

HOFMEYR LAW, PLLC

3849 E. Broadway Blvd, #323

Tucson, Arizona 85716

Tel: 520 477-9035

Email: adriane@hofmeyrlaw.com

October 18, 2024

Via Online Comment Form

https://bit.ly/Comments_South32Hermosa

ADEQ

Water Quality Division, Groundwater Protection

1110 W. Washington St.

Phoenix, AZ 85007

Re: Comments on Significant Amendment to Aquifer Protection Permit No. P-512235 (LTF #101257) for South32 Hermosa, Inc.

To Whom It May Concern:

On behalf of the Patagonia Area Resource Alliance (PARA), please accept these comments and objections to the request by South32 Hermosa, Inc. (South32) that the Arizona Department of Environmental Quality (ADEQ) issue a significant amendment to its Individual Aquifer Protection Permit (APP) No. P-512235 for the Hermosa Project mine located in Santa Cruz County, Arizona (Draft Permit or Permit).¹

As you are aware, the Draft Permit is associated with South32's plans for developing a brand-new mine in the Patagonia Mountains for mining zinc, lead, silver, and manganese. This APP permit was first issued in 2018, underwent significant amendment in 2021, and is now undergoing another significant amendment via this current Draft Permit.

For reasons set forth in these comments, the Draft Permit cannot be issued. ADEQ must reevaluate the Draft Permit and address certain issues, as discussed herein.

PARA previously submitted comments to ADEQ on the prior proposed significant amendment for APP Permit No. P-512235 on May 31, 2021 (2021 Comments), for which an appeal is pending. The issues raised in the 2021 Comments are and continue to be relevant and applicable to this current Draft Permit. Accordingly, PARA's 2021 Comments are attached hereto marked **Exhibit A** and expressly incorporated in full here as if stated in full in this letter. Certain additional comments on the current Draft Permit are presented herein.

¹ ADEQ Public Notice – Significant Amendment to Aquifer Protection Permit for south32 Hermosa Project <https://www.azdeq.gov/public-notice-aquifer-protection-permit-significant-amendment-south32-hermosa-project>

1. The APP Continues to Violate A.R.S. § 49-244 by Failing to Require a Real POC in The Harshaw Creek Aquifer

See 2021 Comments. Furthermore, the Draft Permit proposes several major changes to the APP, including doubling the footprint Tailings Storage Facility (TSF) as “TSF1” from 28 acres to 55 acres, and tripling its permitted capacity from 2.6 million cubic yards to 8 million cubic yards.² The Draft Permit also proposes to revise the Pollutant Management Area (PMA) and Discharge Impact Area (DIA) to reflect this new expansion. As a reminder, the Hermosa Project mine straddles both the Alum Gulch and Harshaw Creek watersheds and drains into both aquifers.³

Incredibly, even given these massive changes to the permit, ADEQ fails to require any changes to the Points of Compliance (POC) monitoring wells, which are a required component of APP permits via A.R.S. § 49-244.⁴ ADEQ continues to fail to require that South32 install and maintain even a single Point of Compliance (POC) well for groundwater monitoring downgradient in the Harshaw or Sonoita Creek aquifers, in conformance with A.R.S. § 49-244. Instead, ADEQ continues to require only one actual well for Alum Gulch aquifer (POC-2). The Draft Permit still contains just two conceptual (imaginary) POCs for Harshaw and Sonoita Creek aquifers (POC-3 and POC-4). Moreover, the conceptual POC in Harshaw Creek is on private land and the owner of the land signed an affidavit that he would not allow a point of compliance on his property. See **Exhibit B** hereto. This means ADEQ continues to fail to require any groundwater monitoring anywhere on the Harshaw side of the mine project.

Even at the one real POC well in Alum Gulch, ADEQ is still only proposing to require compliance groundwater monitoring only semi-annually in the Draft Permit. This is radically insufficient considering the radical expansion of the TSF and other changes in this Draft Permit. Monitoring at POC-2 must be increased to at least monthly and additional real POCs should be installed in the Alum Gulch aquifer, at an absolute minimum. ADEQ must also require multiple real POCs be installed on the Harshaw Creek side with regular monitoring, at an absolute minimum. Anything less than this is an ongoing violation of ADEQ’s legal responsibilities under A.R.S. § 49-244 and Arizona’s Aquifer Protection Program.

2. ADEQ Fails to Meet the Requisite Standard of Review at A.R.S. § 49-324(C) for This Permit

For reasons stated in PARA’s 2021 Comments (see 2021 Comments), as well as for reasons included herein in these comments, ADEQ continues to fail to meet the requisite statutory standard of review for this Draft Permit at A.R.S. § 49-324(C) which provides that “[d]ecisions by the director shall be affirmed by the appeals board unless,

² [APP Significant Amendment Application \(December 2023\)](#) at page 13.

³ This fact has been acknowledged and testified to by South32’s experts as well as ADEQ’s experts. See [PARA’s Proposed Findings of Fact and Conclusions of Law \(March 21, 2022\)](#) at page 15.

⁴ <https://www.azleg.gov/ars/49/00244.htm>

considering the entire record before the board, it concludes that the director's decision is arbitrary, unreasonable, unlawful or based upon a technical judgment that is clearly invalid.”⁵

ADEQ’s Decision to Grant this Draft Permit fails to meet the standard of review at A.R.S. § 49-324(C) because it is arbitrary, unreasonable, unlawful and/or based upon a technical judgment that is clearly invalid.

A. ADEQ Contradicts Itself on Major Aspects of This Draft Permit

ADEQ recently issued a Decision to Grant a renewed AZPDES discharge permit to South32 for the Hermosa Project mine (Permit No. AZ0026387). As part of that renewal and comment process, ADEQ repeatedly insisted and ultimately decided that “This permit only authorizes discharges to Outfall 001 related to historic mine drainage water and tailings...” ADEQ also stated that “Based on South32’s July 7, 2023 letter, Part I.A.1.b. of the [AZPDES] permit states that ‘the only allowable discharges from Outfall 001 are drainage water from historic workings associated with January Adit, drainage water from historic tailings, and stormwater.’”⁶

Yet the TSF is already permitted to contain, and already contains, multiple non-historic materials. ADEQ has long been aware of this, and the 2018 and 2021 APP Permit materials acknowledge this. Even South32 acknowledged in August 2020 “[t]he current TSF is permitted to store historic tailings from Tailings Piles 1 through 4, development rock from the Exploration Decline, filter cake from Water Treatment Plant 1 (WTP1), core cutting material from exploration core sample preparation, and construction PAG.” [South32’s APP Permit Significant Amendment Application](#) (August 2020) at page 14. The current Draft Permit [Executive Summary](#) at page 3 states that “Dry stack historic tailings and production tailings are the primary material placed in TSF1. Filter cake from WTP1 and WTP2, core cutting solids, drill cuttings, assay rejects, sediments from vehicle and equipment wash sumps, and sediments from stormwater BMPs constitute a small amount (>2%) of the total TSF1 volume.” Since WTP2 is known to have been discharging for over a year, filter cake from WTP2 has been placed on the TSF for over a year.

In the Draft Permit [Executive Summary](#) at page 4, ADEQ notes that in addition to historic tailings, multiple non-historic materials are being permitted for placement in TSF1 including production tailings, development rock from exploration and future mine development, soil and rock from construction cuts including PAG, solids associated with water treatment including filter cake, core-cutting solids, drill cuttings, assay rejects, sediments from vehicle and equipment wash sumps, and sediments from stormwater BMPs.

These comments do not propose to offer additional comments on the AZPDES Permit No. AZ0026387. Rather, these comments compare ADEQ’s statements and assertions made in the AZPDES Permit to this current APP Draft Permit and note that

⁵ <https://www.azleg.gov/ars/49/00324.htm>

⁶ Excerpts from ADEQ’s Response to Comments 1 and 2, Response to Public Comments for AZPDES Permit AZ0026387 (July 3, 2024).

they contradict each other on major, critical details of this project. Given these contradictions on major factual and technical aspects of the Hermosa Mine project, it is impossible for ADEQ to meet its requisite standard of review at A.R.S. § 49-324(C). Accepting ADEQ's statements regarding the composition of the TSF as true means that discharge from Outfall 001 is a legal impossibility, yet for unknown reasons, ADEQ continues to proceed with this Draft Permit to allow potential future discharge from Outfall 001. ADEQ's decision to issue this Draft Permit despite these major issues fails to meet the standard of review at A.R.S. § 49-324(C) as it is arbitrary, unreasonable, unlawful and based upon a technical judgment that is clearly invalid. ADEQ must clarify how these statements in the Draft Permit and AZPDES can ever be reconciled, and discharge from Outfall 001 could now ever occur.

B. ADEQ Has Not Required South32 to Appropriately Analyze the Consequences of TSF and UDCP Failure

South32 is a company member of the International Council on Mining and Metals (ICMM).⁷ In response to the catastrophic failure of a tailings dam at Brumadinho, Brazil, in January 2019 which resulted in 272 deaths including 258 mineworkers, the ICMM, the United Nations Environment Programme (UNEP), and Principles for Responsible Investment (PRI) released the Global Industry Standard on Tailings Management (GISTM) on August 5, 2020 (ICMM-UNEP-PRI, 2020). Company Members of ICMM were obligated to fully comply with the GISTM by August 5, 2023 (ICMM, 2020, 2021). The expectation for compliance with the GISTM is well-established in Australia, the United States, and the mining industry globally. South32 acknowledges that it is bound by the GISTM. See South32's [Contingency Plan](#) in the application at Attachment E (p. 43) (which was only obtained via public records request).

[Requirement 2.3](#) of the GISTM states that mining companies must "Develop and document a breach analysis for the tailings facility using a methodology that considers credible failure modes, site conditions, and the properties of the slurry ... the results should include estimates of the physical area impacted by a potential failure, flow arrival times, depth and velocities, and depth of material deposition" (ICMM-UNEP-PRI, 2020). According to [Requirement 2.4](#), "[i]n order to identify the groups most at risk," mining companies must "refer to the updated tailings facility breach analysis to assess and document potential human exposure and vulnerability to tailings facility credible failure scenarios" (ICMM-UNEP-PRI, 2020). According to [Requirement 15.1](#), mining companies must "[p]rovide local authorities and emergency services with sufficient information derived from the breach analysis to enable effective disaster management planning" (ICMM-UNEP-PRI, 2020).

The key word in the preceding requirements is "credible." Thus, the need for a dam break analysis does not depend upon whether failure is "reasonably foreseeable," but only upon whether failure is "credible." According to the GISTM, "[t]he term 'credible failure mode' is not associated with a probability of this event occurring" (ICMM-UNEP-PRI, 2020). Thus, "credible" simply means "physically possible," no matter how unlikely. According to Safety First: Guidelines for Responsible Mine

⁷ <https://www.icmm.com/en-gb/our-story/our-members>

Tailings Management, a “credible failure mode” is “a physically possible sequence of events that could potentially end in tailings dam failure” (Morrill et al., 2022).

The Draft Permit contains no provisions assessing consequences of failure of the TSF, TSF1 and/or the Underdrain Collection Pond (UCP or UDCP). The only language in the Draft Permit that attempts to deal with consequences of failure is the sentence at Section 2.6.3.5. (page 23) stating, “[i]f the slope for the TSF or the UDCP becomes unstable to the point of failure and results in a discharge,” then certain actions must follow (mostly just reporting). This provision does not in any way comply with South32’s obligations under the GISTM. Moreover, the statement is meaningless. The Draft Permit does not define “stable” or “failure” nor does it tie any specific actions to specific observations to prevent or respond to TSF failures. It is standard practice for regulatory agencies to include and incorporate standard mining terminology in permits, as opposed to meaningless company euphemisms.

Failure of the TSF, TSF1, and Underdrain Collection Pond (UCP or UDCP) is credible. NewFields (2024) has noted the UDCP “is classified as an intermediate dam with a low hazard potential under ADWR criteria” ([page 42](#)). Filtered (dry) tailings facilities are vulnerable, and filtered (dry) stack filtered TSFs similar to the TSF and TSF1 in this instance, have failed in other instances around the world, including just last month at a mine in Mexico owned by Minera Cuzcatlán.⁸ A filtered (dry) tailings facility failure also occurred in 2022 at the Pau Branco mine in Nova Lima, Brazil, causing serious harm.

Not only does the Draft Permit not address catastrophic failures of the TSF, TSF1, or UCP, it also does not address “failures” as defined by, for example, the US Federal Emergency Management Agency (FEMA), which defines “failure” in relation to the UCP as “Any malfunction or abnormality outside the design assumptions and parameters which adversely affect a dam’s primary function of impounding water is properly considered a failure. Such lesser degrees of failure can progressively lead to or heighten the risk of a catastrophic failure. They are, however, normally amenable to corrective action” (FEMA, 2004). Although FEMA (2004) primarily deals with water-retention dams, the same document clarifies that “[i]n addition to conventional structures, this definition of ‘dam’ specifically includes ‘tailings dams,’ embankments built by waste products disposal and retaining a disposal pond.”

The [Contingency Plan](#) in the application at Attachment E (titled “Contingency and Emergency Response Plan”) was not publicly posted online as part of ADEQ’s Permit of Interest webpage or by South32. Rather, it had to be obtained via public records request. This document fails to adequately analyze the consequences of TSF, TSF1, and UDCP failure. It merely outlines certain documentation if the TSF, TSF1, and/or UDCP “becomes unstable to the point of failure” and results in a discharge or overtopping. Furthermore, this document appears to only have been drafted as recently as December 2023, while the TSF and UDCP have existed at this site for

⁸ See articles on the dry stack tailings dam spill into the El Coyote River here: <https://www.educaoxaca.org/local-authorities-accuse-federal-attorney-for-environmental-protection-has-not-acted-on-new-mining-contamination-in-oaxaca/> and <https://desinformemonos.org/denuncian-derrame-de-presa-de-jales-secos-de-la-minera-cuzcatlan-en-el-rio-coyote/>.

nearly 8 years. This violates [Requirement 13.1](#) of the GISTM which requires such a plan be prepared, tested, and updated “at all phases of the tailings facility lifecycle” or more frequently if triggered by a material changes. Furthermore, the plan must be “based on *credible flow failure scenarios* and the assessment of potential consequences.” This has not occurred in South32’s Contingency and Emergency Response Plan.

Moreover, the Draft Permit does not require South32 to engage in any preventative action regarding TSF, TSF1 or UDCP failure.

Finally, the Draft Permit does not take into account the danger to human life posed by the close proximity of the TSF and TSF1 to the immediately-adjacent mining infrastructure. This unusually close proximity should have been taken account in a consequences-of-failure analysis but was not.

C. ADEQ Fails to Consider Available Information on WTP2 Waste Solids, Including Moisture Content

The Draft Permit at page 9 states: “WTP2 water treatment solids are anticipated to be hauled and placed in the TSF at a rate of approximately 4,380 cubic yards per year from the stage one filter press and approximately 146 cubic yards per year from the stage two filter press for an aggregate total of approximately 4,526 cubic yards per year. WTP2 water treatment solids material properties are assumed to be similar in nature to WTP1 water treatment solids and therefore the placement criteria are the same for both materials.” (Emphasis added). The Draft Permit further states that these anticipated properties are based on a single control sample from 2019.

The Draft Permit provides that based on this single control sample from 2019, anticipated moisture content of the tailings based on dry weight of solids, upon arrival to the TSF, is 363%. This is highly unusual and raises serious technical questions and concerns. How will drying occur? Will this wet material be added directly to the TSF stack and spread around to dry (as implied at page 11 of the Draft Permit)? Has this ever been tried and tested before? What is the target moisture content? South32 does not clarify, and ADEQ does not appear to question how this high level of evaporation and air-drying is expected to occur at the TSF here.

ADEQ does not appear to question this proposal but rather accepts it, which does not constitute a reasonable or sound technical judgment.

ADEQ is well aware that WTP2 has been operational and actively discharging via Outfall 002 for over a year. This means, presumably, that the water that has been sent to WTP2 has also been treated prior to discharge. Since this treatment is occurring and has been ongoing, there are waste solids being generated at WTP2 which are available for analysis of their material properties. ADEQ must acknowledge this and consider the available data regarding WTP2 waste solids as part of its required analysis and review before granting this Draft Permit. Anything less fails to meet the standard of review at A.R.S. § 49-324(C).

D. Insufficient Evidence of Tailings Testing

In its July 10, 2024 letter at [Comment #2](#), ADEQ flagged the following sentence from South32's Significant Amendment application at page 73: “[i]f instability is identified, slope stabilization may be required.” ADEQ then asked: “[p]lease provide the Geologic Hazard Assessment study for the site. In the absence of such a study, it would be considered CSI in the permit.” In its response to ADEQ’s question, South32 appears to have declined to provide such a study. ADEQ still did not require a Geologic Hazard Assessment in the Compliance Schedule Items (CSI) listed at [Table 7](#) in the Draft Permit. Given the radical expansion of the TSF into TSF1 proposed by this Draft Permit, this Geologic Hazard Assessment should not be required after the permit. Rather, ADEQ must not issue this Draft Permit until after this assessment is completed and its results analyzed and considered. Furthermore, ADEQ must require South32 to conduct stabilization or some other form of preventative remedy if instability on the TSF or TSF1 is identified. Any amount of instability on the TSF or TSF1 constitutes a level of failure, since it is outside of compliance with the intended design objectives. ADEQ must require these failures be addressed to protect the environment and human health before granting this Draft Permit.

In its July 10, 2024 letter at [Comment #7](#), ADEQ noted that “for BADCT, undrained stability is required. Please provide the undrained stability analysis including both Peak and Residual factors of safety (FOS)”. The NewFields Memo dated May 31, 2024, provided by South32 to ADEQ in response to this question (Attachment G) concludes at page 8: “[a]t the request of ADEQ, an undrained stability evaluation was completed to calculate factors of safety in the event a widespread undrained response is mobilized in the entire filtered tailings mass. An undrained response throughout the entire tailings mass is not expected. It is considered a highly conservative assumption, given that any undrained response in the tailings mass is expected to be localized and temporary.” This undrained stability testing appears to have been based exclusively on laboratory test results and did not include any on-the-ground testing at the existing TSF.

In its July 10, 2024 letter at [Comment #17](#), ADEQ requests that South32 “supply the earthquake deformation analysis for the liquefaction analysis. In the absence of such deformation analysis, consider it a Construction Quality Control/Quality Assurance (CSI) requirement to provide earthquake deformation analysis specifically for the filter dry stack.” South32 did not provide this information, instead revising its NewFields TSF1 Design Report at page 30 to state that “[i]liquefaction of natural foundation overburden below the TSF was not considered a hazard due to groundwater conditions at significant depth and the thin veneer of overburden overlying near surface rock.” ADEQ still did not require an earthquake deformation analysis in the Compliance Schedule Items (CSI) listed at [Table 7](#) in the Draft Permit. It is further noted at [Comment #34](#) that only historic earthquake events above 4.0 magnitude were considered by South32, the entire range of seismic events were not even considered. This is insufficient, given the high consequences of failure of TSF or TSF1 and the threats it would pose to human life and the surrounding environment. ADEQ must not issue this Draft Permit until after this analysis is fully completed and its results analyzed and considered.

In its July 10, 2024 letter at [Comment #18](#), ADEQ requests that South32 “provide the static liquefaction analysis and include the critical state line for static liquefaction. In the absence of such deformation analysis, consider it a Construction Quality Control/Quality Assurance (CSI) requirement to provide the static liquefaction analysis specifically for the filter dry stack.” South32 did not provide this information, instead asserting that “static liquefaction cannot be triggered” and that the critical state line for future production tailings may be developed and reported after 8 months of filtered tailings placement. Again, ADEQ still did not require a static liquefaction analysis in the Compliance Schedule Items (CSI) listed at [Table 7](#) in the Draft Permit. This is insufficient, given the high consequences of failure of TSF or TSF1 and the threats it would pose to human life and the surrounding environment. Conducting critical tailings analyses after the Draft Permit is issued is not appropriate and fails to meet the standard of review required of ADEQ. Rather, ADEQ must not issue this Draft Permit until after this analysis is completed and its results analyzed and considered.

E. Additional comments

The Draft Permit’s substitution of actual monitoring at an actual POC with a requirement that South32 submit an annual report which must include “groundwater monitoring results from MW-9” (Draft Permit, p. 27, ¶ 2.7.4.1) does not constitute monitoring as required by statute.

The Draft Permit allows South32 to transport contaminated water across the property from the TSF, TSF1, UCP and WTP1 (Draft Permit, p. 6, ¶ 2.1) without requiring any showing that the transport infrastructure to WTP2 meets BADCT ((Draft Permit, p. 12, ¶ 2.2.1.1.5). The infrastructure that will connect the TSF, TSF1, UCP, WTP1 and WTP2 is a conveyance that is an integral part of the discharging facilities (A.R.S. § 49-201(19)) and is subject to BADCT in order to comply with A.R.S. § 49-243(B)(1).

The Draft Permit relies on South32’s AZPDES Permit No. AZ00226387 to excuse aquifer monitoring in the APP permit. At a minimum, this violates A.R.S. § 49-255.01(G) which provides that AZPDES permits “shall not be combined with” APP permits.

PARA incorporates all arguments made on the above and all issues submitted to Maricopa County Superior Court in case no. LC2022-000259-001 DT in relation to South32’s APP permit, attached hereto marked **Exhibit C** and fully incorporated herein.

Kind regards,

/s/ Adriane Hofmeyr
Adriane J. Hofmeyr

EXHIBIT A

Patagonia Area Resource Alliance (PARA) ♦ Arizona Mining Reform Coalition ♦
Borderlands Restoration Network ♦ Center for Biological Diversity ♦ Defenders of
Wildlife ♦ Earthworks ♦ Friends of the Santa Cruz River ♦ Friends of Sonoita Creek ♦
Save the Scenic Santa Ritas ♦ Sierra Club (Grand Canyon Chapter) ♦ Sky Island
Alliance ♦ Town of Patagonia ♦ Tucson Audubon

May 31, 2021

Via Certified Mail, Return Receipt Requested
[7010 1060 0002 2186 6060]

and Email (chauhan.vimal@azdeq.gov)

Arizona Department of Environmental Quality
Groundwater Protection Value Stream
Attn: Vimal Chauhan
1110 W. Washington St., MC 5415B-3
Phoenix, AZ 85007

Re: Comments on Proposed Significant Amendment to APP Permit (P-512235) for Arizona Minerals, Inc.

To Whom It May Concern:

On behalf of the Patagonia Area Resource Alliance (PARA) and the above listed organizations and the Town of Patagonia, please accept these comments and objections to the request by Arizona Minerals, Inc. (AMI) to significantly amend its Aquifer Protection Permit (APP) No. P-512235) for the January Mine/Hermosa Project.

I. Introduction

These comments and objections are supported by and include the following technical document prepared by qualified experts retained by PARA, which is expressly incorporated here by reference as if stated in full: *A Technical Review of the Draft Aquifer Protection Permit No. P-512235, SIGNIFICANT AMENDMENT, PLACE ID 18640, LTF 83040 for Arizona Minerals, Inc. – Hermosa Project Property*, prepared for Patagonia Area Resource Alliance by Laurel J. Lacher, PhD, RG and Robert H. Prucha, PhD, PE, dated May 30, 2021 (Lacher & Prucha Report) (Attachment A)

II. Summary of Primary Comments from PARA Technical Experts

The conclusions and recommendations contained in the Lacher and Prucha Report reflect their technical analysis of numerous documents associated with the Draft APP, including AMI's application and supporting documents, as well as the AMI AZPDES Draft Permit, and all underlying records. A summary of the key points from the Lacher and Prucha Report are set forth below:

1. Discharge from the proposed WTP2 is an entirely NEW, significantly larger discharge than the previously permitted discharge from Outfall 1 (and Water Treatment Plant No. 1) with different water quality implications for downstream aquifers and should be handled in a separate and complete APP.
2. An assessment of the full range of hydrologic impacts for the life of the mine must be conducted in order to develop protective discharge limits and monitoring requirements.
3. The lower Harshaw Creek alluvium and Sonoita Creek alluvium are both drinking water aquifers, and therefore, may not be degraded by mine discharge in a way that impairs existing or reasonably foreseeable uses of water in those aquifers, as specified in A.A.C. R18-11-405.
4. Additional Points of Compliance (POCs) with increased monitoring frequency are necessary to protect the health of downstream well owners and others who depend on groundwater from the sole-source drinking water aquifers in Harshaw and Sonoita creek valleys.
5. EPA Secondary Drinking Water Standard contaminants should be included in the APP compliance monitoring requirements to protect the downstream aquifers and drinking water infrastructure from irreparable harm.
6. The proposed discharge and POC monitoring requirements are not consistent with Arizona Aquifer Quality Standards (A.A.C. R18-11-406) and federal EPA Safe Drinking Water standards. Failing to maintain these contaminant concentrations in mine discharge below federal and state limits could endanger public health and do irreparable harm to the existing high-quality, sole-source drinking water aquifers and related drinking water infrastructure serving Harshaw Creek and Town of Patagonia residents.

Lacher and Prucha at 2.

III. The APP Violates Arizona Law

In addition to the technical failings outlined in the Lacher and Prucha Report, the Draft Permit also fails to comply with Arizona law and to meet the critically important purposes of the APP program, which is intended to protect drinking water aquifers and the health of Arizona residents. PARA urges ADEQ to pull the Draft Permit back for further consideration, including the preparation of sufficient hydrologic information to better define the POCs and Pollution Management Area for this Permit.

A. ADEQ's Proposal to Process AMI's Application as a "Significant" Amendment

ADEQ proposes to process AMI's APP Application as a "significant" amendment to AMI's **existing** APP No. P-512235 for the "Trench Camp Property – Tailings Storage Facility." See Draft Executive Summary at 1; Draft Permit at 2.1. This violates Arizona law, including but not limited to A.R.S. § 49-241 (Unless otherwise provided, "any person who discharges or who owns or operates a facility that discharges shall obtain an aquifer protection permit from the director"); § 49-243(B) (setting forth the criteria for issuing individual permit); A.C.C. R18-9-A311 (allowing for a significant amendment to existing APP only under specific narrowly prescribed circumstances).

AMI must apply for and receive a **separate individual** APP for this new facility, which involves, among other things, the construction of an entirely new WTP2 and a new Outfall 002, which will discharge up to 4,500 gpm into Harshaw Creek, an entirely new water source. AMI should therefore be required to prepare and submit a **complete** application for an individual APP permit as required by §§ 49-240 and 49-244, and relevant provisions of Title 18 of Arizona Administrative Code.

As noted above, AMI's original APP was prepared and submitted for the APP-regulated discharges associated with ADEQ's Voluntary Remediation Program project related to eliminating discharges of mine impacted water from the January Adit mine workings and tailings piles, and seepage to Alum Gulch. Under this remediation project, historic tailings piles were excavated and placed on a lined Tailings Storage Facility (TSF). Draft Permit at 2.1. In addition, two stormwater detention ponds, an undrain collection pond (UCP), and related facilities were constructed to capture and send process solutions, precipitation, and water from the January Adit to the newly constructed WTP1 for discharge to Allum Gulch. *Id.* Finally, the original APP established a Pollution Management Area (PMA) and Discharge Impact Area (DIA) as well as an actual and "conceptual" POC at or near Outfall 001 and downstream in Allum Gulch.

