam and cover.
- c. Based on the available data in the AMEC Dry Stack TSF design report, direct shear tests were performed on the non-plastic soil samples and the friction angle was found to be as low as 33. Additionally, literature suggests that shear strength can be as low as 28 depending on the plasticity index. In order to ensure the stability and safety of the tailings storage facility, it is essential to have accurate shear strength data for alluvium samples with plasticity index values similar to that of GT-2022-13 at a depth of 0-2.5. Therefore, please provide the required shear strength data for the requested alluvium sample.

Item 26: (Provide a detailed stability monitoring plan):

- a. Please provide justification for the absence of Vibrating Wire (VW) piezometers in TSF1 - Cell2.

- b. Please provide typical cross-sections and installation depths for Vibrating Wire (VW) piezometers during the raising of the TSF.
- c. This item does not require any further action at this time. ADEQ will include a CSI for the TSFs that a site investigation using CPT and piezometers information needs to be provided to ADEQ approximately every three years.

Item 27-29: No further comments on these items

Item 30: (Provide justifications for using different):

1. Please provide the calculation used to determine the natural frequency period 0.18 from Graph 4-56 page 84 of Appendix I-1 for TSF, HLF and WRF.
2. Table 5 of the report shows that the value for 10,000 years is 0.396, and half of that value would be 0.198. Please explain how to arrive at the value of 0.17g using the information from Table 5.

Item 31: (Provide the justifications for including alluvial):

- a. Alluvium refers to loose and unconsolidated materials, such as clay, silt, sand, gravel, or organic matter, that are deposited by flowing water. Alluvium can be found in riverbeds, floodplains, deltas, alluvial fans, or other areas where water runs or overflows. It is considered a relatively young deposit in geological time. Please provide a settlement analysis for the undrained system, including long-term foundation settlement.

As the majority of the foundation consists of alluvium with a wide range of permeability based on 3 tests, provide the following items:

- c. Please clarify/justify the 98% versus 80% of the following statement in Appendix H and Appendix M / Attachment 1. "Solution not captured by the seepage collection system would infiltrate into the bedrock below the TSFs. Based on seepage modeling of the seepage collection system, approximately 98% of seepage from the TSF will be captured and reused in the process circuit." – Page 8 (12 pdf) Appendix M / Attachment 1. "According to Appendix H, page 9 of the PDF, it is mentioned that "80 percent" of the water will be collected, which needs to be updated.
- d. A separate column in Table 5 of Appendix E, page 71 (Site Water Balance) should be provided to show the amount of captured water.
- e. Provide detailed information regarding the seepage collection system, including the depth of the trench to the bedrock or entire TSF plan view, material specification for the

backfill, and location of the discharge pump to the settling pond (Figure 13 of Appendix E, page 42)

Item 32: No further comments on this item

Item 33: (Provide a plan view map):

- a. Please provide a definition and material specification for the term 'Loose alluvium/colluvium materials' that will be removed from drainages throughout the entire footprint of TSF and HLF.
- b. Please provide a geotechnical material specification for "Unsuitable alluvium/ colluvium".

Item 34: No further comments on this item

Item 35: (Provide justification for the phreatic line):

- a. Response (c) states that "the undrained shear strength of the tailings was assumed based on a review of data in published literature." Please provide the table that contains a summary review of the data in published literature, and justify why the assumption is conservative for the project.

Item 36: (Provide supporting data):

- a. Provide the material specifications for the embankment/structural fill and the overliner.

Item 37: (In the evaluation of the HLF): See above - Item 21.c

Item 38-40: No further comments on these items

Item 41: (Provide justification):

- a. Since the thickness of alluvium is highly variable based on the limited results presented in Table 2-1 of Attachment 20, provide an isomap that shows the top of the bedrock and the thickness of alluvium for the TSF and HLF.

Item 42: (Provide supporting data):

- a. This item does not require any further action at this time. ADEQ will include the Compliance Schedule Item (CSI) that requires providing waste rock strength data throughout the operation when more information becomes available.
- b. Provide sensitivity analysis with the lower number as the data is limited for the current project.