In contrast, the APP-regulated discharges associated with the proposed "significant" amendment involves, among other things, the construction of a **new** wastewater treatment plant (WTP2) which will treat and discharge, through a **new** outfall (Outfall 002), significant groundwater sources that must be pumped by the mine in order to depressurize and dewater the surrounding aquifer for mine exploration and related activities. WTP2 will also treat other water sources from the larger mine site, including water from WTP1. *Id.* at 2.2.1.4; *see also* Draft Executive Summary at 3 (IV. Amendment Description). The maximum design flow for WTP2 is 4,500 gpm. *Id.*

The original APP is also proposed for amendment to increase the TSF size to accommodate additional materials, and to update closure costs and financial assurance mechanisms, and for other minor revisions. See Draft Executive Summary at 3. Significantly, the amended APP would also prescribe a **new** PMA and DIA along Harshaw Creek, and establish a single, "conceptual" POC over 9.4 miles downstream.

ADEQ explains that AMI's application was processed as a "significant" amendment based upon the following authorities:

- A.A.C. R18-9-A211(B)(2)(a) – related to an increase of 10 percent or more in the permitted volume of pollutants discharged. The additional 1,400,000 cubic yards of material to be placed on the TSF is more than 10 percent of pollutants added to the TSF.
- A.A.C. R18-9-A211(B)(8) – related to addition to or a substantial change in closure requirements or to provide for post-closure maintenance and monitoring (see above paragraph related to increase in closure and post-closure costs).
- A.A.C. R18-9-A211(B)(9) – related to material and substantial alterations or additions to a permitted facility, including a change in disposal method, justify a change in permit conditions.

None of the above stated authorities supports processing AMI's application as a "significant" amendment. Rather, AMI should be required to submit a complete application package for a new, individual APP permit, that fully addresses the important technical factors required by A.R.S. § 49-243 and A.C.C. R18-9-A202, among other things.

The new WTP2 and Outfall 002 must be permitted as separate "facility" within the meaning of A.R.S. § 49-201(17). See *also* § 49-241(A) ("any person who discharges or who owns or operates a **facility** that discharges shall obtain an aquifer protection permit.")(emphasis added); § 49-243(A)-(B) (outlining application requirements for a "discharge facility" or "facility").

However, a review of AMI's application materials, the Draft Executive Summary, and the Draft Permit, reveals ADEQ is treating the **entirety** of the "Hermosa Project Property" (Property) and the numerous structures, wastewater treatment plants, the TSF, Outfall 001 and Outfall 002, and other facilities associated with the Property, as a **single "facility"** under § 49-201(17). See, *e.g.*, Draft Permit at 1.0, 1.1, and 2.1. And, having done so, ADEQ further concludes that an amendment to the original APP for this "facility" is appropriate. This violates Arizona law. § 49-244(17) provides:

"Facility" means any land, building, installation, structure, equipment, device, conveyance, area, source, activity or practice from which there is, or with reasonable probability may be, a discharge.

Under the definition of facility prescribed by § 49-244(17), the entirety of the "Hermosa Project Property" cannot reasonably be considered a single facility. Instead, the installation of a new WTP2 and associated Outfall 002 must be permitted as a separate facility from which there will be a discharge and ADEQ must ensure that:

[T]he facility will be so designed, constructed and operated as to ensure the greatest degree of discharge reduction achievable through application of the best available demonstrated control technology, processes, operating

methods or other alternatives, including, where practicable, a technology permitting no discharge of pollutants.

To read § 49-244(17) any other way would render the remaining descriptions of a facility contained in the definition (“building, installation, structure, equipment, device, conveyance, area, source, activity or practice”) surplusage. A fundamental rule of statutory construction requires that every word or term in a statute be given meaning so that construction of certain terms in a statute does not render any of its other terms superfluous.¹ The “Hermosa Project Property” therefore cannot be treated by ADEQ as a single facility. Thus, the construction of WWTP and Outfall 002 are, by definition, a separate facility that must be permitted separately under Arizona law.

Instead of requiring AMI to comply with this plain requirement of Arizona law, ADEQ attempts to shoehorn this new source of discharge into the existing APP through a tortured application of A.A.C. R18-9-A211(B).

First, ADEQ explains that an amendment is permitted under R18-9-A211(B)(2)(a) because there will be an increase of 10 percent or more in the permitted volume of pollutants discharged due to the placement of 1,400,000 cubic yards of materials on the existing TSF. See Draft Executive Summary at 4. Because the TSF is already permitted under the original APP, changes to this aspect of the existing facility do fall under R18-9-A211(B)(2)(a), and if this were the sole reason for the amendment, ADEQ would be correct in its analysis. However, along with adding materials to the TSF, AMI is also proposing a host of new activities, including dewatering the aquifer for exploratory mining activities and the construction of a new WTP2, and a new discharge to a new receiving water (Harshaw Creek).

Next, ADEQ contends that the amendment is authorized under R18-9-A211(B)(8) because it is necessary to make an addition to or substantial change in closure requirements or to provide for post-closure maintenance and monitoring. See Draft Permit at 4. While ADEQ is correct that the need to revise an existing APP permit to require additional or revised closure requirements or to provide for post-closure maintenance and monitoring can justify a significant amendment, the amendment must be targeted to the closure/post-closure terms. It does not justify reopening the permit in its entirety and allowing for a significant amendment **unrelated** to these closure or post-closure requirements, like the construction of a new WTP2 and Outfall 002 proposed here. If this were the case, re-opening an existing APP for **any one** of the grounds specifically enumerated in R18-9-A211(B)(1)-(8) would justify a significant amendment for any of the other reasons set forth in R18-9-A211(B)(1)-(8), obviating the need for the list in the first place, a nonsensical proposition.

Finally, ADEQ grasps at R18-9-A211(B)(9) to justify its proposed amendments to the original APP, suggesting there is a substantial alteration or addition to the permitted facility or there is change in the disposal method to justify the new permit conditions. This

¹ See, e.g., *State v. Hoggatt*, 199 Ariz. 440, 443 ¶ 10, 18 P.3d 1239, 1242 (App. 2001).

fails as well. First, as discussed above, the entirety of the Hermosa Project Property cannot be defined as a single facility. Thus, it cannot be said that there is an alteration or addition to this facility. In addition, there is no actual change to the existing disposal method permitted in the original APP. AMI is not proposing to change the function or design of WTP1 or the discharge to Allum Gulch through Outfall 001. Rather, AMI seeks to develop an entirely new wastewater treatment facility (WTP2) and to discharge a mostly new source of water (mine dewatering) through a new outfall (Outfall 002) to a new surface water (Harshaw Creek). This requires AMI to prepare and submit a complete application for a new, individual APP permit. ADEQ's attempt to shoehorn this new permit into the existing APP as a significant amendment is improper and violates Arizona law.

B. ADEQ Must Require AMI to Install Actual vs. "Conceptual" Points of Compliance

AMI proposes to discharge more than 37 times the amount of treated effluent to Harshaw Creek than it is permitted to discharge under to Alum Gulch from WTP1 through Outfall 001 under its existing APP and AZPDES. And yet, in the Draft Permit, ADEQ fails to require that AMI install and maintain even a **single** POC for groundwater monitoring downgradient in the Harshaw or Sonoita Creek aquifers in conformance with A.R.S. § 49-244. This despite the fact that there are numerous domestic wells located in these shallow alluvial aquifers that receive little to no treatment prior to being used as, *inter alia*, a domestic drinking water source. Instead, the Draft Permit merely contemplates a "conceptual" POC [meaning no point of compliance at all] approximately 9.4 miles downgradient from Outfall 002, near the confluence of Sonoita Creek. Draft Permit at 7; see *also* Lacher and Prucha Report, Figure 5.

There is nothing in the Title 49 or in Arizona Administrative Code that permits the use of "conceptual" POCs in APP permitting or that would otherwise provide authority to ADEQ to approve the construction of a wastewater treatment plant and discharge of the type at issue here **without requiring the actual installation of at least one monitoring well (POC)** to serve as the "point at which compliance **must be** determined for...the aquifer water quality standards" under A.R.S. § 49-244 (emphasis added).² Indeed, under § 49-244, this requirement is mandatory and not subject to ADEQ's discretion: "[t]he director **shall** designate a point or points of compliance for each facility receiving a permit under this article." [Emphasis added]. See *also* A.R.S. § 49-203(10) ("The director shall...[r]equire **monitoring** at an appropriate point of compliance for any organic or

² Arizona's APP program is based on the 40 C.F.R., Part F – Releases From Solid Waste Management Units. Nothing in the federal program defines or permits "conceptual" points of compliance. Rather, 40 C.F.R. § 264.95 requires EPA to "specify the point of compliance at which the ground-water protection standard of § 264.92 applies and at which **monitoring must be conducted.**" [Emphasis added]. See *also* § 264.97 (requiring the ground-water monitoring system to "consist of a sufficient number of wells, installed at appropriate locations and depths to yield ground-water samples from the uppermost aquifer" that, among other things, "[r]epresent the quality of background ground water that has not been affected by leakage from a regulated unit" and "[r]epresent the quality of ground water passing the point of compliance.").

inorganic pollutant listed under section 49-243, subsection I if the director has reason to suspect the presence of the pollutant in a discharge.”) (emphasis added); R18-9-A202(6) (Providing that the applicant “shall” submit technical information in its application that includes “[p]roposed points of compliance for the facility based on A.R.S. § 49-244.”).³

The APP’s POC requirements go to the very heart of the Aquifer Protection Program established in Article 3, which is intended to ensure that “pollutants discharged will in no event cause or contribute to a violation of aquifer water quality standards at the applicable point of compliance for the facility” A.R.S. § 49-243(A)(2); see *also* § 49-203(4) (requiring ADEQ to “[a]dopt, by rule, an aquifer protection permit program to control discharges of any pollutant or combination of pollutants that are reaching or may with a reasonable probability reach an aquifer.”); see *also* R18-9-A202(6)(a) (Applicant must demonstrate that the “facility will not cause or contribute to a violation of an Aquifer Water Quality Standard at the proposed point of compliance.”).⁴ While ADEQ has a practice of allowing “conceptual” POCs, this does not make the practice legal. An agency may not disregard clear statutory directives or legislative intent.⁵

Nevertheless, the Draft Permit fails to require the installation of even a single POC in the downgradient alluvial aquifer(s). The Draft Permit also fails to clearly prescribe those circumstances when a POC would be required to be installed, noting only that “[g]roundwater monitoring is not required at ...POC-4 unless as contingency monitoring.” *Id.*

ADEQ’s failure to require the installation of actual POCs (monitoring wells) violates the plain requirements of law and cuts against the very purpose of the APP program.

In lieu of requiring the installation of real POCs to monitor downstream aquifers conditions, ADEQ instead relies solely on **quarterly** water quality sampling at Outfall 002 to protect downstream Aquifer Water Quality Standards. See Draft Permit, Table 4.2.2 (Compliance Discharge Monitoring). If there is a failure at WTP2 that results in

³ As discussed in Lacher & Prucha, the APP should require AMI to install and monitor more than a single POC in the Harshaw and Sonoita Creek alluvial aquifers. Moreover, in order to assure the maintenance of AWQS, AMI should be required to install these POC’s prior to discharge to understand the background water quality conditions of the aquifer(s) and to avoid the degradation of the aquifer(s).

⁴ Certainly, ADEQ cannot be contending the installation of POC-2, downgradient of AZPDES Outfall 001 on Alum Gulch, meets the requirements of A.R.S. § 49-244 and R18-9-A202(A)(6), when POC-2 has no relation to the downgradient alluvial aquifer in Harshaw Creek and it cannot demonstrate that the facility at issue in this case (WTP2 and the discharge from Outfall 002) “will not cause or contribute to a violation of an Aquifer Water Quality Standard” in the alluvial aquifer(s) in Harshaw and Sonoita Creek.

⁵ See, e.g., *Cochise County v. Arizona Health Care Cost Containment System*, 170 Ariz. 443, 445, 825 P.2d 968, 970 (App. 1991).

exceedances to the Alert Levels or Discharge Limits prescribed in Table 4.2.2, it could be months before sampling reveals the failure, and by this time, the downstream AWQS will almost certainly have been violated – perhaps irreparably. Moreover, the health and safety of the citizens of the Patagonia region who have domestic wells in the aquifer will already have been jeopardized. This is not consistent with APP requirements. In addition, sampling at Outfall 002 will not reveal impacts to AWQS that might result from other failures at the Property, including failures to the TSF, UCP, pipelines, or other mine infrastructure or the movement of background contaminants into the downstream alluvial aquifers. Only the installation of a POC or POCs in conformance with § 49-244 will achieve this critically important purpose.

It is also noteworthy that under A.R.S. § 49-244(2)(b), the legislature expressly forbid the installation of alternative POCs involving hazardous substances (like those at issue here) if the location presented an increased risk to drinking water sources. Specifically, § 49-244(2)(b) mandates that “in no event shall [a point of compliance] be so located as to result in an increased threat to an existing drinking water source.” Under the current Draft Permit, however, AMI **would not be required to install a POC at all** and in reality, there would be no protections from an “increased threat to an existing drinking water source” downstream in the Harshaw and Sonoita Creek aquifers. This violates existing law.

ADEQ should carefully review the Lacher and Prucha Report incorporated here and require AMI to install and monitor (at a high frequency) the POCs recommended in the Report. Anything short of this violates the purpose and requirements set forth in the APP program and threatens the health and welfare of people and animals throughout the Patagonia region.

C. The Extent of the Pollution Management Area in the Permit Fails to Comply with the Requirements of A.R.S. § 49-244(1)

The Draft Permit is based upon an expansive and unprotective Pollution Management Area (PMA) that stretches over 9.4 miles down Harshaw Creek, which would encompass multiple drinking water wells located in the alluvial aquifers in violation of A.R.S. § 49-244(1). See Figures 2,3 and 4, Lacher and Prucha Report. The expansive PMA is also contrary to the very purpose of the APP program which, as noted above, is intended to protect downgradient aquifers and drinking water sources. The PMA is illustrated in Figure 5 of the Lacher and Prucha Report. ADEQ explains its rationale for the expansive PMA as follows:

The revised PMA along Harshaw Creek was based on the maximum design flow of 4,500 gpm from the WTP2 outfall, stream channel geometry, and variable infiltration rates along Harshaw Creek. This resulted in a travel distance of 9.4 miles from the outfall, which also defined the downstream extent of the PMA.

Draft Executive Summary at 3. Because of the expansive boundaries of the PMA, it is only at the very downgradient end of the PMA (at the Sonoita Creek confluence) that the

Draft Permit locates a “conceptual” POC (POC-4). See Draft Permit at 2.4; see also Figure 5, Lacher and Prucha Report.

However, by defining the PMA in such an expansive way, ADEQ will allow numerous groundwater wells in the shallow alluvial aquifer to be encompassed by the Pollution Management Area and, even if an actual POC were to be installed at the downgradient end of the PMA area, the POC would offer **no protection** for the numerous wells that provide drinking water and livestock water **between** Outfall 002 and POC-4, since AMI would not be required to install monitoring wells (POCs) in the alluvial aquifers between these two points. This is a plain violation of existing law, and in particular, the requirements of A.R.S. § 49-244(1), which provides, in relevant part:

The pollutant management area is the limit projected in the horizontal plane of the area on which pollutants are or will be placed. The pollutant management area includes the horizontal space taken up by any liner, dike or other barrier designed to contain pollutants in the facility.

A plain reading of § 49-244(1) in the context of the APP program’s goals and statutory requirements, makes clear that the PMA should only encompass the horizontal plane of the area **on which** pollutants will be placed. It does not contemplate that this “horizontal plane” where “pollutants will be placed” **would extend 9.4 miles beyond the boundary of the Hermosa Project Property or encompass two downstream alluvial aquifers that provide drinking water and livestock water to countless people.** Indeed, the second sentence from § 49-244(1) (quoted above) makes clear that the extent of the PMA is generally limited to the horizontal space on the mine property that is taken up by a liner (such as TSF), dike or other barrier “**designed to contain pollutants in the facility.**” *Id.* (emphasis added).

In this case, AMI is not proposing to contain the pollutants on its property or within the facility at all but rather, AMI has delineated an expansive PMA that does just the opposite. This violates § 49-422(1) and the purpose of the APP program.

Furthermore, A.R.S. § 49-243(B)(1) provides: “[t]hat the facility will be so designed, constructed and operated as to **ensure the greatest degree of discharge reduction achievable** through application of the best available demonstrated control technology, processes, operating methods or other alternatives, including, where practicable, a technology permitting no discharge of pollutants.” [Emphasis added]. It is well settled that “a statute should be explained in conjunction with other statutes to the end that they may be harmonious and consistent;...if statutes relate to the same subject and are thus in *pari materia*, they should be construed together with other related statutes as though they constituted one law.”⁶ However, if ADEQ adopts the expansive PMA proposed in the Draft Permit, AMI would essentially be allowed to place pollutants over a 9.4 downgradient area that encompasses two downstream alluvial aquifers. The expansive definition of the PMA

⁶ *Pima County by City of Tucson v. Maya Const. Co.*, 158 Ariz. 151, 155, 761 P.2d 1055, 1059 (1988).

contained in the Draft Permit is therefore inconsistent with the discharge reduction requirements of A.R.S. § 49-243(B)(1) and it is not permitted under Arizona law

IV. Statement of Interests of Commentators

Patagonia Area Resource Alliance is a grassroots organization of volunteer community members committed to protecting and preserving the Patagonia, Arizona area. It is a watchdog organization that monitors the activities of industrial developers such as mining corporations, as well as government agencies, to make sure their actions have long-term, sustainable benefits to our public lands, our watershed, and our regional ecosystem.

The **Town of Patagonia** is proud of our history and distinctive character. Visitors tell us that Patagonia's unique spirit is easily perceived and is their reason to stay or to return. Situated at over 4,000 feet elevation between the Santa Rita and Patagonia Mountains in the riparian corridor of Sonoita Creek, Patagonia is spectacularly rich in both natural and human assets. The distinguishing vision of our community is to protect and build sustainably upon these assets, and continuously develop our Nature Based Economy.

Defenders of Wildlife is a national, nonprofit membership organization dedicated to the protection of all native animals and plants in their natural communities. Defenders is committed to protecting wild lands and wildlife in Arizona, and its Southwest office is located in Tucson, Arizona.

Arizona Mining Reform Coalition works in Arizona to improve state and federal laws, rules, and regulations governing hard rock mining to protect communities and the environment. AMRC works to hold mining operations to the highest environmental and social standards to provide for the long term environmental, cultural, and economic health of Arizona.

The **Center for Biological Diversity** is a non-profit public interest organization with an office located in Tucson, Arizona, representing more than 1.7 million members and supporters nationwide dedicated to the conservation and recovery of threatened and endangered species and their habitats. The Center has a long-standing interest in projects of ecological significance undertaken in the National Forests of the Southwest, including mining projects.

Save the Scenic Santa Ritas is a non-profit organization that is working to protect the Santa Rita and Patagonia Mountains from environmental degradation caused by mining and mineral exploration activities.

Tucson Audubon is a 501(c)(3) member-supported community organization established in 1949. The organization promotes the protection and stewardship of southern Arizona's biological diversity through the study and enjoyment of birds and the places they live. Tucson Audubon provides practical ways for people to protect and enhance habitats for birds and other wildlife; and maintains its deep investment in Patagonia through the

Paton Center for Hummingbirds along Sonoita Creek, a significant resource at risk due to proposed upstream mining activities.

Friends of Santa Cruz River is a non-profit organization dedicated to ensuring the continued flow of the Santa Cruz River, the life-sustaining quality of its waters, and the protection of the riparian biological community it supports.

Borderlands Restoration Network (“BRN”) is a small, Patagonia-based nonprofit that works to grow a local restorative economy by rebuilding healthy ecosystems, restoring habitat for plants and wildlife, and reconnecting our border communities to the land through shared learning. Our work is primarily focused on protecting and restoring wildlife corridors and the surface waters of Sonoita Creek and surrounding watersheds.

Sky Island Alliance is a regional conservation nonprofit dedicated to protecting and restoring the diversity of life and lands in the Sky Island region of the U.S. and Mexico. Its mission is to ensure the Sky Islands—mountain ranges primarily in Arizona and Sonora that rise out of arid grasslands—are a place where nature thrives, open space and clean water are available to all, and people are connected to the region's innate ability to enrich lives.

Friends of Sonoita Creek is a non-profit organization dedicated to protecting and restoring the water and natural habitat of the Sonoita Creek Watershed. We inform residents and visitors about its importance to life forms and relationship to the geography through hands on activities, presentations, hikes and collaboration with kindred organizations.

Earthworks is a nonprofit organization dedicated to protecting communities and the environment from the adverse impacts of mineral and energy development while promoting sustainable solutions. Earthworks stands for clean air, water and land, healthy communities, and corporate accountability. We work for solutions that protect both the Earth's resources and our communities.

Sierra Club (Grand Canyon Chapter). The Sierra Club is one of the largest and most influential grassroots environmental organizations in the U.S., with more than 3.5 million members and supporters. In addition to protecting every person's right to get outdoors and access the healing power of nature, the Sierra Club works to promote clean energy, safeguard the health of our communities, protect wildlife, and preserve our remaining wild places through grassroots activism, public education, lobbying, and legal action. The Grand Canyon Chapter of the Sierra Club, representing 16,000 members, has a long history of public education and advocacy to protect the lands and waters of Arizona.

V. Conclusion

On behalf of the Patagonia Area Resource Alliance and each of the above listed organizations and the Town of Patagonia, we appreciate the opportunity to provide

comments to you on the Draft Permit. We urge ADEQ to take a step back from issuing the proposed Draft Permit as written. There is much to be done before AMI can be issued a legally compliant APP permit in this case.

ADEQ has the authority to pull this permit back and do what is necessary to develop protections for the AWQS and downstream aquifers that are consistent with the requirements of Arizona's APP program, and suitably protective of human health, animals, and the rich and biodiverse environment of this region.

Sincerely,

Patagonia Area Resource Alliance



Carolyn Shafer, Mission Coordinator and Board
Member
P.O. Box 1044
Patagonia, AZ 85624
(520) 477-2308
parawatchdogs@gmail.com

and on behalf of

Pete Dronkers, Southwest Circuit Rider
Earthworks
1612 K St. NW #904
Washington, DC, 20006
pdronkers@earthworksaction.org

Rob Peters, Ph.D.
Senior Representative, Southwest Office, Tucson, AZ
Defenders of Wildlife
210 Montezuma Ave., Suite 210
Santa Fe, NM 87501
Tel: 520 623-0447
rpeters@defenders.org | www.defenders.org

Roger Featherstone
Arizona Mining Reform Coalition
PO Box 43565
Tucson, AZ 85733-3565
(520) 777-9500
roger@AZminingreform.org

Randy Serraglio
Center for Biological Diversity
PO Box 710
Tucson, AZ 85702
(520) 623-5252 x 321
rserraglio@biologicaldiversity.org

Gayle Hartmann, President
Save the Scenic Santa Ritas
8987 E. Tanque Verde #309-157
Tucson, AZ 85749

Jonathan Lutz, Executive
Director
Tucson Audubon Society
300 E. University Blvd., Suite 120
Tucson, AZ 85705
(520) 629-0510
jlutz@tucsonaudubon.org

Ben Lomeli, President
Friends of Santa Cruz River
PO Box 4275
Tubac, AZ 85646
riverfriends@foscraz.com

Kurt Vaughn, Ph.D., Executive Director
Borderlands Restoration Network
P.O. Box 121
Patagonia, AZ 85624
kvaughn@borderlandsrestoration.org

Louise Misztal, Executive Director
Sky Island Alliance
PO Box 41165
Tucson, AZ 85717
louise@skyislandalliance.org

Robert Proctor, President
Friends of Sonoita Creek
PO Box 4508
Rio Rico, AZ 85648
sonoitacreek@gmail.com

Town of Patagonia
Ron Robinson, Town Manager
310 McKeown Ave.
Patagonia, AZ 85624
patagoniagov@qwestoffice.net

Enclosures

CC: Jennifer Varin, USFS Watershed Program Manager, Coronado National Forest
Supervisor's Office
(jennifer.varin@usda.gov)

Tomas Torres, Water Division Director, U.S. EPA, Region IX
(torres.tomas@epa.gov)

Attachment A

A Technical Review of the Draft Aquifer Protection Permit No. P-512235
SIGNIFICANT AMENDMENT, PLACE ID 18640, LTF 83040
for Arizona Minerals, Inc. - Hermosa Project Property

Prepared for Patagonia Area Resource Alliance

by

Laurel J. Lacher, PhD, RG



Lacher Hydrological Consulting

and



Robert H. Prucha, PhD, PE



May 30, 2021

A Technical Review of the Draft Aquifer Protection Permit No. P-512235 SIGNIFICANT AMENDMENT, PLACE ID 18640, LTF 83040 for Arizona Minerals, Inc. - Hermosa Project Property

Overview

On August 14, 2020, Arizona Minerals, Inc. (AMI) submitted an application for a “significant amendment” to its existing Aquifer Protection Permit (APP) under the State of Arizona Department of Environmental Quality (ADEQ). The stated purposes of the amendment were to:

- *“Add a second surface discharge location, Arizona Pollutant Discharge Elimination System (AZPDES) Outfall 002. A new water treatment plant (WTP2) will be constructed that will discharge to ephemeral Harshaw Creek. The best available demonstrated control technology for this proposed discharge is the treatment provided by WTP2, which is designed to treat influent water to applicable standards. AMI is also submitting an AZPDES permit application for this discharge.*
- *Revise the TSF design by increasing the maximum elevation to 5175 ft and revising the stacking geometry. No expansion of the currently permitted footprint is proposed in this amendment application.*
- *Revise the Pollutant Management Area (PMA) and Discharge Impact Area (DIA) to reflect the surface discharge from WTP2. Update closure costs and the financial assurance mechanism.”*

(AZ Minerals, Inc., 2020)

ADEQ responded with a Draft Significant Amendment for APP No. P-512235 (Draft APP) in late March 2021. The following text describes ADEQ’s issuing authority as well as the duration of the proposed amendment, which is specified as “ the life of the facility (operational, closure, and post-closure periods) unless suspended or revoked....”

1.0 AUTHORIZATION

In compliance with the provisions of Arizona Revised Statutes (A.R.S.) Title 49, Chapter 2, Articles 1, 2 and 3, Arizona Administrative Code (A.A.C.) Title 18, Chapter 9, Articles 1 and 2, A. A. C. Title 18, Chapter 11, Article 4 and amendments thereto, and the conditions set forth in this permit, the Arizona Department of Environmental Quality (ADEQ) hereby authorizes Arizona Minerals Inc. to operate the Hermosa Project Property located approximately 5 miles south of the Town of Patagonia, Arizona, over groundwater of the Santa Cruz groundwater basin, in Section 32 in Township 22S, Range 16E and in Township 23S, Range 16E ; and un-surveyed Sections 3 and 4, of the Gila and Salt River Baseline and Meridian.

This permit becomes effective on the date of the Water Quality Division Director’s signature and shall be valid for the life of the facility (operational, closure, and post-closure periods) unless suspended or revoked pursuant to A.A.C. R18-9-A213. The permittee shall construct, operate and maintain the permitted facilities:

1. *Following all the conditions of this permit including the design and operational information documented or referenced below, and*
2. *Such that Aquifer Water Quality Standards (AWQS) are not violated at the applicable point(s) of compliance (POC) set forth below or if an AWQS for a pollutant has been exceeded in an aquifer at the*

time of permit issuance, that no additional degradation of the aquifer relative to that pollutant and as determined at the applicable POC occurs as a result of the discharge from the facility.

(ADEQ, 2021)

This review focuses on the proposed new discharge point described as Outfall 2 which will discharge treated effluent from Water Treatment Plant 2 (WTP2). This new proposed treatment plant is designed to handle:

- *“Groundwater pumped from a wellfield to depressurize and dewater the fractured rock aquifer.*
- *Groundwater and operational water pumped from underground workings*
- *Tailing seepage and January Adit water*
- *Treated water from WTP1*
- *Drilling water and core cutting water*
- *Water from stormwater BMPs”*

(AZ Minerals, Inc., 2020)

This review incorporates by reference a related document with comments on ADEQ’s DRAFT AZPDES Permit No. AZ0026387 for this same Hermosa Mine Project submitted by Lacher and Prucha on behalf of the Patagonia Area Resource Alliance on April 7, 2021.

Summary of Primary Comments

The following bullets itemize the primary points addressed in this technical review:

1. Discharge from the proposed WTP2 is an entirely NEW, significantly larger discharge than the previously permitted discharge from Outfall 1 (and Water Treatment Plant No. 1) with different water quality implications for downstream aquifers and should be handled in a separate and complete APP.
2. An assessment of the full range of hydrologic impacts for the life of the mine must be conducted in order to develop protective discharge limits and monitoring requirements.
3. The lower Harshaw Creek alluvium and Sonoita Creek alluvium are both drinking water aquifers, and therefore, may not be degraded by mine discharge in a way that impairs existing or reasonably foreseeable uses of water in those aquifers, as specified in A.A.C. R18-11-405.
4. Additional Points of Compliance (POCs) with increased monitoring frequency are necessary to protect the health of downstream well owners and others who depend on groundwater from the sole-source drinking water aquifers in Harshaw and Sonoita creek valleys.
5. EPA Secondary Drinking Water Standard contaminants should be included in the APP compliance monitoring requirements to protect the downstream aquifers and drinking water infrastructure from irreparable harm.
6. The proposed discharge and POC monitoring requirements are not consistent with Arizona Aquifer Quality Standards (A.A.C. R18-11-406) and federal EPA Safe Drinking Water standards. Failing to maintain these contaminant concentrations in mine discharge below federal and state limits could endanger public health and do irreparable harm to the existing high-quality, sole-source drinking water aquifers and related drinking water infrastructure serving Harshaw Creek and Town of Patagonia residents.

1. WTP2 Discharge Requires a Separate APP

The original APP No. P-512235 considered only discharge from WTP1 at Outfall1 on Alum Gulch. The maximum discharge from WTP1 is projected at 0.172 MGD. By contrast, the projected maximum discharge from WTP2 is projected at 6.48 MGD (ADEQ, 2021a) – a factor of **37 times** the original permitted discharge rate. Furthermore, the contemplated discharge from Outfall2 will directly affect at least 2 drinking water aquifers - lower Harshaw Creek alluvium and Sonoita Creek alluvium – serving thousands of residents, whereas the Outfall1 discharges to Alum Creek, downstream of the Town of Patagonia’s sole-source drinking water aquifer.

Despite the fact that the term of the Draft APP is “for the life of the facility (operational, closure, and post-closure periods)....” (ADEQ, 2021), and that AMI suggests that discharge from the WTP2 will diminish after about 4 years (AZ Minerals, Inc., 2020), AMI has provided no predicted discharge rate for the remaining 26+ years of the mine life implied by several hydrologic calculations in their APP application (AZ Minerals, Inc., 2020), and has not identified a projected mine life term.

A.A.C. R18-11-407 protects all aquifers in the state:¹

All aquifers in the state are classified for drinking water protected use except for aquifers which are reclassified to a nondrinking water protected use pursuant to A.R.S. § 49-224 and A.A.C. R18-11-503.

Arizona’s Narrative Aquifer Water Quality Standards (A.A.C. R18-11-405) stipulate that:

- A. A discharge shall not cause a pollutant to be present in an aquifer classified for a drinking water protected use in a concentration which endangers human health.**
- B. A discharge shall not cause or contribute to a violation of a water quality standard established for a navigable water of the state.*
- C. A discharge shall not cause a pollutant to be present in an aquifer which impairs existing or reasonably foreseeable uses of water in an aquifer.**

Given the magnitude of change and risk that AMI’s contemplated discharge from WTP2 and potential unintentional releases from the Hermosa Project operation to Harshaw and Sonoita creeks pose to downstream sole-source drinking water aquifers, this NEW discharge proposal warrants a completely new APP application and draft permit. The new application from AMI should include a FULL hydrologic modeling study rather than the “limited” hydrologic study provided thus far (AZ Minerals, Inc., 2020) to simulate the realistic potential fate of Outfall2 discharge and associated contaminants (e.g., flows through town), and prove that the risk to downstream drinking water aquifers is being fully mitigated by the permit conditions.

¹ As of this writing, no aquifers in Arizona are listed as “reclassified” by ADEQ.

2. An assessment of the full range of hydrologic impacts for the life of the mine must be conducted in order to develop protective discharge limits and monitoring requirements.

Although ADEQ (2021) proposes to grant AMI's Hermosa Project an APP for the "life of the facility (operational, closure, and post-closure periods)," AMI has neither confirmed the number of years for the life of the Hermosa Project, nor assessed the full life-of-mine impacts from both dewatering and long-term discharge to Harshaw Creek. AMI's APP application (AZ Minerals, Inc., 2020) refers to 30 years in several sections, but the company has provided no evidence that this time period corresponds to the expected life of this mine. The only groundwater modeling results AMI (South32) has presented publicly describing the effects of dewatering and discharge to Harshaw Creek were those in its July 2020 presentation on "Continued Exploration and Permitting" (Figure 1) (South32, 2020). In a subsequent meeting, South32 acknowledged that these results were preliminary and very short term and were based on findings from their exploratory drilling and test dewatering for approximately one month (T. Goode, pers. comm., 2021). The simulated discharge rate of 3,270 gpm for a few weeks does not approximate the proposed 4500 gpm for 4 years discussed in the Draft APP (ADEQ, 2021) and Draft AZPDES (ADEQ, 2021a) documents, and does not come close to assessing the 30+-year life of mine. The simulated impacts (up to 20 ft of groundwater-level increase across a 3-mile wide area centered on Harshaw Creek are not realistic for this small alluvial aquifer underlain by bedrock (see Section 3 and Figure 2).

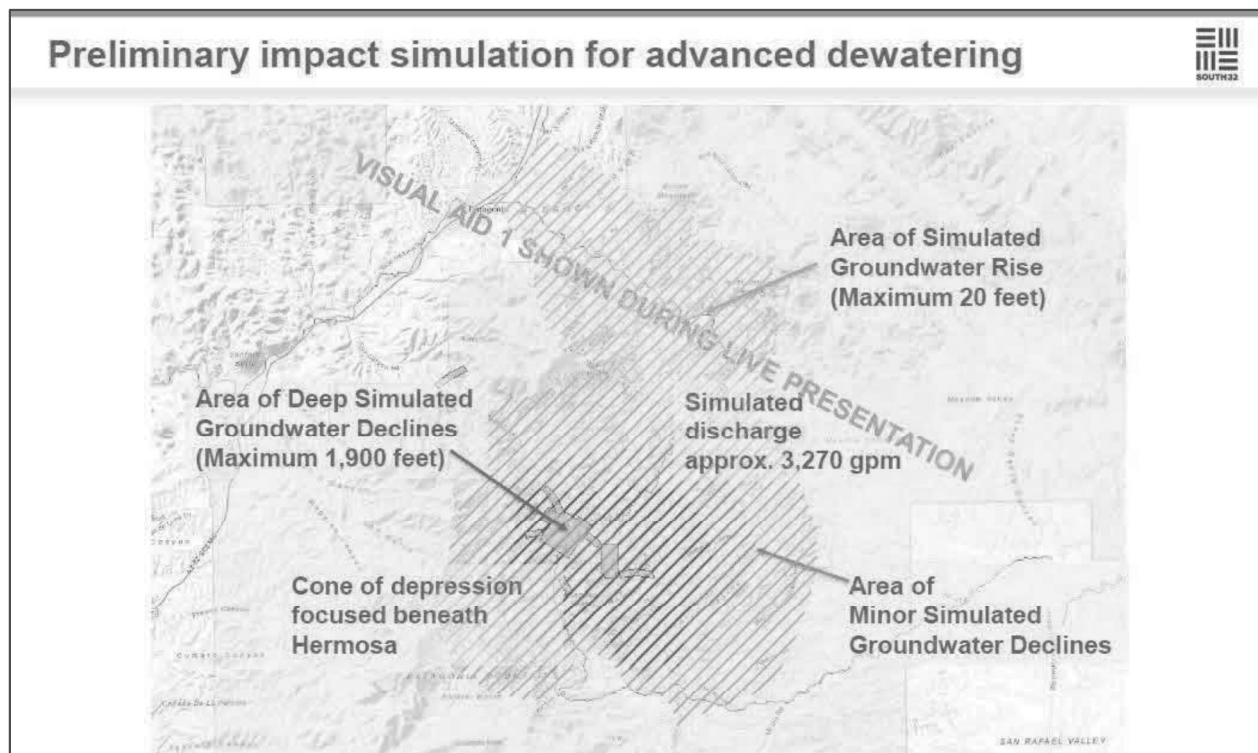


Figure 1. Preliminary and short-term groundwater modeling results by South32 (2020).

AMI acknowledges that there is significant uncertainty regarding the deep sedimentary units that they intend to dewater. Projecting the results of a 1-month dewatering test out 4 to 30 years without any

consideration for the range of outcomes due to the significant uncertainties of the target geological formation is insufficient for a multi-decade APP. In fact, considerable uncertainty exists regarding the nature/extent and potential surface expression of the lower permeable water-bearing sedimentary unit at a distance from the proposed Hermosa mine. A comparison of dewatering estimated at Rosemont mine (on the northeast side of the Santa Rita Mountains in the neighboring Cienega Creek watershed) shows a much greater long-term drawdown extent than shown by AMI's short-term dewatering extent (see Figure 1), produced by pumping about 1/10th of what AMI has proposed in their APP permit application (AZ Minerals, Inc., 2020) and what ADEQ proposes to permit in the Draft APP.

Understanding the potential range of impacts to groundwater and surface water resources over the life of the mine (30+ years?) is critical for permitting safe mine discharge to protect downstream drinking water aquifers over that period. The required hydrologic assessment (see A.A.A. R18-9-202 §8a) must consider:

- a. **The uncertainty in hydrogeologic properties of the dewatering target formation**; what is the likelihood that the proposed 4 years of dewatering may become 15 or 30 years?
 - b. **The potential fate of contaminants released from the Hermosa Project property**; how will years of continuous discharge impact the fate and transport of those contaminants?
 - c. **The potential interaction of surface water and groundwater over the life of the mine**; will dewatering pumping capture contaminants from existing legacy mines over time? If so, will the treatment plants (WTP1 and WTP2) be capable of removing those contaminants? Will the possible change in discharge water chemistry over time mobilize existing contaminants in sediments in lower Harshaw Creek, and how will those changes impact the two downstream drinking water aquifers in Harshaw and Sonoita creek valleys?
3. The lower Harshaw Creek alluvium and Sonoita Creek alluvium are both drinking water aquifers and, therefore, may not be degraded by mine discharge in a way that impairs existing or reasonably foreseeable uses of water in those aquifers.

Figure 2 overlays production wells from the Arizona Department of Water Resources (ADWR) Wells-55 database on AMI's proposed Pollutant Management Area (PMA)/Discharge Impact Area (DIA) map. Hundreds of private and community water system wells depend on the shallow alluvial aquifers in Harshaw and Sonoita Creek valleys. The blue shading in Figure 2 also shows the approximate extent of alluvial aquifers along Harshaw and Sonoita creeks and Alum Gulch within the figure area. Figure 3 provides details for several wells within the black oval in Figure 2. The details Figure 3 show that many wells along lower Harshaw Creek serve as drinking water sources as well as providing water for irrigation and livestock. Several of those wells are less than 40 feet (ft) deep, indicating likely development within the Harshaw Creek alluvial aquifer. Figure 4 illustrates groundwater levels over time for several drinking water wells and one monitoring well in the Town of Patagonia. Groundwater levels in this aquifer have historically ranged from less than 10 to just over 40 ft below ground surface. This shallow aquifer is particularly vulnerable to contaminant sources infiltrating through the Sonoita Creek streambed or migrating in the shallow subsurface from Harshaw Creek drainage.

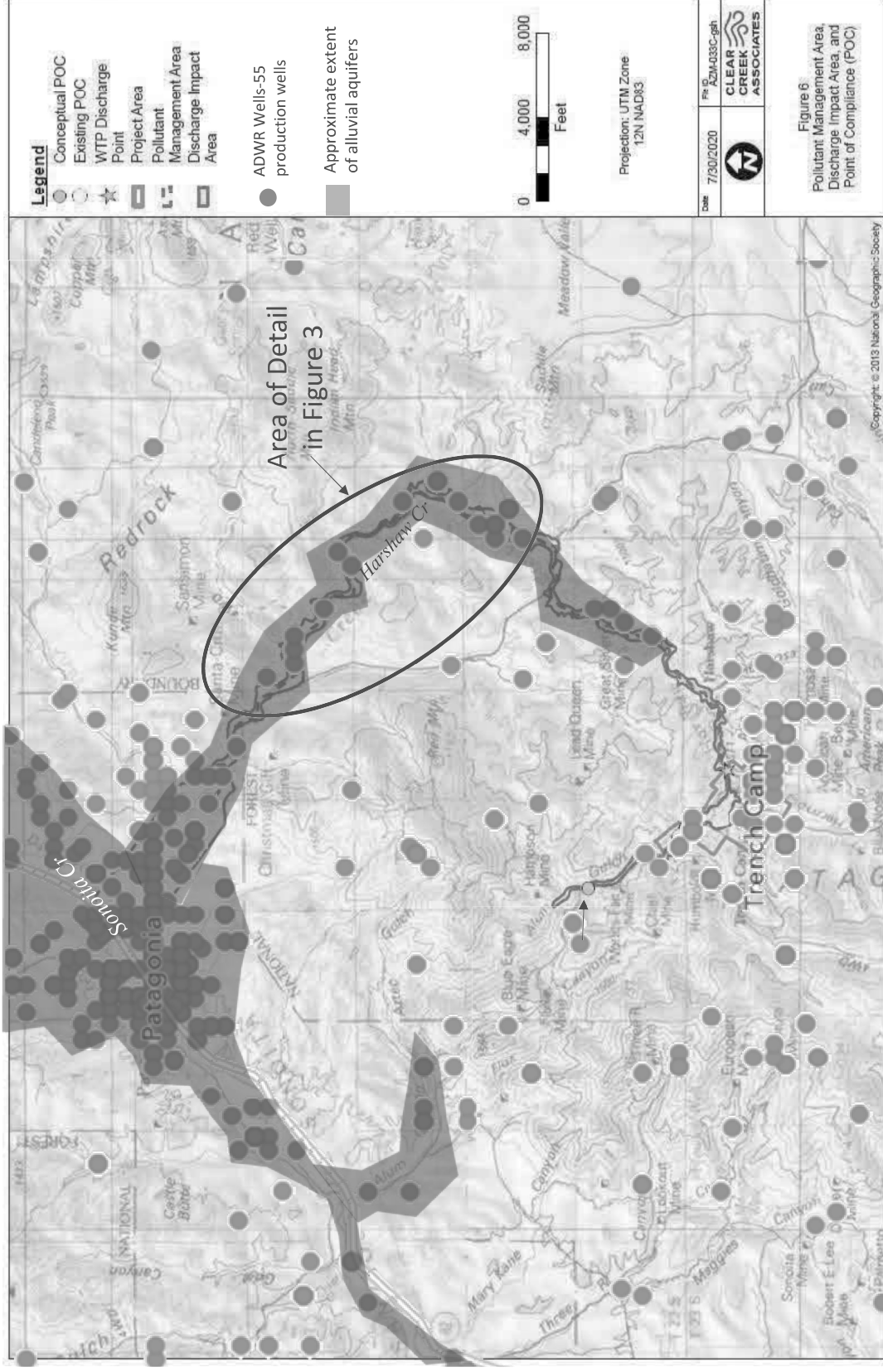


Figure 2. Overlay of production wells (monitoring wells excluded) from the ADWR Wells-55 database on the proposed PMA and DIA for the Hermosa Project. Approximate extent of alluvial aquifers along Harshaw Creek, Sonoita Creek, and Alum Gulch shown in blue shading. Details for several wells within black oval shown in Figure 2.

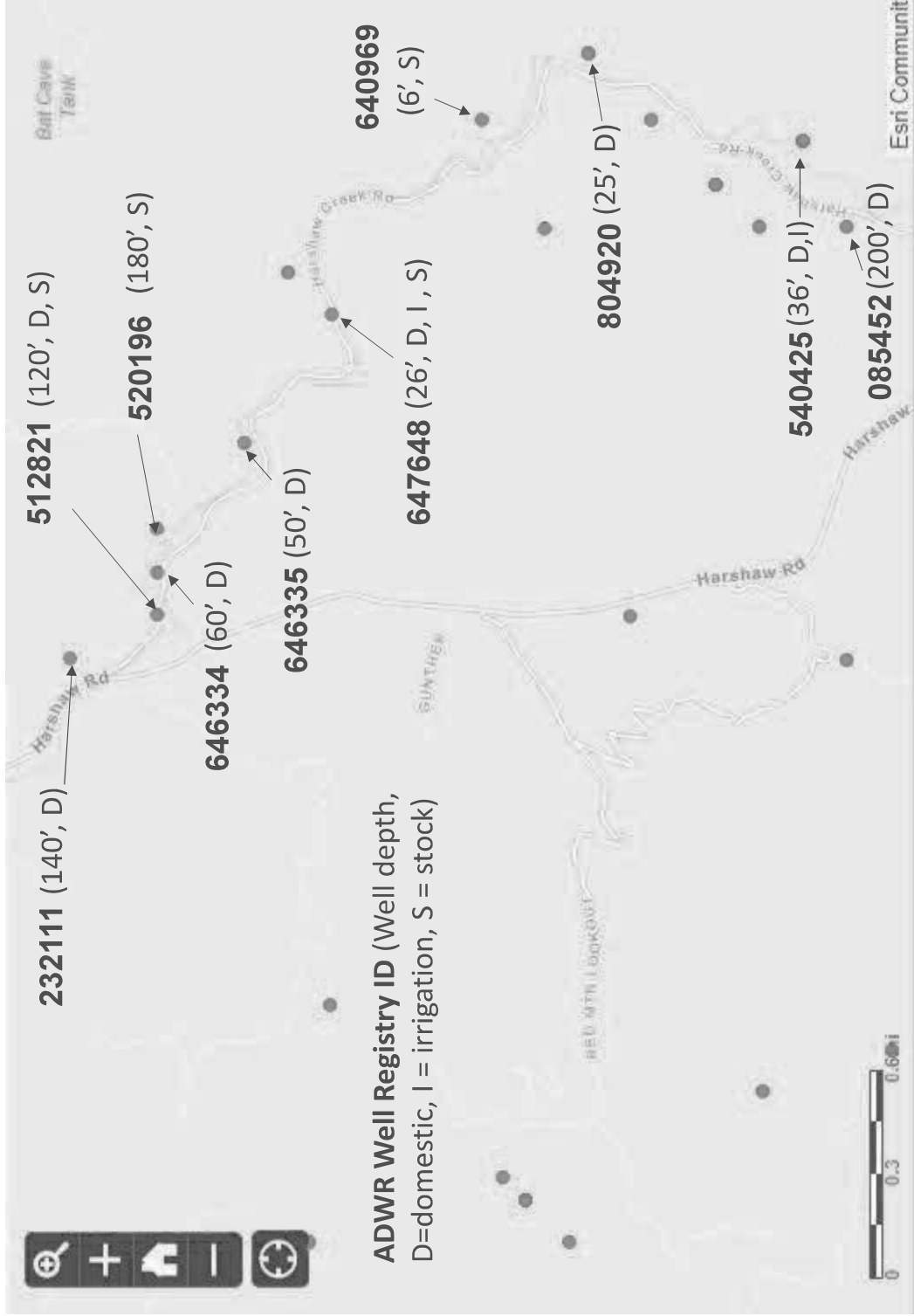


Figure 3. Details including well depth and water uses (domestic, irrigation, and livestock) for wells along Harshaw Creek in the area within black oval in Figure 2. Wells less than 40 feet deep highlighted in yellow.

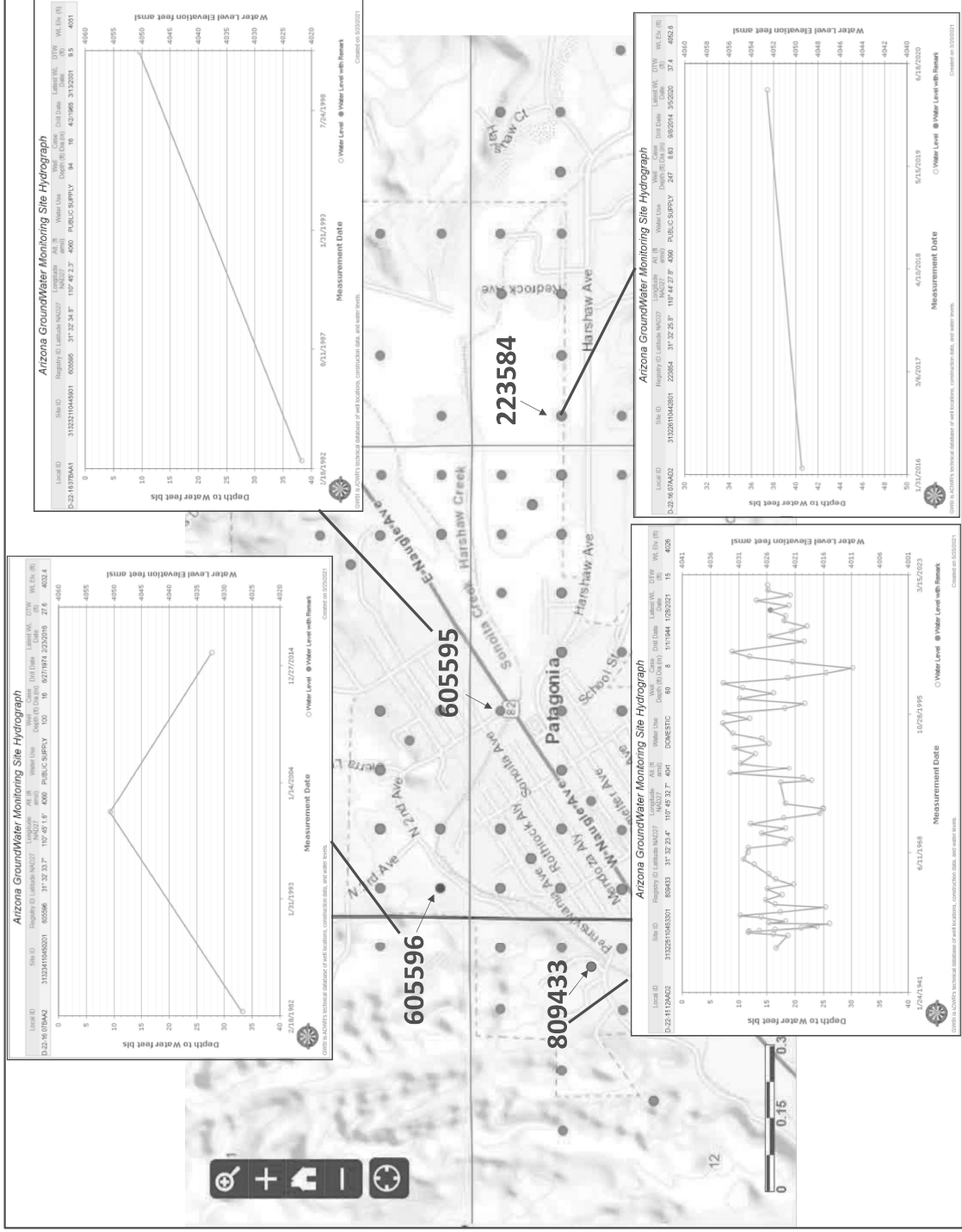


Figure 4. Hydrographs for several monitoring wells in the Town of Patagonia where water levels range from less than 10 to just over 40 ft below ground surface

4. Additional Points of Compliance (POCs) with increased monitoring frequency are necessary to protect the health of downstream well owners and others who depend on groundwater from the sole-source drinking water aquifers in Harshaw and Sonoita creek valleys.

Figure 5 illustrates the proposed Hermosa Project PMA, Discharge Impact Area (DIA), and points of compliance (POCs) in Harshaw Creek and Alum Gulch. Details of the four proposed POCs are provided in Table 1. The only existing POC (POC-2) is a monitoring well (MW3) just below Outfall1 on Alum Gulch. The only proposed POC on Harshaw Creek is “Conceptual” POC-4 which is 9.4 miles downstream of Outfall2 on the Hermosa Project property. The placement of this conceptual POC coincides with the APP applicant’s (AMI’s) assertion that WTP2 discharge flows will not extend past this point. AMI provided no serious study of this issue, relying instead on several point measurements of infiltration rate over the course of just 3 days in October. Their highly abbreviated hydrologic study included no consideration for transient water-level or soil-moisture changes that will undoubtedly occur once AMI begins to discharge 4500 gpm into Harshaw Creek.

Table 1. Proposed POCs for Hermosa Project in Draft APP (ADEQ, 2021).

Well Number	POC Locations	Latitude (North)	Longitude (West)	ADWR Number
POC-1	Conceptual location downgradient of the TSF	31° 28' 15.21"	110° 43' 42.45"	TBD
POC-2	200 feet downgradient of the AZPDES Outfall-001 (MW3)	31° 28' 18.91"	110° 43' 48.83"	55-920120
POC-3	Conceptual location approximately one mile to the north-northwest and downgradient of the WTP1 outfall	31° 29' 1.7"	110° 44' 16.4"	TBD
POC-4	Conceptual location approximately nine miles to the north and downgradient of the WTP2 outfall	31° 32' 2.4"	110° 43' 29.3"	TBD

Under the proposed POC configuration, any contaminant release from the Hermosa Project property – whether from Outfall 1 or 2 or by other means – would not be monitored downstream until and unless the “conceptual” POC-4 were actually constructed. The only trigger to develop the “conceptual” POC-4 into an actual monitoring well is an alert level at WTP2 or possibly in a liner on under the tailings storage facility (ADEQ, 2021). Once an alert level is reached (through required monitoring only every 3 months), the Draft APP sets up months of verification sampling to ensure that the detected violation is “statistically significant.” After several months, if the violation is determined to be significant, then AMI would have to submit a design for the POC-4 well to ADEQ for review. Following ADEQ review, AMI would proceed with well construction and initiate monitoring. Meanwhile, the downstream drinking water aquifers in Harshaw and Sonoita Creek valleys would have been exposed to the contaminant stream for months, potentially causing a risk to human health, damage to well and drinking water infrastructure, and irreparable harm to these sole-source aquifers.