Item 43-45: No further comments on these items

Item 46: (Provide details for any dewatering program):

- a. Based on the results of the groundwater model, it is predicted that the phreatic surface (represented by the yellow contour in Attachment 22, Figure 46-2) will recede by over 300 feet from the slope face in the Gila formation in cross section R4, as indicated by the Pre-Feasibility Slope Design Study. However, it should be noted that the pore pressure displayed in Figure 46-2 is not consistent with the stability shown in Figure H18 (page 307 of I.5 Pit Slope Design.pdf). Please provide the updated stability analysis for cross section R4 the Rosemont pit, taking into account the new pore pressure analysis.

Item 47: No further comments on this item

Item 48: (Provide QA/QC for all the discharging facilities): The underdrain seepage collection system is crucial for maintaining stability and capturing water in the TSF.

- a. Please provide a plan view, longitudinal profile and cross sections that includes the detailing of the installation depth of the underdrain seepage collection system under the TSF.

Hydrogeologic Items

Item 49: (The DIA based on the groundwater modeling indicates): The response is satisfactory.

In the event of an exceedance at a POC location, the permit will require the permittee to investigate and implement mitigation measures, which will be treated as a corrective action. The pumpback scenario presented in Appendix F.2 was a hypothetical scenario, and it is assumed that wells would be installed and operated in a more targeted manner. ADEQ recommends conducting additional simulations to demonstrate the area of influence and capture for single well scenarios.

Item 50: (Per A.R.S. §49-244, the POC is defined as a vertical plane downgradient):

No further comments on these items. The information provided for POC locations 7 through 10 is adequate. The information describing the proposed well screen intervals is acceptable.

Item 51-52: No further comments on these items

Item 53: See below - Item 58

Item 54: See below - Item 58

Item 55: See below - Item 58

Item 56: See below - Item 58

Item 57: See below - Item 58

Item 58: (The facilities in items 51 through 57 are listed as discharging facilities):

The response describes mitigation strategies for the mine pits following closure and in post-closure as including possible pore water monitoring, low flow pumping to maintain capture, and the use of covers to limit precipitation. If these are the preferred mitigation methods, and are found to be required, they should be included in the general closure strategy updates and accounted for in the closure cost estimates. At the time of closure if these are to be implemented, details regarding well design and installation, pumped water management, and the cover design will need to be included in the closure plan.

Item 59: No further comments on these items

Item 60: (Please demonstrate that the locations of the proposed POCs):

- a. Please clarify the response if these companion monitoring wells described in the original application or provided as new information
- b. If these companion wells are included in the post closure plan, the cost of monitoring will need to be added to the facility closure estimate updates.

Item 61: (The applicant has stated that the Rosemont Pit will not be a discharging facility): No further comments on this item

Item 62: (Please provide a detailed summary that describes the mine pits): No further comments on this item

Item 63: (A.A.C. R18-9-A202(A)(8)(b)(vii) and (viii); please provide data/documentation):

- a. It appears that Attachment 4 does not cover the characterization of soil or vadose zone in the TSF or HLP areas. It is recommended that the characterization of the potential for pollutants to leach from soils or the vadose zone should take into account pollutants that may be present in the soil even if they are not the result of spills or similar incidents. ADEQ will include the Compliance Schedule Item (CSI) to provide a characterization plan (which can consist of a more detailed study of site history or the collection and analysis of representative soil samples), within the footprints of the TSFs and HLP.

Item 64-71: No further comments on these items

Consequences of Failure to Submit Required Information

Your response to the items listed above must be received by ADEQ on or before September 22, 2023. Failure to submit any of the above required information by the deadline may result in initiation of the denial process for this APP amendment application.

How to Submit

Please submit your response to this letter in electronic format to the ADEQ Project Manager; no hard copy is required.

- E-mail to: sharifabadi.ardy@azdeq.gov

Thank you for your efforts to comply with Arizona's environmental requirements. Should you have any comments or questions regarding this matter, please do not hesitate to contact me at (602) 771-0715 or sharifabadi.ardy@azdeq.gov.

Sincerely,

DocuSigned by:



37C513BDFF344A8...

Ardeshir Sharifabadi, Ph.D., PE, PMP, Project Manager
WQD, APP Unit, Groundwater Protection Value Stream

cc: Ethan Leiter, Manager, GPVS, WQD, ADEQ
Kyle Richards, APP Unit, GPVS, WQD, ADEQ
David Krizek, PE, Senior Manager, Environmental & Permitting, Copper World, Inc.