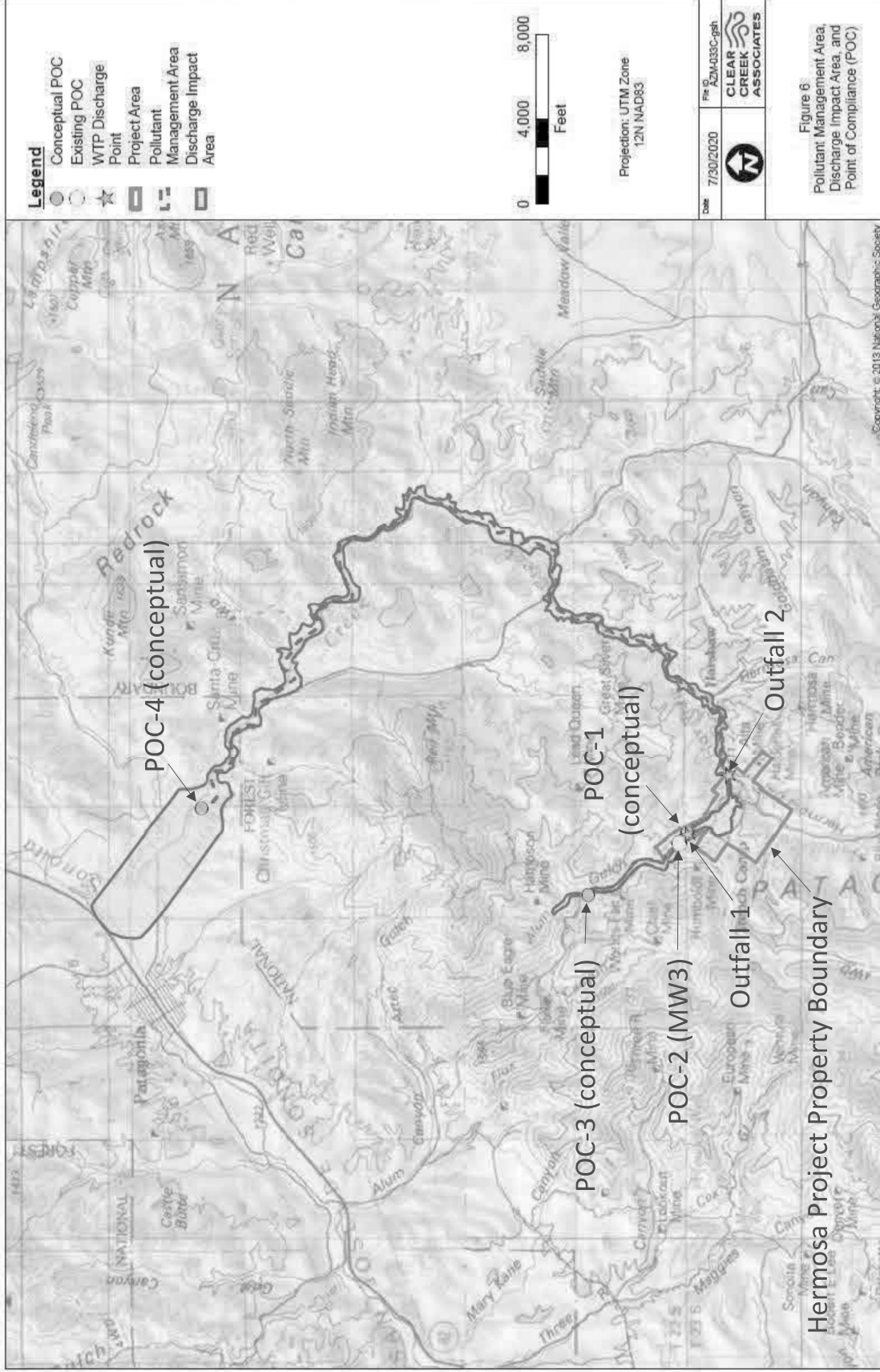


Figure 5. Proposed PMA and DIA for Hermosa Project. Conceptual POC (orange circle) in Harshaw Creek is 9.4 miles below Outfall 2 on AMI property.

Integrated hydrologic modeling by Lacher & Prucha (2020) indicates that after several months of 4500-gallon per minute (gpm) discharge from Outfall2 into Harshaw Creek, the underlying sediments in Harshaw Creek will become saturated and the mine-related discharge will flow readily to Sonoita Creek and through the Town of Patagonia. Once Harshaw Creek sediments are saturated, the predicted transit time from Outfall2 to Sonoita Creek is only 2 to 3 days (Prucha, 2021, pers. comm.). The only way to protect the projected drinking water aquifers and associated infrastructure in Harshaw and Sonoita Creek valleys from inadvertent contaminant releases from the Hermosa Project is to install additional POCs upgradient of the first drinking water aquifer and to require high-frequency monitoring of these POCs with appropriate alert levels. **Daily monitoring** for POCs upgradient of the first downstream aquifer (Harshaw Creek) would be necessary to provide early warning of a potential threat to both Harshaw and Sonoita Creek aquifers since water is likely to be conveyed from WTP2 to Sonoita Creek within 2-3 days.

Figure 6 shows AMI's proposed PMA/DIA map with production wells and Draft APP compliance monitoring points from Table 1. Outfalls 1 and 2 represent discharge points for WTP1 and 2, respectively. In order to protect the downstream drinking water aquifers in Harshaw and Sonoita Creek aquifers, POC-4 should be constructed and additional POCs (POC-5 and POC-6) should be installed at the locations shown in Figure 6. As with POC-2, and as required by A.R.S. § 49-244, the POC below WTP2 (POC-5) should be immediately downgradient of the discharge point and within the Hermosa Project property boundary to provide the maximum early warning for any contaminants leaving the mine site. Because the Harshaw Creek drinking water aquifer lies less than two miles downgradient, another POC (POC-6) should be installed upgradient of the first shallow drinking water well, as shown in Figure 6.

The drinking water aquifers in Harshaw and Sonoita creeks are presently used without treatment other than disinfection. However, areas of "pH as low as 3.5 and dangerously high metal concentrations" in the groundwater of some parts of Harshaw Creek have been documented by (Brown, et al., 2020) and others. In order to comply with the standards set forth in A.A.C. R18-11-405, AMI should conduct a FULL hydrologic investigation of all downstream aquifers likely to be impacted by mine discharge, including those in Harshaw Creek and Sonoita Creek, to determine how increasing groundwater levels associated with Outfall2 discharge will affect existing groundwater levels and gradients and the water produced by drinking water wells in those aquifers. The proposed "Conceptual POC-4" must be converted to a REAL monitoring well to track both the release of contaminants from the Hermosa Project site AND any changes in downstream drinking water quality as a result of local contaminants within Harshaw Creek sediments and isolated areas of known high metals and low pH that may be liberated as a result of contact with the proposed 4500 gpm of discharge from WTP2.

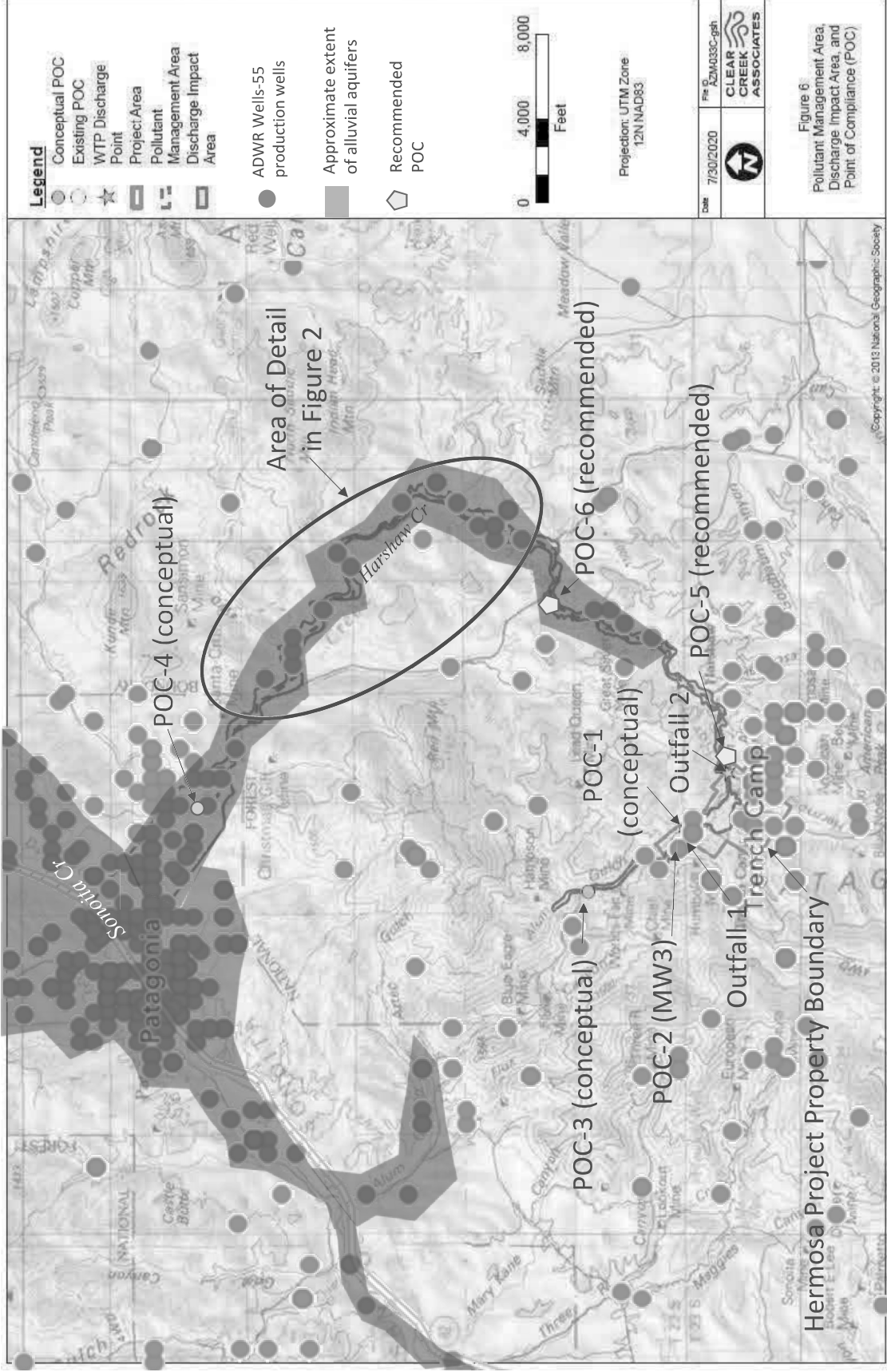


Figure 6. Production wells overlain on map of AMI's proposed PMA/DIA and POCs. Proposed additional POC-5 and POC-6 shown with yellow pentagons.

5. EPA Secondary Drinking Water Standard contaminants must be included in the APP compliance monitoring

The US EPA has established National Secondary Drinking Water Regulations (NSDWRs) that set non-mandatory water quality standards for 15 contaminants (US EPA, 2021). While these are not enforceable standards, the EPA recognizes that elevated levels of these contaminants may cause many people to stop using a water supply because they perceive it as undesirable or unsafe. Such perceptions may cause water utilities to make costly repairs and investment in their systems to maintain the trust of their customers. In some cases, such as with high levels of manganese, private plumbing may become so affected by black slime that the entire water system is unusable.² Secondary Maximum Contaminant Limits (SMCLs) set by EPA for these pollutants address several non-health-related problems such as:

- Aesthetic effects — undesirable tastes or odors
- Cosmetic effects — effects which do not damage the body but are still undesirable
- Technical effects — damage to water equipment or reduced effectiveness of treatment for other contaminants.

Several contaminants typically associated with metals mining can have devastating effects on drinking water infrastructure and usability of the aquifer. EPA (2021) notes that:

“ ... some contaminant odors are noticeable even when present in extremely small amounts. It is usually very expensive and often impossible to identify, much less remove, the odor-producing substance.”

“Standards related to odor and taste: chloride, copper, foaming agents, iron, manganese pH, sulfate, threshold odor number (TON), total dissolved solids, zinc.”

SMCLs for chloride, copper, corrosivity, iron, manganese, pH, total dissolved solids, and zinc are designed to mitigate corrosion and staining of pipes and fixtures.

Table 3 provides groundwater quality data for several wells in and near the Town of Patagonia, Arizona. The red box identifies data for one Town of Patagonia well, and the yellow box indicates sulfate (SO₄) data for the Town of Patagonia well. Three of the six values reported for sulfate for this well exceed the EPA SMCL for sulfate, which is 250 mg/L (Table 2). In fact, 16 out of the 20 groundwater values (75%) reported in Table 3 exceed the sulfate SMCL. AMI’s water quality consultant, Black and Veatch, predicts that WPT2 feed water will contain 32 -152 mg/L sulfate (Table 4) but provides no estimate of the removal to be provided by WTP2. While the Town wells are presently used without treatment (other than disinfection), **any additional sulfate load would push these wells above the EPA SMCL and begin to impair the quality of the existing drinking water.**

ADEQ holds at least two consent decrees (Phelps Dodge - Copper Queen Branch, 2007 and Phelps Dodge - Sierrita Mine, 2006) detailing voluntary compliance by a large mining company to meet the SMCL for sulfate in plumes that originated from mine properties upstream of drinking water aquifers. This provides a clear precedent for requiring the permittee to comply with secondary MCLs. **In order to fully protect**

² The community of Carrizo on the White Mountain Apache Reservation has experienced complete fouling of their entire water system and all private distribution lines, hot water heaters, washing machines, etc. from naturally occurring manganese in the groundwater (Lacher, pers. comm., 2021).

the downstream sole-source aquifers in Harshaw and Sonoita creeks, ADEQ should specify discharge limits for ALL 15 NSDWR contaminants (Table 2) with POCs at the point of discharge and well upstream of the first downstream aquifer on Harshaw Creek.

Table 2. EPA Secondary Drinking Water Standards

Contaminant	Secondary MCL	Noticeable Effects above the Secondary MCL
Aluminum	0.05 to 0.2 mg/L*	colored water
Chloride	250 mg/L	salty taste
Color	15 color units	visible tint
Copper	1.0 mg/L	metallic taste; blue-green staining
Corrosivity	Non-corrosive	metallic taste; corroded pipes/ fixtures staining
Fluoride	2.0 mg/L	tooth discoloration
Foaming agents	0.5 mg/L	frothy, cloudy; bitter taste; odor
Iron	0.3 mg/L	rusty color; sediment; metallic taste; reddish or orange staining
Manganese	0.05 mg/L	black to brown color; black staining; bitter metallic taste
Odor	3 TON (threshold odor number)	"rotten-egg", musty or chemical smell
pH	6.5 - 8.5	low pH: bitter metallic taste; corrosion high pH: slippery feel; soda taste; deposits
Silver	0.1 mg/L	skin discoloration; graying of the white part of the eye
Sulfate	250 mg/L	salty taste
Total Dissolved Solids (TDS)	500 mg/L	hardness; deposits; colored water; staining; salty taste
Zinc	5 mg/L	metallic taste

Table 3. Groundwater quality data from several wells in and near the Town of Patagonia (Gu, 2005). Yellow box shows sulfate data in Patagonia Town well.

Sample ID	Date	Location	Hydrological Type	Temp. (°C)	pH	E.C. mS/cm	TDS g/L	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	SI mg/L	Sr mg/L	alkalinity mg/L	SO ₄ mg/L	Cl mg/L
Ground water																
W1	8/13/1998	Native Seeds Search well	well	22.2	7.38	0.894	0.447	17	2.0	180	39	17	1.5	NA	289	5
W1	6/23/1999	Native Seeds Search well	well	28.2	7.04	0.847	0.424	11	1.6	176	26	12	1.6	NA	295	6
W1	4/5/2001	Native Seeds Search well	well	NA	NA	NA	NA	12	1.4	138	24	12	1.7	NA	300	NA
W1	11/14/2003	Native Seeds Search well	well	19.9	7.05	1.280	0.460	14	1.7	154	30	14	NA	205	307	6
W2	5/20/1999	Patagonia Town well	well	20.4	7.44	0.977	0.487	7	1.3	110	15	7	1.3	212	279	9
W2	2/5/1999	Patagonia Town well	well	17.7	7.32	0.794	0.367	9	1.3	88	18	10	1.2	168	228	<5
W2	7/19/1999	Patagonia Town well	well	22.0	6.80	0.710	0.360	13	1.7	141	24	13	1.2	NA	216	7
W2	3/29/2001	Patagonia Town well	well	22.4	7.14	0.800	0.400	18	2.1	144	26	12	1.3	NA	228	8
W2	1/6/2002	Patagonia Town well	well	15.3	7.14	0.840	0.420	18	1.9	148	25	13	1.4	185	252	8
W2	12/5/2003	Patagonia Town well	well	NA	7.40	0.722	NA	NA	NA	NA	NA	NA	NA	NA	309	NA
W3	4/24/1998	George Proctor's well	well	24.2	7.68	0.37	0.37	70	0.8	32	1	3	0.7	75	470	30
W4	9/24/1999	Windmill well	well	22.0	7.00	1.06	0.53	27	3.1	188	32	8	2.0	NA	413	9
W5 ^a	10/8/1998	Nature Conservancy	well	17.7	7.19	0.680	0.663	16	2.0	141	31	NA	NA	225	269	6
W5	3/29/2001	Nature Conservancy	well	20.3	7.17	0.819	0.410	15	1.7	155	27	12	1.6	NA	222	7
W5	12/5/2003	Nature Conservancy	well	NA	7.70	0.704	NA	NA	NA	NA	NA	NA	NA	NA	256	NA
W6*	10/6/1998	Nature Conservancy old well (55-548541)	well	24.0	4.52	0.947	0.477	43	21.5	67	6	16	0.9	NA	405	10
W6	1/14/1999	Nature Conservancy old well (55-548541)	well	18.7	4.60	0.844	0.423	58	29.2	89	6	27	NA	6	404	27
W7 ^a	8/19/1997	Flux Canyon Flowing well	well	24.5	7.32	1.140	0.660	150	10.4	100	4	NA	NA	78	498	7
W7	2/24/1998	Flux Canyon Flowing well	well	20.0	7.19	1.167	0.980	173	7.7	109	4	12	1.6	NA	380	5
W7 ^a	9/18/1998	Flux Canyon Flowing well	well	24.6	7.67	1.110	0.655	144	10.0	102	4	NA	NA	78	520	7
W7	9/24/1999	Flux Canyon Flowing well	well	28.6	6.93	1.130	0.570	NA	9.5	116	3	16	1.4	NA	372	10
Surface water																
AF2	2/24/1998	Flux Canyon	runoff	12.2	3.91	1.384	0.696	17	3.5	124	53	13	0.4	NA	419	6
AF3	2/24/1998	Flux Canyon under bridge	runoff	16.2	3.90	1.080	0.540	22	4.6	148	66	16	0.4	NA	220	6
SC10	2/24/1998	Sonolita (upstream of flux brg.)	runoff	13.1	7.32	0.440	0.210	11	2.0	59	13	7	0.5	NA	184	3
SC11	2/24/1998	Sonolita (~12 m downstream)	runoff	14.9	5.90	0.580	0.290	8	1.6	52	16	6	0.4	NA	239	3
SC12	2/24/1998	Sonolita (Salero Rd.)	runoff	14.4	7.10	0.670	0.330	8	1.5	46	11	5	0.4	NA	188	5
SC13	2/24/1998	Sonolita (rest area)	runoff	20.0	7.89	1.033	0.537	31	1.6	149	70	5	1.1	86	373	7
AF2	4/15/1996	Flux Canyon	runoff	15.1	3.87	1.478	0.781	28	6.3	151	61	19	0.3	NA	1600	23
SC10	4/15/1998	Sonolita (upstream of flux brg.)	runoff	14.8	7.84	0.773	0.386	19	2.5	123	26	10	1.0	187	211	14
SC12	4/15/1998	Sonolita (400 m downstream)	runoff	15.1	7.26	0.847	0.421	18	2.7	110	24	9	0.9	100	304	10
SC1	5/5/1998	Sonolita Creek	Spring	22.1	6.95	0.953	0.475	16	3.6	132	26	5	1.2	223	332	14
SC1	10/6/1998	Sonolita Creek	Spring	28.7	7.19	1.211	0.606	11	3.6	115	18	8	1.4	NA	334	12
SC1	9/18/1998	Sonolita Creek @ spring source	baseflow	21.9	7.76	0.860	NA	21	2.5	146	31	NA	NA	238	299	10
SC7	9/18/1998	Sonolita Creek @PSCP Visitor Center	baseflow	21.0	8.12	0.810	NA	19	2.3	145	32	NA	NA	237	294	7
SC12	9/22/1998	Sonolita Creek @ Salero Road	baseflow	24.4	8.37	0.820	NA	24	4.4	133	30	NA	NA	205	283	7

Table 4. Predicted Feed Water Chemistry for WTP2.

Table 2.1 - WTP2 Feed Water Chemistry Predictions

ANALYTE	UNIT	MINIMUM	MAXIMUM
Antimony	mg/L	0.0039	0.004
Arsenic	mg/L	0.073	0.075
Barium	mg/L	0.024	0.025
Beryllium	mg/L	Constituent Not Detected at Reporting Levels Ranging from 0.000013 to 0.002 mg/L	
Boron	mg/L	0.049	.05
Cadmium	mg/L	0.0009	0.0012
Chromium	mg/L	0.0046	0.0048
Copper	mg/L	0.044	0.045
Fluoride	mg/L	0.17	0.18
Iron	mg/L	1.1	1.2
Lead	mg/L	0.042	0.059
Manganese	mg/L	0.48	1.02
Mercury ¹	mg/L	0.0000051	0.0000051
Nickel	mg/L	0.008	0.009
Selenium	mg/L	0.027	0.029
Silver	mg/L	0.0003	0.0021
Sulfate	mg/L	32	152
Thallium	mg/L	0.0003	0.00033
Uranium	mg/L	0.0016	0.0018
Zinc	mg/L	0.23	0.43
pH	SU	7.12	7.16
TSS	mg/L	0	44
Hardness ²	mg/L CaCO ₃	258	340
Ammonia/Nitrate-N	mg/L	0.25	3.5
Cyanide (total)	mg/L	Constituent Not Detected at Reporting Levels Ranging from 0.1 to 0.0039 mg/L	
Notes: mg/L = milligrams per liter; SU = Standard Units			
1 Mercury was not detected at Method Detection Levels ranging from 0.00003 to 0.002 mg/L. A single detection at 0.0000051 mg/L occurred in a groundwater sample analyzed with a Method Detection Level of 0.0000002 mg/L			
2 The treatment process is not expected to change the hardness of the water.			

Source: Attachment A Part3, AZ Minerals, Inc. (2020)

6. The proposed discharge and POC monitoring requirements are not consistent with Arizona Aquifer Quality Standards (A.A.C. R18-11-406) and federal EPA Safe Drinking Water standards.

Table 5 presents the proposed compliance monitoring requirements for the only three monitoring points contemplated in the Draft APP: Outfall1 and Outfall2 (column 2) and POC-2 (column 4). Columns 3 and 5 show the proposed monitoring frequency for the three compliance sites. The Draft APP proposes that contaminants be monitored quarterly (every 3 months) at the two outfalls and only semi-annually (every 6 months) at POC-2. Column 6 shows the unit of measurement for the contaminant concentrations in the table. Column 7 shows the Arizona Numeric Aquifer Water Quality Standards (AWQS) (A.A.C. 18-11-406). Columns 8 and 9 show the primary and secondary MCLs, respectively, for federal (EPA) Safe Drinking Water Act (SDWA) standards for inorganic constituents.

Values highlighted in yellow exceed the EPA primary standard. Values highlighted in orange exceed the EPA secondary standard. Note AWQS for arsenic, lead, copper, and uranium exceed the EPA primary standard or simply aren't specified (as with uranium). Consequently, because they match the AWQS, the proposed compliance concentrations for these constituents also exceed EPA primary standards. The proposed compliance limits for cadmium (0.01 mg/L for Outfalls 1 and 2; 0.011 mg/L for POC-2) exceed the AWQS and EPA primary standard of 0.005 mg/L.

Despite the AWQS for radionuclides, no discharge limit is specified in the Draft APP for either outfall. Only POC-2 (the only monitoring well compliance point in the Draft APP) has proposed radionuclide concentration limits: gross alpha including Radium 226 at 15 pCi/L and Radium 226 + Radium 228 at 5 pCi/L. These limits are equal to the AWQS (A.A.C. 18-11-406 Section E). Despite being a known carcinogen, no uranium limit is specified in the Draft APP even though uranium is a primary drinking water contaminant under the SDWA and is regulated under the EPA Radionuclides Rule (66 FR 76708). Table 6 presents the federally regulated radionuclide contaminants under the SDWA.

Black and Veatch (Attachment A, Table 2.1 in AMI, 2020) predicts that the WTP2 feed water will contain 0.0016 to 0.0018 mg/L (Table 4). While these concentrations are low relative to the EPA primary MCL (0.03 mg/L), **the discharge limits for Outfalls 1 and 2 and groundwater concentration in POC-2 should include this contaminant and the other radionuclides regulated by AQWS and the EPA Radionuclides Rule to ensure that the contaminant levels released from the mine do not threaten the downstream drinking water aquifers in Harshaw and Sonoita Creeks.**

Table 6. Regulated Contaminants under US EPA's Radionuclides Rule

Regulated Contaminants		
Regulated Radionuclide	MCL	MCLG
Beta/photon emitters*	4 mrem/yr	0
Gross alpha particle	15 pCi/L	0
Combined radium-226/228	5 pCi/L	0
Uranium	30 µg/L	0
*A total of 168 individual beta particle and photon emitters may be used to calculate compliance with the MCL.		

Source: US EPA (2001)

Summary and Conclusions

The following observations pertain to the Draft APP as it is currently written.

1. All downstream aquifers, including those in Harshaw and Sonoita creek valleys, must be protected by a system of early-warning POCs upgradient of the first drinking water well monitored on a DAILY basis.
2. POC-4 must be constructed, and baseline data collected for at least one full year prior to any large discharge from WTP2 to capture the range of natural variation in the system. This POC is important for tracking any changes in water quality that might result from the addition of 4500 gpm into Harshaw Creek, regardless of the compliance status of that discharge.
3. Two additional POC monitoring wells should be installed between Outfall2 and the first shallow drinking water well in Harshaw Creek.
4. EPA Secondary standards are critical for protecting the existing uses of Harshaw and Sonoita Creek aquifers. These aquifers are presently used without treatment except disinfection. Any additional load of sulfate, for example, may require local residents who depend on these sole-source aquifers to implement expensive treatment or seek a replacement (eg, bottled water) supply.
5. AMI has not conducted a thorough and complete hydrologic study to assess the predicted impacts of pollutant releases on downstream drinking water aquifers. An integrated hydrologic/hydraulic flow and fate/transport model should be used to assess the short- (hours to days) and long-term (months) nature and extent of pollutant release(s) at the Hermosa Property, as the surface and subsurface hydrologic system along Harshaw and Sonoita Creeks are strongly coupled. A much more rigorous hydrologic evaluation is needed, and a protection plan commensurate with those results must be developed.
6. Compliance monitoring requirements should be consistent with AWQS and federal SDWA standards where they are stricter. Radionuclide monitoring should be required at all POCs, including Outfalls 1 and 2.

Bibliography

- ADEQ. (2021). *DRAFT PERMIT - State of Arizona AQUIFER PROTECTION PERMIT NO. P-512235, Significant Amendment, PLACE ID 18640, LTF 83040*. Phoenix, AZ.
- ADEQ. (2021a). *Authorization to Discharge Under the Arizona Pollutant Discharge Elimination System, DRAFT PERMIT No. AZ0026387, Place ID No. 18640 for AMI January Mine Hermosa Project*. Phoenix, AZ: AZ Dept. Enviro. Quality, Inventory No. 512453, LTF No. 85604.
- AZ Minerals, Inc. (2020). *Aquifer Protection Permit Significant Amendment Application P-512235, Hermosa Project- Trench Camp Property*. Santa Cruz Co.: prep. by Clear Creek Assoc., Tucson, AZ.
- Brown, K., Harris, R., Russell, H., Sternberg, B., Wang, Z., & Xavier, D. (2020, August). Geophysical Surveys in the Harshaw Creek Area, Patagoia Mountains, Arizona. *Geophysics Field Camp 2020*. Tucson: Laboratory for Advanced Subsurface Imaging, LASI-20-1, Univ. of Arizona.
- Gu, A. (2005). *Stable Isotope Geochemistry of Sulfate in Groundwater of Southeast Arizona: Implications of Groundwater Flow, Sulfate sources and Environmental Significance*. Tucson, AZ: Univ. of Arizona PhD Dissert.
- Lacher, L., & Prucha, R. (2020). *Hydrologic Evaluation of Proposed Hermosa Mine Water Treatment Plant (WTP2) Discharge*. Patagonia, AZ: Presentation to Patagonia Area Resource Alliance.
- Phelps Dodge - Copper Queen Branch, Mitigation Order on Consent (ADEQ ID No. 100531, Docket P-121-07 November 19, 2007).
- Phelps Dodge - Sierrita Mine, Mitigation Order on Consent (ADEQ ID 101679, Docket P 50-06 June 15, 2006).
- South32. (2020). *Continued Exploration and Permitting*. Patagonia, AZ: Presentation to the Santa Cruz County Board of Supervisors and the Town of Patagonia.
- US EPA. (2021, May 26). *Secondary Drinking Water Standards: Guidance for Nuisance Chemicals*. Retrieved from <https://www.epa.gov/sdwa/secondary-drinking-water-standards-guidance-nuisance-chemicals>

EXHIBIT B

1 **MUNGER, CHADWICK & DENKER, P.L.C.**
National Bank Plaza
2 333 North Wilmot Road, Suite 300
Tucson, Arizona 85711
3 Telephone: (520) 721-1900
Facsimile: (520) 747-1550
4 Attorneys@MungerChadwick.com

5 Adriane J. Hofmeyr
Arizona State Bar No. 025100
6 AJHofmeyr@mcdplc.com

7 Robert Metli
Arizona State Bar No. 018509
8 RJMetli@mcdplc.com

9 Andrew H. Barbour
Arizona State Bar No. 030821
10 Ahbarbour@mcdplc.com

11 *Attorneys for Patagonia Area Resource Alliance*

12 **IN THE SUPERIOR COURT OF THE STATE OF ARIZONA**
13 **IN AND FOR THE COUNTY OF MARICOPA**

14 PATAGONIA AREA RESOURCE
15 ALLIANCE,

16 Appellants,

17 v.

18 ARIZONA DEPARTMENT OF
ENVIRONMENTAL QUALITY,

19 Appellee.

Case No. LC2022-000259-001 DT

**DECLARATION OF JEFFREY
BUCHANAN**

Assigned to: Hon. Daniel J. Kiley

20 I, JEFFREY BUCHANAN, pursuant to Arizona Rule of Civil Procedure 80(c),
21 declare, under penalty of perjury, that the following is true and correct:

- 22 1. I am over the age of eighteen years and am a resident of Santa Cruz County,
23 Arizona.
- 24 2. I make this declaration from my own personal knowledge.
- 25 3. Together with my wife, Laura Buchanan, I own property located at 59
26 Harshaw Road, Patagonia, Arizona, also known as Santa Cruz County Assessor's Parcel
27 Number 106-39-002 (the "Property")
- 28 4. According to aquifer protection permit #512235 granted to Arizona Mining,

1 Inc. (“AMI”), ADEQ indicates a “conceptual point of compliance” at 31°32'02.4"N
2 110°43'29.3"W. These coordinates fall within the boundary lines of the Property.

3 5. Our Property comprises an historic adobe homestead surrounded by 17 lush
4 acres of dense pristine mature trees at the base of dramatic rock outcroppings as shown in
5 the following picture:



22 6. We do not wish to have AMI construct any infrastructure, including, but not
23 limited to a well, on the Property.

24 7. Any such construction on our Property will negatively impact our use and
25 enjoyment of our Property, and will devalue the Property.

26 8. We will not consent to any request by AMI to use our Property for any
27 purpose.
28

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

I declare under penalty of perjury that the foregoing is true and correct.

Dated this 17TH day of September, 2022.

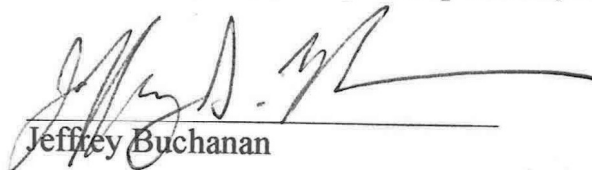

Jeffrey Buchanan

EXHIBIT C

1 **MUNGER, CHADWICK & DENKER, P.L.C.**

2 National Bank Plaza
3 333 North Wilmot Road, Suite 300
4 Tucson, Arizona 85711
5 Telephone: (520) 721-1900
6 Facsimile: (520) 747-1550
7 attorneys@mungerchadwick.com

8 Adriane J. Hofmeyr
9 Arizona State Bar No. 025100
10 ajhofmeyr@mcdplc.com

11 Robert Metli
12 Arizona State Bar No. 018509
13 rjmetli@mcdplc.com

14 Andrew H. Barbour
15 Arizona State Bar No. 030821
16 ahbarbour@mcdplc.com

17 *Attorneys for Patagonia Area Resource Alliance*

18 **IN THE SUPERIOR COURT OF THE STATE OF ARIZONA**
19 **IN AND FOR THE COUNTY OF MARICOPA**

20 PATAGONIA AREA RESOURCE
21 ALLIANCE,

22 Appellant,

23 v.

24 ARIZONA DEPARTMENT OF
25 ENVIRONMENTAL QUALITY,

26 Appellee.

Case No. LC2022-000259-001 DT

OPENING BRIEF

(Oral Argument Requested)

Assigned to: Hon. Daniel J. Kiley

27 Pursuant to A.R.S. § 12-910, and Rule 6, *Arizona Rules of Procedure for Judicial*
28 *Review of Administrative Decisions*, Appellant Patagonia Area Resource Alliance
29 (“PARA”) hereby respectfully requests that the Court remand an aquifer protection permit
30 granted by the Arizona Department of Environmental Quality (“ADEQ”) to Arizona
31 Minerals Inc. (“AMI”), with instructions to modify the permit to require the installation of
32 at least one point of compliance (a monitoring well) in the Harshaw Creek, to require that
33 AMI demonstrate that piping that will transport untreated tailings across the mining
34 property complies with A.R.S. § 49-243(B)(1), and to rule that as a matter of law ADEQ
35 has authority to include narrative aquifer water quality standards in the Permit.

TABLE OF CONTENTS

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

I.	INTRODUCTION	6
II.	STATEMENT OF THE CASE	7
III.	STATEMENT OF THE FACTS	8
	A. Old, heavily-polluted mining properties close to Patagonia are bought by an Australian mining operation	8
	B. The Hermosa Project has four named “discharging facilities,” all of which will discharge into the Harshaw Creek aquifer.....	9
	C. The water at issue is indisputably contaminated and hazardous	11
	D. WTP2 will use nonconventional, untested technology	12
	E. AMI’s discharging facilities threaten the Harshaw Creek aquifer and the Sonoita Creek aquifer, in which there will be no monitoring wells	15
	F. The Permit requires no groundwater monitoring in the Harshaw Creek aquifer.....	16
IV.	STATEMENT OF THE ISSUES	18
V.	LEGAL STANDARDS.....	18
	A. Standard for judicial review of administrative actions.....	18
	B. Standards for statutory interpretation	19
VI.	A.R.S. § 49-244 REQUIRES A POINT OF COMPLIANCE EXTENDING INTO THE AQUIFER BENEATH THE DISCHARGING FACILITIES.....	20
	A. AMI was obliged to obtain an aquifer protection permit from ADEQ	20
	B. A.R.S. § 49-244 mandates aquifer monitoring by means of a well that extends into the aquifer underlying the facility	21
	C. ADEQ’s interpretation of A.R.S. § 49-244 is unreasonable.....	24
	D. The TSF, UCP, WTP1 and the piping infrastructure that will connect them to WTP2 are independent sources of discharge.....	31
	E. AMI’s voluntary monitoring does not comply with A.R.S. § 49-244	32
	F. Conclusion: failure to require a monitoring well on AMI’s property immediately downgradient of Outfall 2 extending into the Harshaw Creek aquifer was unlawful.	34
VII.	ADEQ MUST EXERCISE ITS DISCRETION AND REQUIRE TWO ADDITIONAL POCS AND MORE FREQUENT MONITORING	35
VIII.	AMI FAILED TO DEMONSTRATE THAT PIPING CARRYING UNTREATED WATER ACROSS THE PROPERTY MEETS BADCT	39

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

IX. ADEQ HAS AUTHORITY TO IMPOSE NARRATIVE AQUIFER WATER QUALITY STANDARDS IN THE PERMIT 41

X. CONCLUSION 43

TABLE OF AUTHORITIES

CASES

Gutierrez v. Industrial Comm. of Arizona, 226 Ariz. 395, ¶6 (2011) 19
Ins. Co. of N. Am. V. Superior Court, 166 Ariz. 82, 85 (1990)..... 19
Joshua J. v. Ariz. Dep't of Econ. Sec., 230 Ariz. 417, 421 (App. 2012)..... 22
Parker v. City of Tucson, 233 Ariz. 422, 428 (App. 2013) 19
Sharpe v. AHCCC, 220 Ariz. 488, ¶19 (App. 2009) 20
Stambaugh v. Killian, 242 Ariz. 508, 512 (2017) 19
State v. McFall, 103 Ariz. 234, 238 (1968)..... 19
State v. Sanner 19
Town of Florence v. Ariz. Dep't of Env'tl. Quality, 2020 Ariz. App. Unpub.
LEXIS 493 (No. 1 CA-CV 19-0122)..... 23

STATUTES

A.R.S. § 12-348(A)(2)..... 44
A.R.S. § 12-348(I)(1) 44
A.R.S. § 12-901 44
A.R.S. § 12-910 1
A.R.S. § 12-910(F) 18, 19
A.R.S. § 41-1092.12(C)..... 44
A.R.S. § 49-201(12) 20
A.R.S. § 49-201(19)..... 9
A.R.S. § 49-201(21)(f) 12
A.R.S. § 49-201(35) 12
A.R.S. § 49-201(51) 22
A.R.S. § 49-221(A)(1)..... 42
A.R.S. § 49-225(A)..... 43
A.R.S. § 49-241(A)..... 20
A.R.S. § 49-243(B)..... 39
A.R.S. § 49-243(B)(1) 6, 18, 39
A.R.S. § 49-243(B)(1)-(2)..... 20
A.R.S. § 49-243(B)(2) passim
A.R.S. § 49-244 passim
A.R.S. § 49-255.01(G)..... 31
A.R.S. 49-201(29) 42
Clean Water Act 30

OTHER AUTHORITIES

ADEQ's Substantive Policy Statement 3010.000 42

RULES

1 Rule 201(b)(2), *Arizona Rules of Evidence* 37, 40, 42
2 Rule 6, *Arizona Rules of Procedure for Judicial Review of Administrative*
3 *Decisions* 1

REGULATIONS

4 40 C.F.R. §264.95 23
5 40 C.F.R. §264.97(a) 23
6 A.A.C § R18-11-405 43
7 A.A.C § R18-9-A206(A)(2)(1) and (2) 35
8 A.A.C. R18-11-401 to R18-11-408 42
9 A.A.C. R18-11-405 7, 18, 20, 42
10 A.A.C. R18-11-405(C) 21, 41
11 A.A.C. R18-11-406 42
12 A.A.C. R18-9-A202 39
13 A.A.C. R18-9-A202(A)(5) 39
14 A.A.C. R18-9-A206(2)(b) 37
15 A.A.C. R18-9-A206(A) 33

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

1 **I. INTRODUCTION**

2 AMI plans to mine for zinc, lead, silver, and manganese on the southern slopes of
3 Patagonia Mountain in Santa Cruz County, Arizona. As part of AMI’s exploration phase,
4 ADEQ granted AMI a significant amendment to an aquifer protection permit (“Permit” or
5 “APP”) allowing AMI, *inter alia*, to double the size of its existing tailings pile, and to
6 pipe untreated tailings seepage over half a mile across the mining property into a
7 treatment facility prior to discharge into the Harshaw Creek aquifer. The Permit also
8 permits AMI to discharge over six and a half million gallons of treated mine water daily
9 into the Harshaw Creek aquifer. The Harshaw Creek aquifer flows into the Sonoita Creek
10 aquifer. Both aquifers are the sole source of drinking water for residents along Harshaw
11 Creek and the town of Patagonia. Nonetheless, ADEQ required *no monitoring in the*
12 *Harshaw Creek* to ensure that it remains uncontaminated, in violation of A.R.S. § 49-244.
13 ADEQ also granted permission to pipe the untreated tailings seepage across the property
14 without requiring AMI to demonstrate that the piping infrastructure met the requirements
15 of A.R.S. § 49-243(B)(1). ADEQ also wrongly claimed that it had no authority to impose
16 narrative aquifer water quality standards in the Permit.

17 The Permit as granted is arbitrary, capricious, and contrary to law because:

18 (1) A.R.S. § 49-244 requires that the director “shall” designate a “point or
19 points of compliance for each facility,” which “shall be a “vertical plane ... that extends
20 through the uppermost aquifers underlying that facility.” ADEQ failed to require that
21 AMI install a single point of compliance extending into the Harshaw Creek aquifer
22 underlying the discharging facilities.

23 (2) A.R.S. § 49-243(B)(1) requires that an applicant must “demonstrate” that all
24 discharging facilities will be constructed to ensure “the greatest degree of discharge
25 reduction achievable” through application of the “best available demonstrated control
26 technology” available (abbreviated as “BADCT”). ADEQ issued the Permit without any
27 information at all regarding how AMI proposes to transport untreated tailings seepage
28 across the property.

1 (3) ADEQ's claim that it has no legal authority to impose narrative aquifer
2 water quality standards contradicts A.R.S. § 49-243(B)(2), A.A.C. R18-11-405, ADEQ's
3 own policy documents, and the very purpose of the Aquifer Protect Permit program.

4 The Court is requested to remand the permit to ADEQ and instruct ADEQ to
5 modify the Permit to (1) require the installation of a monitoring well on AMI's property in
6 the Harshaw Creek aquifer immediately downgradient of AMI's discharging facilities,
7 and (2) require that AMI demonstrate BADCT for the piping that will transport untreated
8 tailings seepage across the property to the Harshaw Creek aquifer. The Court is also
9 requested to remand the Permit to ADEQ and instruct ADEQ to exercise its discretion to
10 require two additional monitoring wells, to require frequent monitoring of the wells, and
11 to impose narrative aquifer water quality standards in the Permit.

12 **II. STATEMENT OF THE CASE**

13 On August 14, 2020, AMI filed with ADEQ an application for a significant
14 amendment to its aquifer protection permit that was issued in 2018. *See*, Certification of
15 Record on Review filed by the Office of Administrative Hearings on October 3, 2022
16 ("ROA"), #83.¹

17 On August 4, 2021, ADEQ granted AMI's application and issued the Permit at
18 issue. ROA #145. The Permit authorizes, *inter alia*, a 6,652,000 gallons per day
19 "discharge from a new water treatment plant (WTP2) with a proposed discharge to a
20 channel that will convey the discharge to Harshaw Creek (Outfall 002)." ROA #145, pp.
21 ADEQ00741, 751. The Permit also authorizes AMI to more than double the size of an
22 existing tailings storage facility ("TSF") to over 2,600,000 cubic yards of contaminated
23 drilling and excavation materials. ROA #145, pp. ADEQ00741, 756, 760, ¶¶2.1 and 2.3.1.
24 The Permit then authorizes AMI to "pipe" untreated tailings seepage from the TSF's
25 "underground collection system" across the site to WTP2, and then to discharge it into the
26 Harshaw Creek aquifer. ROA #145, p. ADEQ00755.

27
28 ¹ AMI's 2018 aquifer protection permit (referred to hereafter as the "original permit")
allowed for discharges only into a different aquifer, the Alum Gulch aquifer. ROA #121.

1 On September 9, 2021, PARA filed a timely notice of appeal to the Water Quality
2 Appeals Board (“WQAB”). ROA #202.

3 Between January 10 and January 21, 2022, an administrative hearing (“Hearing”)
4 was held at the Office of Administrative Hearings (“OAH”) before Administrative Law
5 Judge Thomas Shedden (“ALJ”). ROA #217-225.

6 On June 21, 2022, the ALJ issued a decision upholding ADEQ’s granting of the
7 Permit to AMI. ROA #215 (“ALJ Decision”).

8 On July 8, 2022, WQAB adopted the ALJ’s findings of fact and conclusions of law
9 in their entirety (“Final Order”). ROA #216. This is the action appealed herein.

10 **III. STATEMENT OF THE FACTS**

11 A. Old, heavily-polluted mining properties close to Patagonia are bought by an
12 Australian mining operation

13 AMI is wholly owned by South32 Limited, a “globally diversified metals and
14 mining company based in Australia.” ALJ Decision, ¶14; ROA #27, ¶3.

15 In 2016, AMI acquired historic “land and mine claims” situated in the Patagonia
16 Mountains, five miles south (and upstream) of the town of Patagonia in Santa Cruz
17 County, Arizona. ROA #27, ¶4-5. The property contains significant remnants of historic
18 mining, including mine shafts and tailings piles with acid generating waste rock. ROA
19 #145, p. ADEQ00755; ROA #118, p. ADEQ00085; ROA #119, p. ADEQ00135. AMI’s
20 “mineral exploration project” on this land is referred to as “the Hermosa Project.” ROA
21 #27, ¶4; ROA #145, p. ADEQ00739.

22 The Hermosa Project is “one of the largest undeveloped zinc-lead resources in the
23 world, and the largest in America.” ROA #163, p. AMI01956.

24 AMI plans to mine the Hermosa Project for zinc, lead, silver, and manganese.
25 ROA #163, p. AMI01954.

26 As part of its exploration phase, AMI plans to more than double the size of the
27 original TSF (from 1,230,500 cubic yards to over 2,630,500 cubic yards). ROA #145, p.
28 ADEQ00741, 756, 760, ¶¶2.1 and 2.3.1. The “additional material” to be added to TSF

1 includes “exploration decline or shaft development rock,” “filter cake from WTP1 ... and
2 WTP2,” “core cutting solids,” “drill cuttings,” and “construction potentially acid
3 generating [“PAG”] rock.” ROA #145, p. ADEQ00740-1. “All water that enters the
4 TSF/UDCP is considered contact water [water that comes into contact with tailings or
5 other potentially contaminated workings] which requires treatment before it can be
6 released.” ROA #83, pp. AMI01014, 1016. AMI plans to “pipe” this water across the
7 property to WTP2, to be discharged into the Harshaw Creek aquifer. ROA #145, p.
8 ADEQ00755 (“the captured tailings seepage water, precipitation that falls within the UCP
9 and water from the January Adit (the January and Norton Mine Claims) will be piped to
10 WTP 1 and/or WTP2 for treatment and discharge to Alum Gulch and/or Harshaw Creek”).

11 Also as part of its exploration phase, AMI “plans to pump groundwater to
12 depressurize fractured bedrock.” ALJ Decision, pp. 1-2. After “dewatering of the
13 groundwater in which the ore body is submerged,” “relocation of the water” is required.
14 ROA #62, ¶12. AMI plans to discharge this water, after treatment, into the Harshaw
15 Creek aquifer. ROA #145, p. ADEQ00760.

16 B. The Hermosa Project has four named “discharging facilities,” all of which will
17 discharge into the Harshaw Creek aquifer

18 The Permit names four separate “discharging facilities”² that are being licensed
19 (ROA #145, p. ADEQ00756; ROA #83, p. AMI00123):

20 (1) “Lined Tailings Storage Facility” (the “TSF”). A smaller TSF was developed
21 to remediate historic mine tailings under the original permit. ROA #83, p. AMI00081, p.
22 AMI00100. The amended Permit now authorizes AMI to double the size of the original
23 TSF. ROA #145, p. ADEQ00741, 756, 760. The TSF is “constructed on a lined facility
24 with an underdrain collection system ... that allows seepage and runoff from the tailings
25 to be collected through a series of pipes that report to the underdrain collection pond.”
26 ROA #217, p. 161:2-10. “The collected water then reports to water treatment plant 1, or

27 _____
28 ² A “facility” is defined as “any land, building, installation, structure, equipment, device,
conveyance, area, source, activity or practice from which there is, or with reasonable
probability may be, a discharge.” A.R.S. § 49-201(19).

1 WTP1” (per the original permit). ROA #217, p. 161:22-23. The amended Permit now
2 authorizes AMI to pipe the TSF’s seepage runoff across the property to be treated at
3 WTP2 and then discharged into the Harshaw Creek aquifer. Id.

4 (2) “Underdrain Collection Pond” (the “UCP”). The UCP was licensed under the
5 original permit and is already constructed. ROA #83, p. AMI00081, p. AMI00100. The
6 UCP collects contaminated seepage “from beneath the tailings and above the liner.” ROA
7 #217, p. 161:20. The UCP is downgradient of the TSF in the Alum Gulch watershed and
8 captures “tailings seepage water, precipitation that falls within the UCP and water from
9 the January Adit.” ROA #145, p. ADEQ00755. Under the original permit, the UCP is
10 authorized to discharge into the Alum Gulch aquifer through water treatment plant 1
11 (“WTP1”). *Id.* The amended Permit now authorizes AMI to pipe the UCP’s untreated
12 mine impacted water across the property to be treated at WTP2 and then discharged into
13 the Harshaw Creek aquifer. Id.

14 (3) “AZPDES Outfall 001” (“Outfall 1”). WTP1 was constructed under the
15 original permit and discharges through Outfall 1 into the Alum Gulch aquifer. ROA #83,
16 p. AMI00081, p. AMI00100. WTP1 was built to treat mine impacted water and seepage
17 from the UCP before discharging into the Alum Gulch aquifer. The amended Permit now
18 authorizes AMI to pipe WTP1’s water across the property to WTP2 and then discharge
19 into the Harshaw Creek aquifer. *Id.*

20 (4) “AZPDES Outfall 002” (“Outfall 2”). Outfall 2 is nothing more than a concrete
21 basin (“an energy dissipater”) at the end of a pipe to catch and absorb the force of effluent
22 to be treated and discharged into the Harshaw Creek aquifer from the soon-to-be
23 constructed WTP2. WTP2 is authorized to discharge 6,652,000 gallons a day into the
24 Harshaw Creek aquifer. ROA #83, pp. AMI00103, 205-219; ROA #145, p. ADEQ00751.

25 Under the Permit, the only waters authorized to be discharged into the Harshaw
26 Creek aquifer are waters that are processed through WTP2, including water from
27 mineshafts, tailings seepage from the TSF and the UCP, and water from WTP1. ROA
28 #83, p. AMI00125.

1 The newly permitted discharges through WTP2 into the Harshaw Creek aquifer
2 (4,500 gallons per minute, or gpm) are *37.5 times* greater than the maximum volume
3 discharge permitted through WTP1 (at Outfall 1) into the Alum Gulch aquifer (120 gpm).
4 ROA #145, p. ADEQ00759-760.

5 The three existing facilities (the existing TSF, the UCP, and Outfall 1) all drain and
6 discharge into the Alum Gulch aquifer. In accordance with A.R.S. § 49-244, the original
7 permit required that AMI install a monitoring well extending into the Alum Gulch aquifer
8 just below Outfall 1. ROA #121. This monitoring well below Outfall 2 is known as
9 “POC-2.”³

10 The new Outfall 2, which will receive treated mine impacted water from the new
11 WTP2, will discharge into the Harshaw Creek aquifer, and eventually to the Sonoita
12 Creek aquifer downstream. Untreated TSF and UCP water, as well as treated WTP1 water,
13 will be piped across the property for processing at WTP2 and then discharged into the
14 Harshaw Creek aquifer. ROA #145, pp. ADEQ00740, 746, 755, ¶2.1; ROA #218, p.
15 28:19-25; ROA #83, p. AMI00125. Inexplicably, and in violation of A.R.S. § 49-244, the
16 Permit does *not require that even a single monitoring well be installed extending into the*
17 *Harshaw Creek aquifer beneath the discharging facilities.*

18 C. The water at issue is indisputably contaminated and hazardous

19 There is no dispute that the water at issue here is contaminated. The “mine
20 drainage water,” “tailings seepage,” “core cutting water,” and “drilling water” emanating
21 from the site contains a “cocktail of metals and constituents.” ROA #219, p. 16:9-10.
22 According to AMI, the “key constituents” of this “cocktail of metals” include arsenic,
23 lead, beryllium, chromium, copper, mercury, nickel, selenium, silver, and zinc. ROA #83,
24 p. AMI00135. ADEQ describes the contaminated water as “laden in heavy metals.”
25 ROA #222, p. 26:4. These metals are defined as “hazardous substances” under A.R.S. §
26 49-201(21)(a), the defining characteristic of which is that they represent “*an imminent and*

27 ³ “POC” is an acronym for “point of compliance,” the term used in A.R.S. § 49-244 (see
28 below). For ease of reference, an aerial photograph showing the discharging facilities
(ROA #83, p. AMI00123) is attached hereto marked **Exhibit A**.

1 substantial endangerment to public health.” A.R.S. § 49-201(21)(f). It is undisputed that
2 the contaminated water from the Hermosa Project has concentrations of lead and arsenic
3 that exceed water quality standards. ALJ Decision, ¶101; ROA #222, p. 29:18-21.

4 Water collected in the UCP includes “water that is leached from historic mine
5 tailings.” ROA #218, p. 29:6-9. “Water in the UCP contains constituents that need to be
6 treated. You know, metals primarily. It can have low ph.”⁴ ROA #218, p. 29: 25, p. 30:1.

7 That the contaminated water to be captured at the Hermosa Project mine site
8 contains “pollutants”⁵ is not in dispute.

9 That pollutants will be “discharged” is also not in dispute and is the very reason
10 AMI was required to apply for the Permit in the first place. Definitionally, a “discharge”
11 means that there is a “*reasonable probability that the pollutant will reach an aquifer.*”
12 A.R.S. § 49-201(12).

13 That the contaminated water from the Hermosa Project is hazardous and poses an
14 “imminent and substantial endangerment to public health”⁶ is also not in dispute.

15 D. WTP2 will use nonconventional, untested technology

16 AMI plans to construct WTP2, which it asserts will remove contaminants from the
17 water so that the discharge into the Harshaw Creek aquifer will meet aquifer water quality
18 standards (“AWQS”). ROA #145, p. ADEQ00741; ALJ Decision, ¶¶24-25.

19 WTP2 has been authorized by ADEQ to discharge up to 4,500 gallons per minute
20 (6.65 million gallons per day) “of treated mine drainage water, tailings seepage,
21
22

23 ⁴ Lower pH levels, *inter alia*, increase mobility of metals in the water. See ROA #224, p.
24 164:7-12.

25 ⁵ “Pollutant” is defined as “fluids, contaminants, toxic wastes, toxic pollutants, dredged
26 spoil, solid waste, substances and chemicals, pesticides, herbicides, fertilizers and other
27 agricultural chemicals, incinerator residue, sewage, garbage, sewage sludge, munitions,
28 petroleum products, chemical wastes, biological materials, radioactive materials, heat,
wrecked or discarded equipment, rock, sand, cellar dirt and mining, industrial, municipal
and agricultural wastes or any other liquid, solid, gaseous or hazardous substances.”

A.R.S. § 49-201(35).

⁶ A.R.S. § 49-201(21)(f)

1 groundwater, core cutting water, drilling water, and stormwater from WTP2 to Harshaw
2 Creek.” ROA #82, ¶12; ALJ Decision, ¶4; ROA #145, p. ADEQ00741.

3 WTP2 will be “a very, very large water treatment plant,” comparable in size to
4 some of the largest mine water treatment plans in the United States and the entire world.
5 ROA #223, p. 206:12-13. WTP2 will be substantially larger than the water treatment
6 plant of the largest zinc-producing mine in the world. ROA #223, p. 207:24-25, 208:1-3.

7 According to the chief executive officer of the company that designed WTP2 for
8 AMI, the process “is unique in the industry and very different from – from those applied
9 elsewhere.” ROA #219, p. 22:6-8. WTP2’s designer promotes itself as having
10 “successfully commercialized three new mine water treatment technologies.” ROA #87,
11 p. AMI01261. WTP2’s proposed technology “is not the conventional process for
12 removing lead or zinc from mine water. This is the process that is used by BQE [WTP2’s
13 designer] because this is the technology that they sell.” ROA #223, p. 233:14-23.

14 Not only is the technology nonconventional, but it has also only ever been used
15 (and only recently) at *two other locations*, neither of which is comparable to the Hermosa
16 Project. ROA #219, p. 35:8, p. 152:10-17. Only *one* of the two locations --the “Kemess
17 Mine,” a “remote mine site – fly in/fly out mine” in Canada -- used the technology to treat
18 “newly generated water to standards.” ROA #219, p. 28:24-25, p. 35:1-3. But the process
19 at the Kemess Mine operated for *only three months*, has already ceased operating and,
20 when it did briefly operate, *processed a maximum of only 1,030 gallons per minute*. ROA
21 #219, p. 149:2-8, p. 154:10-20. In sharp contrast, WTP2 is planned to process *4,500*
22 *gallons per minute*. This is the one and only example of the alleged success and reliability
23 of AMI’s nonconventional technology that it plans to implement before discharging six
24 and half million gallons of mine water into the Harshaw Creek aquifer daily – water that
25 has the potential to carry dangerous pollutants into downstream drinking water aquifers if
26 AMI’s experiment at WTP2 fails.

27 AMI’s own witness admitted that WTP2 would be the “*largest water volume*” that
28 AMI’s vendor has ever designed for. ROA #219, p. 155:19-22.

1 The only other site that employs this technology does not use it to treat “newly
2 generated water” (as the Hermosa Project would); it uses it “for remediation of existing
3 waste ponds,” and has only been doing so since December 2021. ROA #219, p. 34:22-25,
4 p. 152:17-23. In other words, at the time ADEQ granted the Permit (August 2021), this
5 other site using WTP2’s technology was not even in operation, and, by the time of the
6 OAH hearing (January 2022), it had less than a month’s track record. Moreover, the
7 volume of water it treats is 1,600 gallons a minute (as opposed to the 4,500 gallons a
8 minute the Hermosa Project plans to discharge). ROA #219, p. 155:14-18.

9 Moreover, although the designer/vendor of the technology to be used in WTP2
10 “relied on the experience and demonstrated performance of existing treatment plants that
11 we’ve been involved in designing and operating,” they will not release the effluent water
12 quality test results from those other sites because “that information is covered by
13 confidentiality agreements.” ROA #219, p. 140:25, 141:1-3, p. 142:19-25, p. 143:1-8. So
14 it remains unknown whether the promised technology even worked effectively at those
15 other sites.

16 In spite of the technology’s unproven ability to remediate anywhere near the
17 volumes to be discharged into Harshaw Creek, and in spite of the fact that WTP2 would
18 be processing 4,500 gallons a minute, the test for WTP2 that was presented to ADEQ was
19 performed at an astonishing “one gallon per minute.” ROA #219, p. 163:2-15. In other
20 words, the ADEQ authorized the Permit based on experimental technology operating at
21 1/4,500th the expected actual capacity.

22 Moreover, neither of the two ADEQ employees who recommended acceptance of
23 WTP2 had any expertise in the functionality of water treatment plants (set out in detail
24 below).

25 Ignoring the flimsy-to-nonexistent track record of the technology that AMI plans to
26 use, and despite ADEQ’s failure to independently assess (or even understand) the
27 technology of the machine that is intended to prevent hazardous substances from entering
28 the aquifers beneath Harshaw Creek and Patagonia, the ALJ approved ADEQ’s refusal to

1 require *any groundwater monitoring devices* in the Harshaw Creek aquifer as required by
2 A.R.S. § 49-244.

3 E. AMI's discharging facilities threaten the Harshaw Creek aquifer and the
4 Sonoita Creek aquifer, in which there will be no monitoring wells

5 It is not disputed that, below WTP2, "there are two distinguishable aquifers ... the
6 Harshaw Creek alluvial aquifer and the second that might be known as the Sonoita Creek
7 alluvial aquifer" that need to be protected here. ROA #224, p. 160:20-25.

8 ADEQ agrees that its duty under the aquifer protection permit program is to
9 "protect for [sic] the shallow groundwater aquifer near the regulated discharge. So in this
10 case, it would be ... a shallow aquifer system along Harshaw Creek" as well as "part of the
11 basin fill alluvium surrounding Sonoita Creek." ROA #223, p. 18:15-25. ADEQ agrees
12 that the two aquifers are "interrelated." ROA #223, p. 19:1. ADEQ agrees that "the
13 alluvial system in Harshaw Creek, eventually that water is going to enter the basin-filled
14 alluvium that surrounds Sonoita Creek." ROA #223, p. 19:1-4.

15 ADEQ agrees that the aquifer of Harshaw Creek joins the aquifer of Sonoita Creek
16 "where the edge of the PMA [pollutant management area] was delineated. That's
17 probably where you're going to start seeing the inflow from Harshaw Creek into the
18 basin-filled deposits there." ROA #223, p. 27:9-12.

19 There is no dispute that "there are drinking water wells in the lower Harshaw Creek
20 ... There are some wells that are used for livestock purposes, and some that are used for
21 irrigation purpose. And many of the wells have very shallow groundwater. So the depths
22 to groundwater is less than 10 feet. I shouldn't say 'many,' but the ones we could find,
23 several of them had very shallow depths to groundwater. The wells tend to cluster around
24 Harshaw Creek ... because the creek's alluvial aquifer provides water that's easy to
25 access at a shallow depth." ROA #224, p. 113:21-25, p. 114:1-12.

26 There is no dispute that "the Sonoita Creek aquifer is the drinking water aquifer for
27 the Town of Patagonia." ROA #224, p. 161:15-16. Residential homes, businesses,
28 schools, and all other residents located along the banks of Harshaw Creek and in the town

1 of Patagonia are entirely reliant on wells for drinking water, livestock, irrigation, and
2 other municipal purposes. ROA #211, slide 15; ALJ Decision, ¶131. The town of
3 Patagonia is 100% dependent on wells. ROA #221, p. 145:4-6.

4 There is no dispute that the TSF straddles both watersheds – the Alum Gulch
5 watershed and the Harshaw Creek watershed. ROA #218, p. 114:16-17, p. 121:16-19,
6 ROA #223, p. 101:19-20, ROA #211, p. 1. There is also no dispute that the TSF “is a
7 possible or potential source of discharge of contaminants into the environment.” ROA
8 #223, p. 96:14-16. If contaminants discharge from the TSF for any reason (see below),
9 such discharge impacts both the Alum Gulch aquifer and the Harshaw Creek aquifer
10 (which connects to the Sonoita Creek aquifer). ROA #223, p. 162:6-10 (Q: “where does
11 that discharge go if it seeps underneath the liner?” A: “It could go to either Alum Gulch or
12 Harshaw Creek”).

13 There is no dispute that AMI intends to convey untreated mine water from the TSF
14 and the UCP across the property above the Harshaw Creek aquifer on its way to WTP2.
15 ROA #145, p. ADEQ00755.

16 F. The Permit requires no groundwater monitoring in the Harshaw Creek aquifer

17 Although A.R.S. § 49-244 mandates groundwater monitoring in the underlying
18 aquifer (set out in detail below), the Permit expressly states that no groundwater
19 monitoring is required for discharges into the Harshaw Creek aquifer. ROA #145, p.
20 ADEQ00761 (“Groundwater monitoring is required under this permit at POC-2.
21 Groundwater monitoring is not required at POC-1, POC-3, and POC-4”).⁷

22 The Permit also requires no surface water monitoring, either. ROA #145, p.
23 ADEQ00762 (“Routine surface water monitoring is not required under the terms of this
24 permit”).

25 Although the Permit has a heading “Groundwater Monitoring and Sampling
26 Protocols” and sets out steps for AMI to take if “groundwater monitoring” reveals “alert
27

28 ⁷ “POC-1,” “POC-3” and “POC-4” are not real (ADEQ calls them “conceptual”) (see below). POC-2 is in the Alum Gulch aquifer, which is in an entirely different watershed.

1 levels” in pollutants (ROA #145, p. ADEQ00761, 00766), *these provisions have nothing*
2 *to do with the Harshaw Creek aquifer.* These provisions apply only to POC-2, which is
3 the monitoring well that AMI was required to install in the Alum Gulch aquifer under the
4 original permit. Given its location in separate aquifer, POC-2 cannot monitor for a
5 migration of pollutants into the Harshaw Creek aquifer. ROA #145, p. ADEQ00761.

6 The Permit misleadingly references one POC in the Harshaw Creek aquifer – a so-
7 called “POC-4.” ROA #145, p. ADEQ00761. But it also is not in dispute that this “POC-
8 4” does not actually exist and is not required to exist. ADEQ describes POC-4 as
9 “conceptual.” ROA #145, p. ADEQ00761. “POC-4” is nothing more than a dot on the
10 map 9.4 miles away from AMI’s property, downstream of WTP2. ROA#145, p.
11 ADEQ00761; ROA #83, p. AMI00126. The ALJ acknowledged that “POC-4” does not
12 exist: “POC 4 is conceptual, meaning that no actual well or other structure from which
13 samples will be taken exists.” ALJ Decision, ¶164. Even AMI admits “POC-4” is not
14 real. *See*, ROA #219, p. 86:4-6; ROA#217, p. 228:3-4. ADEQ acknowledges that no
15 monitoring will take place at POC-4. ROA #218, p. 120:5-7 (Q: “Is there any requirement
16 for monitoring at point of compliance 4?” A: “Point of Compliance 4? No”).

17 Not only is “POC-4” not real, but it is also in a *different aquifer.* POC-4 is marked
18 *9.4 miles downstream* from the discharging facility. ROA#145, p. ADEQ00761; ROA
19 #223, p. 27:9-12; ROA #83, p. AMI00126. The Harshaw Creek aquifer joins the Sonoita
20 Creek aquifer “where the edge of the PMA was delineated.” *See*, ROA #223, p. 27:9-12.
21 In other words, right at the point that ADEQ marked “POC-4” (which is at the edge of
22 PMA) (ROA #83, p. AMI00126), the Sonoita Creek aquifer starts. Even if “POC-4” were
23 required to be installed, it cannot constitute the *only* POC required by A.R.S. § 49-244
24 because there must be at least one POC in the uppermost aquifer “underlying” the
25 discharging facilities (here, the Harshaw Creek aquifer).

26 Moreover, “POC-4” is not even on AMI’s property. The ALJ justified ADEQ’s
27 waiver of monitoring required by A.R.S. § 49-244 on the comforting (but false)
28 assumption that “[i]f future conditions warrant, ADEQ can require AMI to install an

1 actual POC, in the area of conceptual POC4.” ALJ Decision, ¶171. However, this is
2 simply not true. ADEQ could never require AMI to install a well at “conceptual POC4”
3 because the piece of land on which the “conceptual POC4” is marked in the Permit *is not*
4 *owned by AMI*. See, Exhibits A, B and C (¶¶1-4), attached to PARA’s Motion to
5 Introduce Additional Evidence filed on September 12, 2022.

6 Under the Permit’s current POC configuration, any contaminant released from any
7 discharging facility at the Hermosa Project into the Harshaw Creek aquifer (whether from
8 WTP2’s 6.48 million gallons of effluent per day, or from the TSF, UCP, or the as-yet-
9 unknown piping infrastructure) will percolate into the Harshaw Creek aquifer and
10 ultimately the Sonoita Creek aquifer, and no one would know until it is too late.

11 **IV. STATEMENT OF THE ISSUES**

- 12 1. Whether the Permit violates A.R.S. § 49-244 because ADEQ failed to
13 require a point of compliance extending into the Harshaw Creek aquifer underlying the
14 discharging facilities?
- 15 2. Whether the Permit violates A.R.S. § 49-243(B)(1) because it allows mine
16 impacted water to be piped across the Hermosa Project property without any evidence
17 that the piping infrastructure meets BADCT?
- 18 3. Whether, as a matter of law, ADEQ has the authority to impose narrative
19 aquifer water quality standards as contemplated in A.A.C. R18-11-405 in the Permit?

20 **V. LEGAL STANDARDS**

21 **A. Standard for judicial review of administrative actions**

22 Where agency action “is contrary to law, is not supported by substantial evidence,
23 is arbitrary and capricious or is an abuse of discretion,” the court may affirm, reverse,
24 modify, or vacate and remand the agency action. A.R.S. § 12-910(F).⁸

25 ⁸ The standard applied by the WQAB was similar: decisions by ADEQ’s director shall be
26 affirmed by the WQAB unless, “considering the entire record before the board, it
27 concludes that the director’s decision is arbitrary, unreasonable, unlawful or based upon a
28 technical judgment that is clearly invalid.” A.R.S. § 49-324(C). But this is not the
standard applied by the court in this appeal. “Notwithstanding any other law, this

1 The court shall decide all questions of law, including the interpretation of a
2 statutory provision or a rule adopted by an agency “without deference to any previous
3 determination that may have been made on the question by the agency.” A.R.S. § 12-
4 910(F).

5 Where “the legislature has directly and clearly spoken to the question at issue, this
6 Court owes no deference to the Department's interpretation.” *Stambaugh v. Killian*, 242
7 Ariz. 508, 512 (2017).

8 B. Standards for statutory interpretation

9 The “primary purpose in interpreting a statute is to give effect to the legislature’s
10 intent. Because the plain language of a statute is the best reflection of that intent, when
11 a statute is clear and unambiguous we need look no further than the statute’s terms to
12 determine its meaning and do not employ other principles of statutory construction. And
13 we assume that when the legislature uses different language within a statutory scheme, it
14 does so with the intent of ascribing different meanings and consequences to
15 that language.” *Parker v. City of Tucson*, 233 Ariz. 422, 428 (App. 2013).

16 “The use of the word “shall” indicates a mandatory intent by the legislature.”
17 *Ins. Co. of N. Am. V. Superior Court*, 166 Ariz. 82, 85 (1990).

18 Preference must be given to the interpretation “that gives a statute a fair and
19 sensible meaning.” *Gutierrez v. Industrial Comm. of Arizona*, 226 Ariz. 395, ¶6 (2011).

20 “Courts will not place an absurd and unreasonable construction on statutes.” *State*
21 *v. McFall*, 103 Ariz. 234, 238 (1968).

22 “Where the evil sought to be prevented is apparent, a reasonable construction of the
23 language employed is justified, and uncertainty can frequently be removed by resort to the
24 context, instead of attempting to construe the words by themselves.” *State v. Sanner*
25 *Contracting Co.*, 109 Ariz. 522, 524-25 (1973) (internal citations omitted).

26
27
28 subsection [A.R.S. § 12-910] applies in any action for judicial review of any agency
action that is authorized by law.” A.R.S. § 12-910(F).

1 An agency may not disregard clear statutory directives and legislative intent. *See,*
2 *Sharpe v. AHCCC*, 220 Ariz. 488, ¶19 (App. 2009) (“As our supreme court has instructed,
3 it is fundamental that the respondent [administrative agency] could not enact a regulation
4 nor make an order that would conflict with the proper interpretation of the statute”) (internal citations omitted).

6 **VI. A.R.S. § 49-244 REQUIRES A POINT OF COMPLIANCE EXTENDING**
7 **INTO THE AQUIFER BENEATH THE DISCHARGING FACILITIES**

8 A. AMI was obliged to obtain an aquifer protection permit from ADEQ

9 Because AMI’s facilities will “discharge” a “pollutant” “directly to an aquifer” or
10 “in such a manner that there is a reasonable probability that the pollutant will reach an
11 aquifer,” AMI was required to obtain an aquifer protection permit from ADEQ. A.R.S. §
12 49-241(A) and A.R.S. § 49-201(12). This is not in dispute.

13 “Discharge” means “For purposes of the aquifer protection permit program
14 prescribed by article 3 of this chapter, discharge means the addition of a pollutant from a
15 facility either directly to an aquifer or to the land surface or the vadose zone in such a
16 manner that there is a reasonable probability that the pollutant will reach an aquifer.”
17 A.R.S. § 49-201(12).

18 To qualify for a permit, AMI must “demonstrate” both that:

19 (1) each discharging facility (here, WTP2/Outfall 2, the enlarged TSF, as well as
20 the new infrastructure that will connect WTP2 to the TSF, UCP and WTP1) “will be so
21 designed ... as to ensure the greatest degree of discharge reduction achievable through the
22 best available demonstrated control technology” [this is referred to as “BADCT”], and

23 (2) that “the pollutants discharged will *in no event* cause or contribute to a violation
24 of the aquifer water quality standards at the applicable point of compliance for the
25 facility.” A.R.S. § 49-243(B)(1)-(2) (emphasis added).

26 Aquifer water quality standards (“AWQS”) are prescribed in A.A.C. R18-11-405
27 to R18-11-408, and include that “a discharge *shall not* cause a pollutant to be present in an
28 aquifer classified for a drinking water protected use in a concentration which endangers

1 human health,” and that “a discharge *shall not* cause a pollutant to be present in an aquifer
2 which impairs existing or reasonably foreseeable uses of water in an aquifer.” A.A.C.
3 R18-11-405(C) (emphasis added).

4 ADEQ admits that the aquifer protection permit program is “to protect for [*sic*] the
5 shallow groundwater aquifer near the regulated discharge,” that the aquifer protection
6 “unit is essentially issuing permits to prevent pollution reaching the groundwater,” and
7 that “the Aquifer Protection program ... ensures that groundwater is protected as drinking
8 water.” ROA #223, p. 18:16-20; ROA #221, p. 48:7-8; ROA #222, p. 136:4-9.

9 In particular, ADEQ admits that its duty is to “protect for the shallow groundwater
10 aquifer... along Harshaw Creek” and “part of the basin fill alluvium surrounding Sonoita
11 Creek.” ROA #223, p. 18:22-24.

12 B. A.R.S. § 49-244 mandates aquifer monitoring by means of a well that
13 extends into the aquifer underlying the facility

14 Because aquifer protection permits by definition apply where hazardous substances
15 will have a reasonable probability of reaching an aquifer, A.R.S. § 49-244 mandates that
16 ADEQ monitor the impacted aquifer(s) in a very particular way:

17 The director *shall* designate a point or points of compliance for
18 each facility receiving a permit under this article. The point
19 of compliance *shall* be a vertical plane downgradient of the
20 facility that extends through the uppermost aquifers underlying
21 that facility. For an aquifer that has no existing or reasonably
22 foreseeable drinking water beneficial use, the director *may*
23 establish monitoring for compliance in another aquifer in lieu
24 of monitoring in the uppermost aquifer. The point of
25 compliance *shall* be determined as follows: ... (emphasis
26 added).

23 A.R.S. § 49-244 is unambiguous; it affords ADEQ no discretion in whether and
24 how to monitor groundwater below a facility – the director “*shall*” designate a POC when
25 an aquifer protection permit is granted.

26 Even the ALJ acknowledged the mandatory nature of this statute: “A point or
27 points of compliance, at which compliance with the AWQS is to be determined, *must be*
28

1 *designated* for all discharging facilities receiving aquifer protection permits.” See ALJ
2 Decision, ¶161 (emphasis added).

3 ADEQ’s project manager for the Permit acknowledges that “shall” is not a
4 “suggestion;” ‘no, it says “shall designate.”’ ROA #220, p. 171:15-16.

5 That “shall” is used three times in A.R.S. § 49-244, and is intended to be
6 mandatory, is made clear by the fact that, in the very same section, the word “*may*” is used
7 to indicate actions that are within ADEQ’s discretion. For example, “for an aquifer that
8 has no existing or reasonably foreseeable drinking water beneficial use,” the director
9 “*may*” establish monitoring for compliance in another aquifer in lieu of monitoring in the
10 uppermost aquifer.⁹ “When the Legislature has used both ‘may’ and ‘shall’ in the same
11 paragraph of a statute, we infer that the Legislature acknowledged the difference and
12 intended each word to carry its ordinary meaning. The word ‘may’ is used in a permissive
13 sense while ‘shall’ appears to be used in its ordinary ‘mandatory’ sense. This weighs in
14 favor of an imperative meaning for ‘shall.’” *Joshua J. v. Ariz. Dep’t of Econ. Sec.*, 230
15 *Ariz.* 417, 421 (App. 2012) (internal citations omitted).

16 A.R.S. § 49-244 also must be interpreted in the light of the statutory scheme
17 authorizing ADEQ to effectuate the aquifer protection permit system as a whole. The
18 general powers and duties of the director of ADEQ set forth at A.R.S. § 49-203 also
19 distinguish between mandatory duties (identified by the use of “shall”) (at section (A))
20 and discretionary powers (identified by the use of “may”) (at section (B)).

21 Moreover, that a POC must be an actual monitoring well is also mandatory. A
22 POC “*shall*” be a “*vertical plane*” that is “downgradient of the facility that extends
23 through the uppermost aquifers underlying that facility.” A.R.S. § 49-244. This can only
24 be a monitoring well.¹⁰ “Vertical” means “perpendicular to the plane of the horizon or to
25 a primary axis.” See, for example, Merriam Webster Online Dictionary ©2021. This
26

27 ⁹ This scenario is not applicable here.

28 ¹⁰ A “well” is a “bored, drilled or driven shaft, pit or hole whose depth is greater than its
largest surface dimension.” A.R.S. § 49-201(51).

1 does not mean *downhill* or *downstream* of the facility; it means straight down into the
2 aquifer at a 90° angle to the horizon, *i.e.*, a monitoring well.

3 Interpreting A.R.S. § 49-244 to require an actual monitoring well is in line with the
4 federal law upon which Arizona’s aquifer protection program is based. *See*, 40 C.F.R.
5 §264.95; and 40 C.F.R. §264.97(a) (“The ground-water monitoring system must consist of
6 a sufficient number of wells, installed at appropriate locations and depths to yield ground-
7 water samples from the uppermost aquifer” (emphasis added).

8 ADEQ’s witnesses acknowledge this obvious fact. ADEQ’s project manager and
9 “permit writer” (ROA #221, p. 20:23-25) testified that a POC must be “underground,” “in
10 the groundwater” (ROA # 220, p. 173:9-11) and that he is not aware of a POC being
11 anything other than a well. ROA #221, p. 17:5-8. ADEQ’s hydrogeologist spoke only in
12 terms of “wells” when talking about POCs. ROA #222, p. 120:4-19, p. 121:25, p. 123:17-
13 18, p. 125:3, p. 127:12-13, p. 128:11, p. 129:4, p. 130:1, p. 131:6. Even AMI’s
14 application refers to a point of compliance as a “conceptual POC well.” ROA #83, p.
15 AMI00114. The Permit itself lists each of POC-1, POC-2, POC-3, and POC-4 as a “well
16 number.” ROA #145, p. ADEQ00761.

17 Arizona’s appellate courts have examined the term “point of compliance” in A.R.S.
18 §49-244 in only one case, *Town of Florence v. Ariz. Dep’t of Env’tl. Quality*, 2020 Ariz.
19 App. Unpub. LEXIS 493 (No. 1 CA-CV 19-0122). In *Florence*, the Court plainly
20 understood that POCs require wells, and in each instance of describing the POCs in that
21 case, the court referred to the points of compliance as “POC wells.”

22 A.R.S. § 49-244 cannot reasonably be interpreted as granting ADEQ discretion to
23 waive the requirement of a point of compliance or to allow a completely fictional or
24 “conceptual” point of compliance to substitute for a real one.

25 If the legislature had wanted to give discretion to ADEQ to decide on an *ad hoc*
26 basis what type of monitoring would be required for each new aquifer protection permit,
27 the legislature could have and would have said so. It did not. The legislature used the
28 mandatory term “shall,” thereby imposing an obligation on the department to monitor

1 groundwater in the very specific way required by A.R.S. § 49-244, namely, by requiring
2 the installation of monitoring wells extending into the aquifer underneath the discharging
3 facilities.

4 C. ADEQ's interpretation of A.R.S. § 49-244 is unreasonable

5 ADEQ's justification for refusing to require the installation of at least one
6 groundwater monitoring well (a POC) in the Harshaw Creek aquifer has evolved
7 throughout these proceedings. At first, ADEQ implied that it had in fact complied with
8 A.R.S. § 49-244, stating that "the permit includes Monitoring Requirements," pointing to
9 "Section 2.5 on pages ADEQ00761 - ADEQ00762 and Table 9 on page ADEQ00782."
10 ROA #28, p. 11:13-15. This was disingenuous because those "monitoring requirements"
11 at section 2.5 of the Permit expressly apply only to POC-2, which is in the Alum Gulch
12 aquifer, and not in the Harshaw Creek aquifer. Indeed, section 2.5 expressly states that
13 neither groundwater nor surface water monitoring is required in the Harshaw Creek
14 aquifer. ROA #145, p. ADEQ00761.

15 Later, ADEQ claimed that A.R.S. § 49-244 gives it *discretion* in how to monitor
16 groundwater in an aquifer protection permit. ROA #217, p. 63:1-6 (the statutes and rules
17 are "permissive on the Agency ... They are not mandatory, and allow the Agency
18 discretion in deciding what is required in a permit"); and *see*, ROA #28, p. 6:13-14 ("once
19 a point of compliance is determined, ADEQ *may* require that a well be installed at that
20 location for sampling and monitoring"). This simply is wrong; A.R.S. § 49-244 is
21 unequivocal that ADEQ *shall* designate one or more points of compliance for each
22 discharging facility.

23 Next, ADEQ argued that it properly exercised its (non-existent) discretion by
24 waiving the requirement of groundwater monitoring in the Harshaw Creek aquifer based
25 on (1) AMI's promises that WTP2 will not fail, and (2) AMI will be submitting a
26 quarterly report that includes testing of WTP2's effluent under a different permit. Not
27 only are these justifications irrelevant because ADEQ has no discretion under A.R.S. §
28 49-244 (see above), but they, in any event, lack merit. The surface water monitoring to be

1 performed under a different permit cannot substitute for groundwater monitoring under
2 the aquifer protection program. Moreover, WTP2 is not the only potential discharging
3 facility at the site - the TSF, UCP and the infrastructure that will connect them to WTP2
4 are each separate facilities that independently threaten downgradient drinking water
5 aquifers.

6 a. ADEQ's reliance on the promises that WTP2 will never fail as a reason
7 to waive compliance with A.R.S. § 49-244 is arbitrary and capricious

8 ADEQ's principal hydrogeologist on the Hermosa Project (ROA #222, p. 7:6)
9 made it clear that ADEQ was deliberately deviating from the requirements of A.R.S. § 49-
10 244 when ADEQ waived groundwater monitoring in the Harshaw Creek aquifer: "in lieu
11 of installing a well, you could be assured that the Aquifer Water Quality Standards are
12 met" at the point of discharge because the effluent being discharged from WTP2 "really,
13 that water is cleaner than what they were pumping out because of the treatment process."
14 ROA #222, p. 120:16-19, p. 25:4-12 (emphasis added). He decided "with that in mind"
15 (namely, "because of the treatment process"), "I thought [a conceptual POC well] was
16 appropriate." ROA #222, p. 24:21, p. 25:11-12. He reiterated that he based his decision to
17 waive groundwater monitoring because "it's clean water that's going into the drainage."
18 ROA #222, p. 26:17-21.

19 Even if AMI were correct that WTP2 will never fail, demonstrating that to be true
20 is a *separate and independent prerequisite* that AMI must establish to receive a Permit for
21 a facility discharging to an aquifer. The requirement that AMI must prove to ADEQ that
22 the technology behind WTP2 will successfully remove pollutants prior to discharge (*i.e.*,
23 that WTP2 meets BADCT) is in addition to the requirement that AMI demonstrate that
24 "in no event" will the facility cause or contribute to a violation of AWQS in the aquifer.
25 A.R.S. 49-243(B)(1) and (2). It is also in addition to the requirement that an actual
26 monitoring well (a POC) be installed into the aquifer. A.R.S. 49-244. In other words,
27 AMI demonstrating that WTP2 will not fail is an entirely separate statutory requirement
28

1 that it must meet to be granted the Permit—and it cannot be a substitute for the other
2 statutory requirements, including that ADEQ designate at least one point of compliance.

3 In any case, the ADEQ employees who made the decision to waive the requirement
4 of groundwater monitoring in the Harshaw Creek aquifer admitted that they 1) did not
5 even assess WTP2 for whether it met BADCT, and 2) determined that such an assessment
6 was not necessary because WTP2 was not a “discharging facility.” Each of these
7 admissions confesses that the Permit was granted in violation of the law.

8 ADEQ’s project manager (and the “Permit writer” for the Hermosa Project) (ROA
9 #221, p. 20:23-25) testified that *he did not assess WTP2 for whether it met BADCT*
10 *because WTP2 “is not a BADCT discharging facility.”*¹¹ ROA #221, p. 7:17-18; ROA
11 #221, p. 72:9-10 (“Water Treatment Plant 2 is not an APP discharging facility”); ROA
12 #220, p. 222:25, p. 223:1-3 (“the water treatment plant ... is not a discharging facility ...
13 It is only the discharge that is at Outfall 2, which needs to meet the requirements of the
14 rules and the statutes”); ROA #221, p. 71:1 to 72:16 (“the discharge in this case occurs at
15 the Outfall Number 2. ... There is no discharge directly from” WTP2”). ADEQ expressly
16 did not apply ADEQ’s written BADCT standards memorialized in ADEQ’s BADCT
17 manual (ROA #120) to WTP2. ROA #220, p. 214:16-25 (“*it’s not related in this case to*
18 *the Arizona BADCT guidance manual*”); ROA #221, p. 53:5-11 (Q: “Does the ADEQ
19 Arizona Mining Guidance Manual on BADCT address different types of facilities?” A:
20 “Yes.” Q: “Does it address water treatment plants?” A: “No”); ROA #220, p. 218:5-8 (Q:
21 “When it says “Best Available Demonstrated Control Technology,” is that referring to the
22 Arizona BADCT manual?” A: “Not specifically.” Q: “to what does it refer?” A: “*It’s not*
23 *referring to any specific document*”). He also admits that he *never reviewed ADEQ’s*
24

25 _____
26 ¹¹ ADEQ’s determination that WTP2 is not a “discharging facility”—and thus outside the
27 purview of BADCT—is simply wrong. Even the Permit acknowledges that WTP2 is a
28 discharging facility: “The purpose of this significant amendment is to make the following
revisions to the APP: To authorize discharge from a new water treatment plant (WTP2)
that will convey the discharge to Harshaw Creek (Outfall 002) at a maximum discharge
rate of 4,500 gallons per minute.” ROA#145, p. ADEQ00741.

1 BADCT manual (included in the record at ROA #118) for AMI's application, even though
2 he normally does review the manual for APP applications.¹² ROA #220, p. 208:9-18.

3 In light of the foregoing, ADEQ's project manager did *not* testify that he concluded
4 that WTP2 met BADCT standards; on the contrary, he testified that BADCT standards
5 *were not applied to WTP2*. In other words, ADEQ's witness testified only to the *second*
6 of the two requirements that AMI must demonstrate to qualify for an APP permit, namely,
7 that a discharge must meet AWQS (A.R.S. § 49-243(B)(2)). He failed to testify that
8 WTP2 met the *first* requirement—that it meet BADCT. (A.R.S. § 49-243(B)(1)).

9 In spite of this, the ALJ astonishingly concluded that “Water Treatment Plan 2 is
10 BADCT for the discharge to Harshaw Creek,” and “WTP2 is BADCT for Outfall 2,” and
11 concluded that “the preponderance of the evidence shows that WTP2 meets the BADCT
12 requirements for Outfall 2.” ALJ Decision, ¶¶ 6, 87, p. 33, ¶ 20. The ALJ relied on this
13 finding when he upheld that no point of compliance was required in the Harshaw Creek
14 aquifer. ALJ Decision, ¶ 165 (“a conceptual POC was adequate given ... WTP2's
15 BADCT controls”). Not only was the ALJ's conclusion that WTP2 met BADCT
16 contradicted by the evidence, but the fact that the ALJ upheld ADEQ's deviation from
17 A.R.S. § 49-244 on the assumption that WTP2 met BADCT when ADEQ has no idea how
18 WTP2 even works and cannot say what standards it applied reveals quite how arbitrary
19 and capricious its deviation from A.R.S. § 49-244 is.

20 The only other ADEQ witness at the OAH hearing was ADEQ's principal
21 hydrogeologist, who admitted that “he is not the one to ask about how WTP2 actually
22 works,” and that “the scope of my evaluation did not include the water treatment plant.”
23 ROA #222, p. 233:17-18. ADEQ's hydrogeologist admitted that he did only a “high level
24 review” of Attachment A to AMI's application (the attachment describing how WTP2 is
25

26 ¹² ADEQ's project manager admits that he was the “primary person within ADEQ
27 reviewing the technical capabilities of” WTP2 but conceded that he does “not have the
28 expertise in the design of the water treatment plant. So my knowledge is quite limited
when it comes to the actual design of the treatment plant.” ROA #220, p. 234:11-15;
ROA #221, p. 9:4-15.

1 proposed to work) because he “just kinda wanted to get an idea of how that process
2 worked.” ROA #222, p. 31:1, 5-6. Even though he testified that he based his decision to
3 waive the requirement of an actual monitoring well on the AZPDES permit, he admits that
4 he “didn’t really” review Table 3 of AMI’s application (which laid out “applicable
5 Surface Water Quality Standards and Aquifer Water Quality Standards”) “because this
6 mostly applied to surface water quality standards which would be more relevant to the
7 AZPDES permit.” ROA #222, p. 30:14-17.

8 AMI’s geologist admits that she is “not a water treatment expert.” ALJ Decision,
9 ¶¶34, 118; ROA #219, p. 98:7. In fact, she admits that, when she reviewed Attachment A
10 to AMI’s application (describing how WTP2 is proposed to work) (ROA #83, pp.
11 AMI00127-203), she reviewed it “with the idea that they were going to meet discharge
12 standards.” ALJ Decision, ¶ 118; ROA #219, p. 98:12-13.

13 The only witness who knew how WTP2 will work (and upon whose testimony
14 ADEQ and the ALJ relied) (ALJ Decision, ¶¶91, 93, 109, and p. 33, ¶¶20, 22) is the chief
15 executive officer of the company selling the technology to AMI (ALJ Decision, ¶33; ROA
16 #219, p. 129:13-25) and then operating it for AMI (ROA #219, p. 195:23-25). In other
17 words, the only witness who vouched for WTP2’s technology has a vested financial
18 interest in seeing the Permit be granted. Even this witness did not testify that WTP2 was
19 BADCT.

20 PARA presented substantive, reliable evidence from experts (ROA #223, 92:5-14,
21 P. 244-245) whose qualifications were unchallenged by AMI and ADEQ, and whom AMI
22 and ADEQ did not even cross-examine (ROA #223, p. 197:17-22; ROA #29, p. 3-4), that
23 there are serious deficiencies in the design of WTP2. One basic, glaring omission from
24 the design of WTP2 is that it has *no holding pond* in its design capable of storing the
25 influent feeding into WTP2 for *more than 20 to 30 minutes* if WTP2 were to be shut
26 down. ROA #219, p. 164:11-25. AMI never even discussed it. ROA #218, p. 48:5-22. It
27 is typical in the industry to include a holding pond that can hold water for at least a 24-
28 hour period. ROA #223, p. 244:2-25, p. 245:1-5, p. 167:5-25, p. 168:1-7, p. 173:3-16.

1 The obvious danger is that it “we might be in a situation where the water treatment plant
2 is off spec. It’s discharging water way exceeding standards. We need to shut it down.
3 Wait a minute. We can’t shut it down because we have water being pumped up from the
4 underground mine, and we can’t shut down the pumps from the underground mine
5 because we have got workers working down there.” ROA #223, p. 165:1-7. A “holding
6 pond is the way to eliminate the possibility of catastrophes, at least gives us a day to work
7 with.” ROA #223, p. 166:2-4.

8 While it is clear that WTP2 was not held to the standards of ADEQ’s BADCT
9 manual, it is unknown what other standards, if any at all, were applied to WTP2 to
10 determine that it met the first requirement of A.R.S. § 49-243(B).

11 In any event, even if WTP2’s technology were proven to the best in the world,
12 A.R.S. § 49-244 *still requires the installation of at least a single point of compliance to*
13 *monitor groundwater in the Harshaw Creek aquifer* (see above). It was an arbitrary and
14 capricious abdication of its obligations for ADEQ to waive the statutory requirement to
15 monitor at-risk aquifers, in sole reliance on the promises of an applicant’s vendor that its
16 product will not fail, especially given that WTP2 relies on novel technology, was not
17 demonstrated to meet BADCT, and has barely any track record.

18 *b. AMI’s testing of effluent from WTP2 under a different permit is not a*
19 *substitute for aquifer monitoring under A.R.S. § 49-244*

20 In refusing to require groundwater monitoring, ADEQ relied on the fact that AMI
21 has received a separate permit that governs surface water discharges. ADEQ took into
22 account “as an additional safeguard, the monitoring of the discharge.” ROA #223, p.
23 48:7-10. ADEQ is referring to the fact that AMI must submit a quarterly report that
24 includes information referenced in “Table 9.” ROA #145, p. ADEQ00773, § 2.7.1(3)(a).
25 “Table 9” references the testing of *surface* effluent discharged from WTP2 required by a
26 *different permit* issued under the Arizona Pollutant Discharge Elimination System
27 (“AZPDES”). ROA #145, p. ADEQ00782; ROA #161. In other words, ADEQ decided
28 that AMI did not need *both* an APP permit *and* an AZPDES permit. This makes no sense

1 whatsoever and has no support in the law whatsoever. ADEQ's decision to substitute the
2 APP requirements (in particular, monitoring groundwater under A.R.S. § 49-244) with the
3 requirements of the AZPDES permit (that governs surface water discharges under the
4 federal Clean Water Act) was a blatant abuse of discretion (assuming ADEQ had
5 discretion in the first place, which it did not), and makes its deviation from A.R.S. § 49-
6 244 all the more unlawful.

7 Even ADEQ admits that A.R.S. § 49-244 has nothing to do with the surface water
8 program governed by the AZPDES. ROA #220, p. 173:1-3 (Q: "does 49-244 have
9 anything to do with the AZPDES surface water program?" A: "No"). ADEQ also admits
10 that it is possible for surface discharge to meet water quality standards at the point of
11 discharge but to fail water quality standards in the *downgradient aquifer*. ROA #222, p.
12 184:21-25 (Q: "Have you ever worked on a project in which there is above-ground surface
13 water discharge as there is in WTP2, and yet monitoring of the aquifer downgradient
14 revealed increases in certain constituents?" A: "Yes"); p. 185:15-19 (Q: "It does
15 sometimes occur that consistently clean surface water discharges can have indirect –
16 would cause indirect increases in aquifer constituent levels?" A: "In some cases, yes").

17 In any event, the two permitting programs (AZPDES and APP) are *two separate*
18 *permitting programs protecting two separate bodies of water* (groundwater and surface
19 water). The statutes that govern the two programs are not "either/or" statutes. In Arizona,
20 where there is a discharging facility that threatens an aquifer, ADEQ must enforce the
21 APP statutes. A.R.S. § 49-243(B)(2) ("pollutants discharged will in no event cause or
22 contribute to a violation of aquifer water quality standards at the applicable point of
23 compliance for the facility"). By contrast, where a person wants to "discharge" into
24 surface waters governed by the Clean Water Act, then ADEQ imposes the AZPDES
25 statutes. Here, there are both: the obvious discharge to a surface water (Harshaw Creek)
26 at Outfall 2 (requiring an AZPDES permit), and the existence of AMI's facilities (TSF,
27 UCP, and WTP2) that have the reasonable potential to "discharge" to downgradient
28 aquifers (the Harshaw Creek aquifer and the Sonoita Creek aquifer), which would

1 necessitate an APP permit -- and require a POC -- even in the absence of surface waters
2 being added to Harshaw Creek at Outfall 2. ADEQ does not get to choose which one to
3 impose and enforce. Both apply; both are to be enforced.

4 Moreover, the two programs are required by law to be kept separate. Pursuant to
5 A.R.S. § 49-255.01(G) (under Article 3.1 which governs the AZPDES program), “Permits
6 that are issued under this article [3.1] shall not be combined with permits issued under
7 article 3 of this chapter.” Article 3 governs aquifer protection permits. ADEQ blatantly
8 and inexcusably exceeded its authority by substituting monitoring requirements demanded
9 Article 3 (the aquifer protection permit) with the monitoring requirements demanded
10 under Article 3.1 (the AZPDES permit).

11 D. The TSF, UCP, WTP1 and the piping infrastructure that will connect them
12 to WTP2 are independent sources of discharge

13 The Permit’s reliance solely on surface water monitoring at WTP2 fails to account
14 for the fact that the TSF and UCP, and the infrastructure connecting them to WTP2, are
15 *independent sources of discharge*. By keeping the focus on WTP2, ADEQ hopes to
16 distract from the reality that the TSF and UCP, and whatever infrastructure it might
17 propose to connect them to WTP2 on the Harshaw Creek watershed side of the property,
18 are also sources of pollutants to downgradient aquifers – the Harshaw Creek aquifer and,
19 further down, the Sonoita Creek aquifer.

20 It cannot genuinely be disputed that any failures in the TSF, UCP and/or the pipes
21 that will carry mine contaminated water across to WTP2 will result in contaminants
22 entering the Harshaw Creek aquifer. And it cannot genuinely be disputed that failures are
23 anticipated and may occur at the TSF and UCP. *See*, for example, ROA #223, p. 16-17
24 (“There’s no such thing as a liner that’s 100% impervious”); ROA #223, p. 160:4 (“could
25 have a leakage through the liner”); ROA #223, p. 97:22-24 (“If you have a large storm,
26 you could have an overflow of that underdrain collection pond that’s also a major source
27 of contamination”); ROA #223, p. 96:25 (the TSF can “slump”); p. ROA #83, p.
28 AMI00251 (AMI’s application anticipated a TSF “leakage flow rate”). The Permit itself

1 acknowledges the risks from the TSF and UCP. ROA #145, p. ADEQ00742 (refers to a
2 “backup system to provide additional data in the event of a UCP lining system failure”);
3 ROA #145, p. ADEQ00764-765 (reporting steps to take for “Normal Liner Leakage” and
4 “Liner Failure or Rips”); ROA #145, p. ADEQ00767-771 (refers to reporting steps to take
5 in the event of “overtopping, liner failure, containment structure failure, or unexpected
6 loss of fluid,” “Slope and Berm Failures”). The original permit provided for “Leak
7 Collection and Removal,” and included an “Underdrain Collection Pond (UCP) Sump”
8 that must be monitored “daily.” ROA #121, p. ADEQ00365. This requirement carried
9 over into the amended Permit. ROA #145, ADEQ00784.

10 In other words, *leakage and failures in the TSF and UCP are anticipated by*
11 *ADEQ*. Such leakages and failures are monitored in the Alum Gulch aquifer through
12 POC-2 (an actual monitoring well). Yet no monitoring of the Harshaw Creek aquifer is
13 required under the Permit, even though the TSF straddles both the Alum Gulch and
14 Harshaw Creek watersheds (ROA #218, p. 114:16-17, p. 121:16-19, ROA #223, p.
15 101:19-20, ROA #211, p. 1), and even though AMI will be piping untreated mine seepage
16 and mine impacted water from the TSF and UCP across the watershed to WTP2 (through
17 an as-yet unknown system) (see below), above the Harshaw Creek aquifer.

18 ADEQ’s sole reliance on monitoring the water that comes out of WTP2 at Outfall 2
19 as a substitute for monitoring the Harshaw Creek aquifer itself is as confounding as it is
20 inexcusable.

21 E. AMI’s voluntary monitoring does not comply with A.R.S. § 49-244

22 The ALJ upheld ADEQ’s failure to require the actual installation even a single
23 monitoring well (a POC) in the Harshaw Creek aquifer because “AMI is also conducting
24 monitoring at MW-9 in the [Discharge Impact Area] about 1 mile downstream of POC 4.”
25 ALJ Decision, ¶ 169. The ALJ also relied on the fact that “AMI also has a voluntary well
26 monitoring program collecting samples in downstream wells under private ownership; that
27 data is confidential to the well-owners but those owners can share the data if they chose
28 to.” *Id.* The ALJ held that this monitoring “is additional information in support of the

1 decision to use a conceptual POC” (*i.e.*, to waive an actual monitoring well altogether).
2 *Id.* The ALJ erred. None of the Permit’s references to voluntary monitoring by AMI in
3 any way, shape or form complies with, or is even comparable to, the monitoring
4 requirements of A.R.S. § 49-244.¹³

5 After the public comment period closed, ADEQ added into the Permit that AMI
6 must submit “an annual report” containing “groundwater monitoring results from MW-9.”
7 ROA #145, p. ADEQ00774. “MW-9” is a well owned by AMI “about one mile
8 downgradient of the conceptual well location [POC-4].” ROA #222, p. 134:11-16.

9 First, “MW-9” is not even in the Harshaw Creek aquifer. It is 1 mile *further*
10 *downstream* than even “POC-4” (ROA #222, p. 134:11-16; ALJ Decision, ¶ 169), which
11 is itself right at the very edge of the Harshaw Creek aquifer, and more likely in the
12 Sonoita Creek aquifer. ROA#145, p. ADEQ00761; ROA #201. ROA #223, p. 27:9-12.
13 Either way, “MW-9” cannot constitute the kind of POC required by A.R.S. § 49-244
14 because it does not extend into, and thus, cannot monitor, the uppermost aquifer beneath
15 the discharging facilities.

16 Second, nothing in the Permit requires AMI to monitor “MW-9” for compliance
17 with AWQS or even to report any exceedances of AWQS, as contemplated by A.A.C.
18 R18-9-A206(A). In fact, the kind of monitoring contemplated by ADEQ at “MW-9” is
19 only that “they’ll supply like a brief analysis, you know, identifying any trends and
20 generate any potential map areas. So we ... can gauge the – whether there are any
21 changed conditions.” ROA #222, p. 134:20-25. ADEQ did not intend to impose the
22 monitoring requirements required by rule and statute at “MW-9.”

23 Third, nothing in the Permit prescribes the frequency of monitoring at MW-9, as
24 contemplated by A.A.C. R18-9-A206(A).

25
26 ¹³ The ALJ mistakenly ruled that PARA had waived arguments regarding the inadequacies
27 of monitoring at MW-9. ALJ Decision, p. 30, ¶ 6. But MW-9 was not discussed in the
28 APP Application (ROA # 83) and was not mentioned in the draft APP permit materials
published for public comment (ROA ##131, 132). The first reference to MW-9 appeared
after the comments period closed. ROA #143, p. ADEQ00711.

1 In sum, in lieu of actual groundwater monitoring pursuant to A.R.S. § 49-244 and
2 A.A.C. R18-9-A206(A), the Permit merely requires that AMI *annually* report the results
3 of *whatever pollutants AMI chooses to monitor* at the MW-9 well in a *different* aquifer,
4 based upon results from *whenever* AMI chooses to conduct such monitoring. This is not
5 the kind of monitoring that ADEQ is obligated to require of facilities reasonably likely to
6 be discharging pollutants into aquifers.

7 Finally, that AMI may request private well owners along Harshaw Creek to share
8 monitoring test results is irrelevant. The results of the monitoring program are
9 confidential, and AMI is not permitted to provide the results to ADEQ without well owner
10 permission.

11 Nothing about MW-9 or voluntary private well monitoring satisfies the
12 requirements of A.R.S. § 49-244 or any part of ADEQ's obligations under the statutory
13 scheme.

14 F. Conclusion: failure to require a monitoring well on AMI's property
15 immediately downgradient of Outfall 2 extending into the Harshaw Creek
16 aquifer was unlawful

17 In sum, the ALJ misinterpreted A.R.S. § 49-244 by failing to require that the
18 Permit include a groundwater monitoring well (a POC) that extends into the Harshaw
19 Creek aquifer.

20 A.R.S. § 49-244 requires that the location of a POC be "downgradient of the
21 facility that extends through the uppermost aquifers underlying that facility" (emphasis
22 added). It is undisputed that the Harshaw Creek aquifer is the aquifer that "underlies"
23 WTP2 and Outfall 2. ADEQ must be instructed to modify the Permit to include a
24 requirement that AMI install a monitoring well on AMI's property that extends into the
25 Harshaw Creek aquifer at a point located immediately downgradient of the discharging
26 facilities, namely, WTP2/Outfall 2.

1 This location mirrors the location of the monitoring well (POC-2) in the Alum
2 Gulch watershed, which is “200 feet downgradient of the AZPDES Outfall-001.” ROA
3 #145, p. ADEQ00761.

4 **VII. ADEQ MUST EXERCISE ITS DISCRETION AND REQUIRE TWO**
5 **ADDITIONAL POCS AND MORE FREQUENT MONITORING**

6 A. Two additional POC wells is a reasonable exercise of authority

7 Within the parameters of the mandatory monitoring requirements of A.R.S. § 49-
8 244, ADEQ has discretionary powers regarding, *inter alia*, “the type and method of
9 monitoring” and “the frequency of monitoring.” A.A.C § R18-9-A206(A)(2)(1) and (2).
10 The exercise of this authority must be to further the APP program goals, encapsulated in
11 A.R.S. § 49-243(B)(2): “pollutants discharged will *in no event* cause or contribute to a
12 violation of the aquifer water quality standards.”

13 It is a reasonable exercise of ADEQ’s authority to require one additional POC in
14 the Harshaw Creek aquifer and one in the Sonoita Creek aquifer.

15 ADEQ knows it has this authority and has already exercised it in this Permit. In
16 the Alum Gulch aquifer, ADEQ required *three* POCs (although only one is real – POC-2).
17 ROA #145, p. ADEQ00761. ADEQ must do the same for the downgradient aquifers
18 below WTP2/Outfall 2.

19 The need for more than one POC is that, in this Permit, unlike typical APPs, the
20 discharge from the facilities that mandated the APP in the first place (from the TSF and
21 UCP) *is coupled with a surface water discharge* (into both Alum Gulch and Harshaw
22 Creek) that will emanate from WTP2/Outfall 2 (the discharge that required the separate
23 AZPDES permit). Because ADEQ was presumably concerned about discharges not only
24 from the TSF/UCP facilities *but also* about the *additional* surface water to be discharged
25 from Outfall 1, ADEQ exercised its authority and required two more POCs in the Alum
26 Gulch aquifer in the Permit.

27 For the same reasons, two more POCs are required downgradient of the Hermosa
28 Project in the Harshaw Creek and Sonoita Creek aquifers. First, the *volume* of the

1 additional (surface) water discharge on the Harshaw Creek side will be 3,700% greater
2 than the additional (surface) water discharge on the Alum Gulch side. ROA #145, p.
3 ADEQ00759-760. A POC well is still required in the Harshaw Creek aquifer – the TSF
4 and UCP alone demand an APP and corresponding POC even in the absence of the
5 surface water discharge at WTP2/Outfall 2. Now, an additional 6,652,000 gallons per day
6 (ROA #145, p. ADEQ00751) is being added to the system. The sheer volume of water to
7 be *added to* the TSF/UCP discharge warrants *additional* POCs further downgradient of
8 the one mandated POC (see above).

9 It is undisputed that the Town of Patagonia is entirely dependent on well water, and
10 that those wells all extend into the Sonoita Creek aquifer. ROA #224, p. 161:15-16; ROA
11 #221, p. 145:4-6. It is undisputed that the landowners along Harshaw Creek are all
12 dependent on well water, and that those wells extend into the Harshaw Creek aquifer for
13 the full 9+ miles between AMI’s property and the point where the Harshaw Creek aquifer
14 merges with the Sonoita Creek aquifer. ALJ Decision, ¶131; ROA #211, slide 15.

15 The Permit reflects that discharge from WTP2/Outfall 2 is expected to travel at
16 least 9.4 miles downstream of Outfall 2. ROA #145, p. ADEQ00741. That is the point
17 that the Harshaw Creek aquifer meets the Sonoita Creek aquifer. ROA #223, p. 27:9-12;
18 ROA #83, p. AMI00126. Water particles traveling down the Harshaw Creek aquifer will
19 enter the Sonoita Creek alluvial basin. ROA #219, p. 58:1-17. The discharge will reach
20 Sonoita Creek. ROA #83, p. AMI00126.

21 ADEQ admits that its duty is to “protect for the shallow groundwater aquifer...
22 along Harshaw Creek” and “part of the basin fill alluvium surrounding Sonoita Creek.”
23 ROA #223, p. 18:22-24

24 The entire length of the Harshaw Creek aquifer below WTP2/Outfall 2, as well as
25 the Sonoita Creek aquifer at the point that it joins with the Harshaw Creek aquifer will be
26 be impacted by any contaminants accidentally discharged from the Hermosa Project.

27 For this reason, PARA proposed two additional POCs at the locations marked as
28 “POC-6” (further downstream in the Harshaw Creek aquifer) and also “POC-4” (using the

1 same name as the conceptual "POC-4" in the Permit) in the Sonoita Creek aquifer, *See*,
2 ROA #201, Figure 6, pdf p. 28, attached hereto for ease of reference marked **Exhibit B**.

3 The Permit must be remanded requiring ADEQ to exercise its discretion and best
4 professional judgment to determine the precise locations of two additional downstream
5 POCs.

6 B. Frequent monitoring is a reasonable exercise of discretion

7 A.A.C. R18-9-A206(2)(b) provides that the director can determine the frequency of
8 monitoring.

9 Groundwater monitoring at POC-2 is currently scheduled to be performed every
10 six months. ROA #145, p. ADEQ00761.

11 Surface water monitoring at Outfall 2 under the AZPDES permit is currently
12 scheduled to be performed quarterly. ROA #145, p. ADEQ00782; ROA #161, pp.
13 AMI01862-3, 1865. This is about to be increased under the AZPDES permit to *monthly*.¹⁴

14 Quarterly testing is altogether inadequate:

15 Q: Do you believe that quarterly testing is an appropriate frequency at
16 the beginning of the operation of a new plant? A: It's inadequate
altogether."

17 "Q: When you say 'inadequate altogether,' is that to suggest that even
18 after months or years of gaining confidence that quarterly is still too
infrequent? A: Yes. ... It should be monitored monthly in my
opinion." ...

19 "Q: And in your professional opinion, during the beginning months of
20 operation of a new treatment plant, what is the frequency you would
expect to see of effluent testing of the various constituents? A: Well,
21 let's call it a startup where we all agree there will be fluctuation and
adjustments in that, and once all of that has been done, then the plant
22 is operating. From that point on, I would say weekly to monthly ... It
would be something between weekly to monthly. But quarterly is
23 inadequate by all measures and all standards." ROA #224, p. 33:25, p.
34:1-10, p. 35:5-23.

24 Quarterly monitoring is grossly inadequate because of the as-yet untested
25 technology to be used at WTP2 (see above) and because WTP2 is authorized to
26 *continuously* discharge over a six and half million gallons a day of mine impacted water
27 into the Harshaw Creek aquifer. ROA #222, p. 221:15-17; ROA #145, p. ADEQ00751.

28 ¹⁴ The court may take judicial notice of this public record. Rule 201(b)(2), *Arizona Rules of Evidence*. It is available at <https://azdeq.gov/node/9226>.

1 Moreover, AMI must only report the results of its quarterly 28 days after the end of the
2 monitoring period. ROA #161, p. AMI01870, Part II, § B.2. Therefore, if WTP2 or the
3 TSF or the UCP or the infrastructure that connects them fails for any reason, pollutants
4 will be released into the Harshaw Creek aquifer at 6.5 million gallons a day for four
5 months before the exceedance would be reported. AMI's counsel even conceded this
6 could happen: "if you're merely trying to point out that a hypothetical, unknown
7 exceedance occurring the day after a sample is taken might not be discovered in the
8 absence of sampling until the next regular sampling event, we'll stipulate that that would
9 be the case." ROA #222, p. 215:7-12). At that point, the damage could not be undone and
10 the entire aquifer protection permit is rendered pointless.¹⁵

11 Quarterly monitoring is also grossly inadequate in light of the fact that discharges
12 here emanate not only from the TSF/UCP facilities *but also* from the *additional* surface
13 water to be discharged from Outfall 2 (as shown above). In other words, because of the
14 many sources of discharge, and because the sources of discharge straddle the watershed,
15 monitoring more frequently than the bi-annually required at POC-2 is reasonable.

16 In addition, more frequency is required on the Harshaw Creek side than on the
17 Alum Gulch side. Permitted maximum discharges into Alum Gulch are $1/37^{th}$ of the
18 maximum permitted discharges on the Harshaw Creek side. Discharge into Alum Gulch
19 from WTP1 via Outfall 1 is only anticipated to occur on a "periodic, short-term" basis
20 "during periods of exploration or mine development." ROA #145, p. ADEQ00745.
21 Discharges into the Harshaw Creek aquifer are permitted to be "continuous." ROA #222,
22 p. 221:15-17.

23 Testimony on the record supports that reasonable monitoring would be weekly for
24 the first year that WTP2 is in operation, and, assuming WTP2 performs as represented,
25 monitoring be reduced to monthly.

26 The Permit must be remanded requiring ADEQ to exercise its discretion and best
27 professional judgment to determine the appropriate monitoring frequency at the POCs.

28 ¹⁵ See, again, A.R.S. § 49-243(B)(2).

1 **VIII. AMI FAILED TO DEMONSTRATE THAT PIPING CARRYING**
2 **UNTREATED WATER ACROSS THE PROPERTY MEETS BADCT**

3 A.R.S. § 49-243(B)(1) requires that an applicant must “demonstrate” that all
4 facilities will be constructed to ensure “the greatest degree of discharge reduction
5 achievable” through application of BADCT. And *see* A.A.C. R18-9-A202. The Permit
6 itself says “facilities regulated by this permit shall be designed, constructed, operated, and
7 maintained to meet requirements specified by A.R.S. § 49-243(B) and A.A.C. R18-9-
8 A202(A)(5).” ROA #145, p. ADEQ00756.

9 Presumably, in its original application for its original permit (which is not in the
10 record), AMI submitted designs pertaining to the TSF, the UCP, WTP1, and the piping
11 infrastructure that connect them to demonstrate BADCT.

12 In its application for the amended Permit, AMI submitted designs for how the
13 enlarged TSF would meet the requirements laid out in ADEQ’s BADCT manual. ROA
14 #83, pp. AMI00104, AMI00221-1045. These designs included plans showing the piping
15 infrastructure that would connect the TSF to the UCP - it defined the “pipe network” as
16 “the underdrain collection system,” which was included in its “BADCT Design Report.”
17 *See*, for example, ROA #83, pp. AMI00248, AMI00252, AMI00312.

18 AMI also submitted designs for WTP2 (ROA #83, pp. AMI00127-203) and Outfall
19 2 (ROA #83, pp. AMI00204-219).¹⁶ They included designs showing the piping
20 infrastructure that would connect WTP2 to Outfall 2. *See*, for example, ROA #83, p.
21 AMI00219.

22 What is strikingly absent from any of the designs submitted by AMI is how AMI
23 proposes to transport *untreated TSF seepage and mine impacted water* from the TSF
24 and/or the UCP, and/or treated effluent from WTP1, across the property from the Alum
25 Gulch watershed to the Harshaw Creek watershed. *See*, for example, ROA #83, p.
26 AMI00319.

27
28 ¹⁶ Even though WTP2’s designs were not measured against the BADCT manual and there
was no testimony that such designs met BADCT. *See* above.

1 “There’s currently no infrastructure that connects the underdrain collection pond to
2 the water treatment plant 2.” ROA #218: p. 30:4-4.

3 Nowhere in AMI’s application (ROA #83) or in the Permit (ROA #145) is there
4 any description of what that piping infrastructure will consist of, let alone a demonstration
5 that it meets BADCT. This is in direct contrast to the detail presented regarding the
6 piping between the TSF and UCP. It is completely unknown how AMI intends to
7 transport the untreated contaminated water from the TSF and the UCP to WTP2, whether
8 by temporary piping laying across the surface, in excavated subsurface concrete-encased
9 piping (like the piping between the TSF and UCP) (ROA #64, pp. AMI00016, 00018),
10 installed in an earth berm (like the piping between WTP2 and Outfall 2) (ROA #83, p.
11 AMI00103), or by some other means.

12 The length of the piping infrastructure is considerably longer than the pipes
13 connecting the TSF to the UCP, the UCP to WTP1, and WTP2 and Outfall 2. The new
14 piping infrastructure will be almost 3000 feet from WTP1 to WTP2 (*over half a mile*), and
15 approximately 2000 feet from the UCP to WTP2.¹⁷

16 The failures in or spillages from the piping pose the same risks as failures in and
17 spillages or leakage from the TSF and the UCP. In fact, given the length of piping here
18 and the inherent nature of piping generally, the risk of failures in or spillages from the
19 piping infrastructure is arguably *higher* than the risk of spillages from the body of the TSF
20 or UCP. Pipes are more susceptible to damage through ground movement or through
21 freezing in the winter.¹⁸ The pipes will be conveying effluent that will cause constant
22 movement, thereby weakening joints. The pipes will be conveying possibly corrosive
23 substances (including potentially acid generating (PAG) rock) (ROA #145, p.
24 ADEQ00740) that may damage and weaken the piping. Pipes can become clogged,

25 _____
26 ¹⁷ The court may take judicial notice of this readily calculable fact. Rule 201(b)(2),
27 *Arizona Rules of Evidence*. Alternatively, the court may refer to the scale printed in the
28 legend of any of the numerous aerial images of the Hermosa site already in the record.
See, e.g., ROA#211, p. 10.

¹⁸ The court may take judicial notice of these widely known facts. Rule 201(b)(2), *Arizona
Rules of Evidence*.

1 causing the whole system to back up and fail. All of this is exacerbated by the sheer length
2 of piping needed to convey effluent across the property from the Alum Gulch watershed
3 to the Harshaw Creek watershed.

4 Any failures or spillages from this infrastructure *that will contain untreated TSF*
5 *seepage and mine impacted water will seep directly into the Harshaw Creek aquifer.* The
6 Alum Gulch aquifer has a proper point of compliance (a monitoring well installed at POC-
7 2), whereas the Harshaw Creek aquifer has no point of compliance at all.

8 This is no evidence whatsoever in the record that demonstrates how this integral
9 part of the discharging facilities that threatens the Harshaw Creek aquifer will be designed
10 and constructed at all, let alone how it meets BADCT, in violation of A.R.S. § 49-
11 243(B)(1).

12 The Permit must be remanded with instructions to ADEQ to require that AMI
13 demonstrate BADCT for the piping that will transport untreated tailings seepage across
14 the property to the Harshaw Creek aquifer.

15 **IX. ADEQ HAS AUTHORITY TO IMPOSE NARRATIVE AQUIFER WATER**
16 **QUALITY STANDARDS IN THE PERMIT**

17 The Permit requires that WTP2's effluent meet "numeric aquifer water quality
18 standards," which are set out in A.A.C. R18-11-406. ROA #145, p. ADEQ00766.

19 When PARA requested that ADEQ also impose *narrative* aquifer water quality
20 standards as set out in A.A.C. R18-11-405(C), ADEQ surprisingly claimed that it had no
21 authority to do so. ROA # 201; ROA #146, p. ADEQ00803. ADEQ is wrong as a matter
22 of law. ADEQ has the authority to impose the narrative aquifer water standards set out in
23 A.A.C. R18-11-405(C) and this matter should be remanded with instructions to ADEQ to
24 exercise its discretion reasonably.

25 The starting point is A.R.S. § 49-243(B)(2), which establishes the imperative that
26 "pollutants discharged will in no event cause or contribute to a violation of aquifer water
27 quality standards at the applicable point of compliance for the facility."
28

1 A.R.S. § 49-221(A)(1) provides that “the director shall ...adopt, by rule, water
2 quality standards for all WOTUS¹⁹ and for all waters in all aquifers to preserve and
3 protect the quality of those waters for all present and reasonably foreseeable future uses.”

4 The director adopted rules at A.A.C. R18-11-401 to R18-11-408 (“Aquifer Water
5 Quality Standards”).

6 A.A.C. R18-11-406 sets out *numeric* aquifer water quality standards.

7 A.A.C. R18-11-405 sets out *narrative* aquifer water quality standards, including
8 that a “discharge shall not cause a *pollutant* to be present in an aquifer classified for a
9 drinking water protected use in a concentration which endangers human health,” and that
10 a “discharge shall not cause a *pollutant* to be present in an aquifer which impairs existing
11 or reasonably foreseeable uses of water in an aquifer.” A.A.C § R18-11-405(A) and (C).

12 Moreover, the definition of “pollutant” under A.R.S. 49-201(29) is not tied to
13 numeric AWQS, but rather is defined broadly to include:

14 [F]luids, contaminants, toxic wastes, toxic pollutants, dredged spoil, solid
15 waste, substances and chemicals, pesticides, herbicides, fertilizers and other
16 agricultural chemicals, incinerator residue, sewage, garbage, sewage sludge,
17 munitions, petroleum products, chemical wastes, biological materials,
radioactive materials, heat, wrecked or discarded equipment, rock, sand,
cellar dirt and mining, industrial, municipal and agricultural wastes or any
other liquid, solid, gaseous or hazardous substances.

18 ADEQ knows full well that it has this authority – it sets it out in its own policy
19 statement.²⁰ In ADEQ’s Substantive Policy Statement 3010.000, Using Narrative Aquifer
20 Water Quality Standard To Develop Permit Conditions For Aquifer Protection Permits
21 (October 3, 2003), ADEQ provides *inter alia*: “Description of Practice/ Policy: Narrative
22 AWQS (A.AC. R18-11- 405) have equal status in protecting the environment and human
23 health as numeric AWQS (R18-11-406)” (emphasis added). It goes on: “If a pollutant
24 discharged from a facility subject to the Aquifer Protection Permit (APP) program may
25 endanger human health or threaten reasonably foreseeable uses of water in an aquifer and

26 ¹⁹ Refers to Waters of the United States.

27 ²⁰ The court may take judicial notice of this public record. Rule 201(b)(2), *Arizona Rules*
28 *of Evidence*. It is available at
<https://legacy.azdeq.gov/function/laws/download/policy/3010.pdf>.

1 no numeric AWQS exists for that pollutant, then an AL for the APP may be established to
2 prevent any possible violation of the narrative AWOS for that pollutant.”

3 All of the above must be read in the light of ADEQ’s obligation to “conduct
4 ongoing monitoring of the waters of the state including the state’s WOTUS and aquifers
5 to detect the presence of new and existing pollutants, determine compliance with
6 applicable water quality standards, determine the effectiveness of best management
7 practices, agricultural best management practices and best available demonstrated control
8 technologies, evaluate the effects of pollutants on public health or the environment and
9 determine water quality trends.” A.R.S. § 49-225(A).

10 There is no conceivable reason to justify ADEQ’s claim that it does not have
11 authority to impose narrative aquifer water quality standards already provided for in its
12 own regulations.

13 The court is requested to rule that ADEQ has the authority to impose narrative
14 aquifer water quality standards as delineated in A.A.C § R18-11-405, and to remand this
15 matter to ADEQ to exercise reasonable discretion in assessing whether to impose these
16 standards on AMI in the Permit.

17 **X. CONCLUSION**

18 The Court is respectfully requested to remand this matter to ADEQ to modify the
19 Permit as follows:

20 (1) To require that a POC well be installed on AMI’s property that extends into
21 the Harshaw Creek aquifer immediately downgradient of WTP2/Outfall 2.

22 (2) To require that AMI demonstrate that the piping infrastructure connecting
23 the TSF, UCP or WTP1 to WTP2 and the Harshaw Creek aquifer is in compliance with
24 A.R.S. § 49-243(B).

25 (3) That ADEQ must exercise its authority under the APP program to require
26 the installation of two additional POCs at locations determined by ADEQ in its reasonable
27 judgment in the downstream segments of the Harshaw Creek aquifer and the Sonoita
28 Creek aquifer.

1 (4) That ADEQ must exercise reasonable discretion and require monitoring of
2 the POCs in the Harshaw Creek and Sonoita Creek aquifers of not less than weekly for the
3 first year of WTP2's operation, and monthly thereafter.

4 (5) That ADEQ has authority to include narrative water quality standards in the
5 Permit and must exercise this authority reasonably.

6 The Court is respectfully requested to order that ADEQ reimburse PARA its
7 attorneys' fees and other expenses incurred in this appeal pursuant to A.R.S. § 12-
8 348(A)(2) ("a court shall award fees and other expenses to any party ... that prevails by an
9 adjudication on the merits in ... a court proceeding to review a state agency decision
10 pursuant to" A.R.S. § 12-901 *et seq.*).

11 The Court is also respectfully requested to order that ADEQ pay PARA's
12 reasonable costs and fees incurred during the administrative appeal before the Office of
13 Administrative Hearings pursuant to A.R.S. § 12-348(I)(1), A.R.S. § 41-1007, and A.R.S.
14 § 41-1092.12(C).

15 DATED this 12th day of December, 2022.
16

17 **MUNGER, CHADWICK & DENKER, P.L.C.**

18 /s/ Adriane J. Hofmeyr
19 Adriane J. Hofmeyr
20 Robert Metli
21 Andrew H. Barbour
22 *Attorneys for PARA*

23 Original of the foregoing filed
24 this 12th day of December, 2022, with:

25 Clerk of the Court
26 Maricopa County Superior Court
27 201 West Jefferson St.
28 Phoenix, Arizona 85003

A conformed copy of the foregoing was
delivered this 12th day of December, 2022, to:

1 The Honorable Daniel J. Kiley
2 Maricopa County Superior Court
3 101 West Jefferson St.
4 East Court Building-613
5 Phoenix, Arizona 85003

6 A copy of the foregoing was mailed and
7 e-mailed this 12th day of December, 2022, to:

8 Jothi Beljan
9 Arizona Department of Environmental Quality
10 Environmental Enforcement Section
11 Arizona Attorney General's Office
12 2005 N. Central Avenue
13 Phoenix, Arizona 85004
14 Jothi.Beljan@azag.gov
15 *Counsel for Appellee Arizona Department of Environmental Quality*

16 Christopher D. Thomas
17 Andrea Driggs
18 Alisha Tarin-Herman
19 Perkins Coie LLP
20 2901 N. Central Ave., Ste 2000
21 Phoenix AZ 85012-2788
22 ATarinHerman@perkinscoie.com
23 *Counsel for Arizona Minerals Inc.*

24 Todd Gwillim
25 South32/Arizona Minerals Inc.
26 2210 E. Fort Lowell Rd.
27 Tucson AZ 85719
28 *Counsel for Arizona Minerals Inc.*

By: Julissa Villegas

CERTIFICATION OF WORD COUNT

Counsel undersigned certifies that appellant’s opening brief to which this certificate is attached contains 13,456 words and does not exceed the word limit set by Judicial Review of Administrative Decisions Rule 8 (a).

The information provided in this certification is true and complete.

RESPECTFULLY SUBMITTED this 12th day of December, 2022.

/s/ Adriane J. Hofmeyr
Adriane J. Hofmeyr
Andrew H. Barbour
Attorneys for Appellant PARA

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

EXHIBIT A

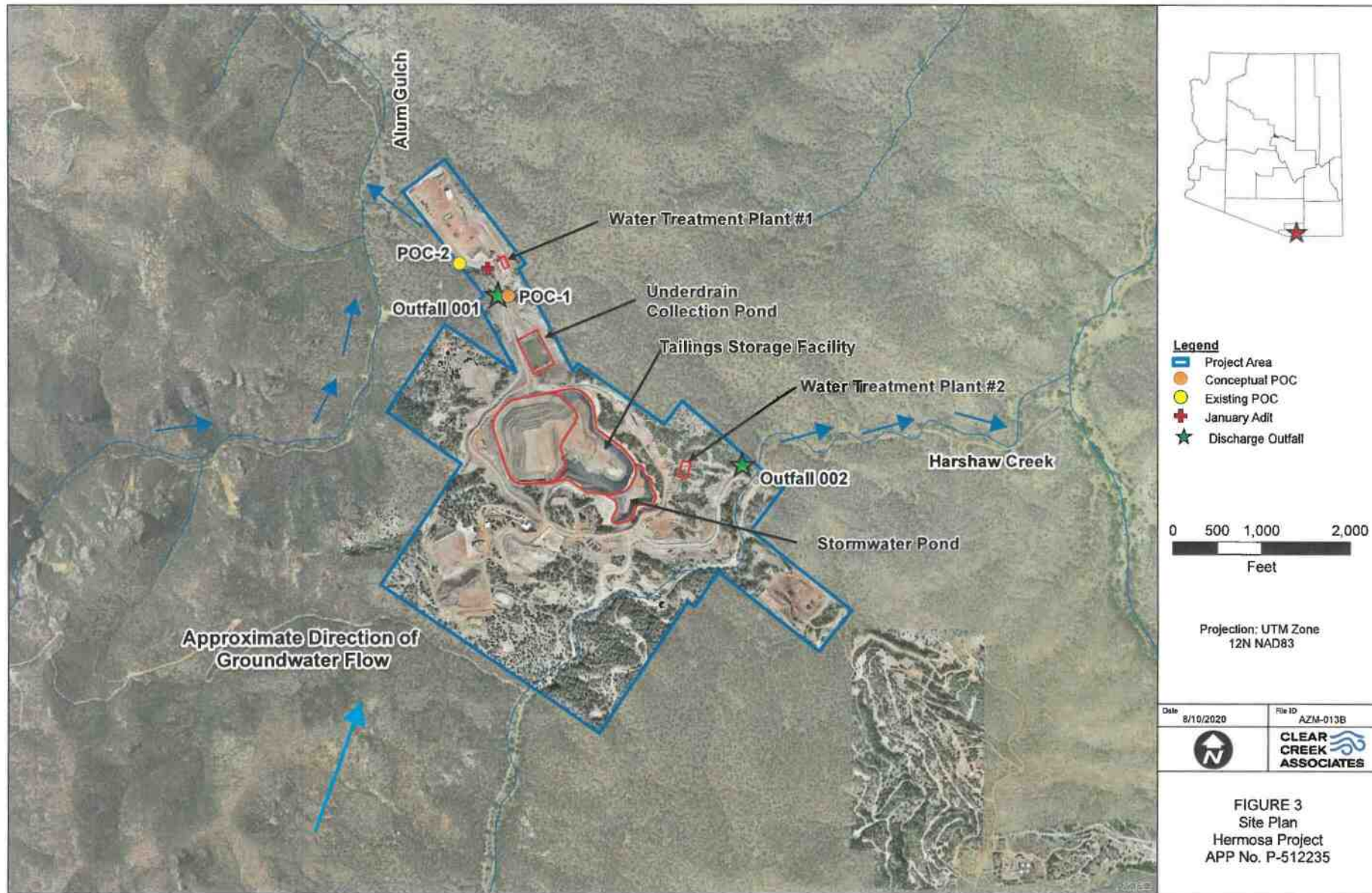


EXHIBIT B

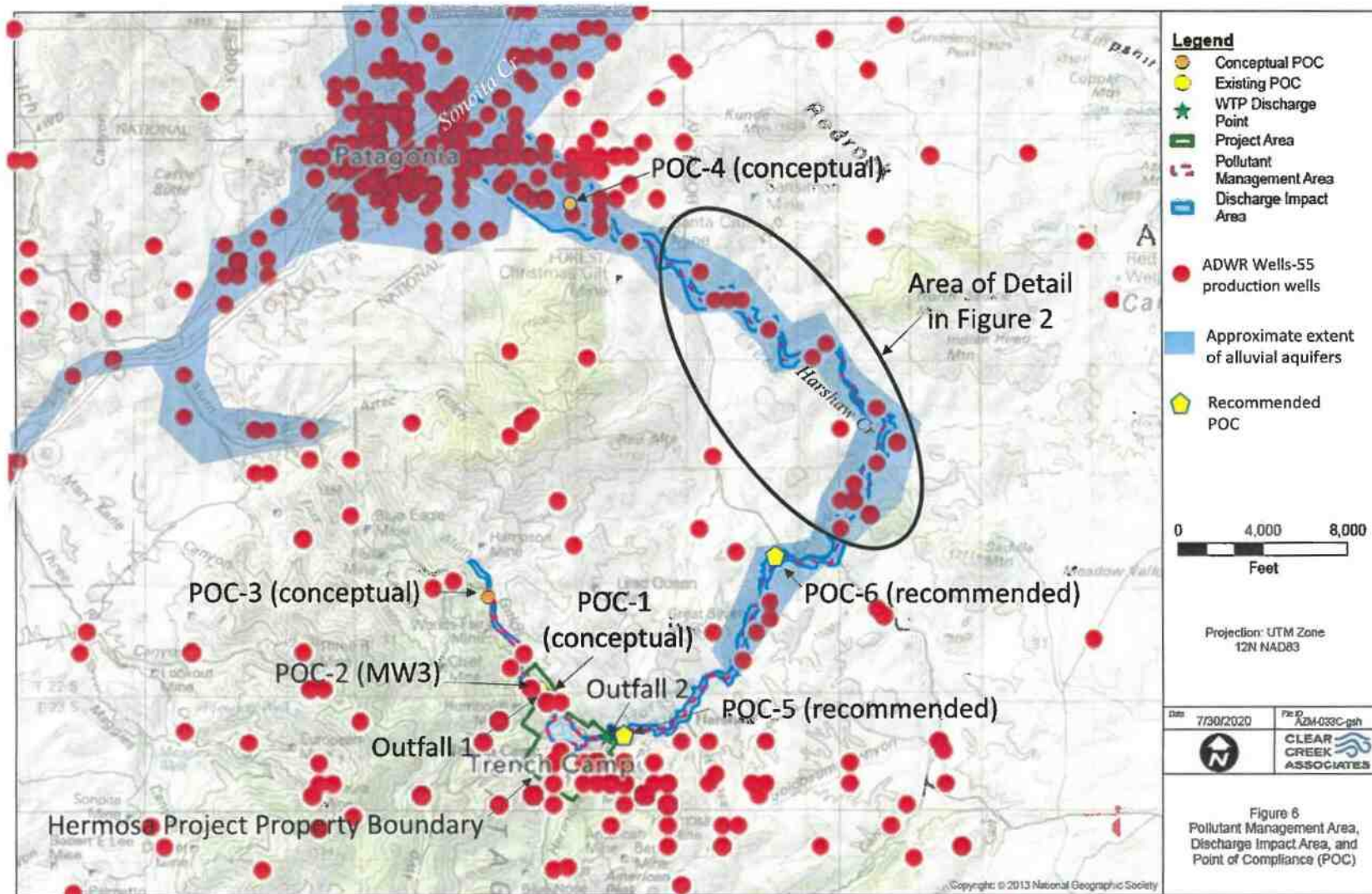


Figure 6. Production wells overlain on map of AMI's proposed PMA/DIA and POCs. Proposed additional POC-5 and POC-6 shown with yellow pentagons.