

RESPONSE TO PUBLIC COMMENTS

Permit No. AZ0026387 – January Mine Hermosa Project

Applicant: Arizona Minerals Inc.
2210 East Fort Lowell Road
Tucson, Arizona 85719

Permit Action: Final permit decision and response to comments received on the draft permit public noticed on February 5, 2021, February 26, 2021, and April 30, 2021. Following is ADEQ’s response to comments received on the subject draft permit.

Prepared By: Devin McAllister
Surface Water Protection Permits Unit
Arizona Department of Environmental Quality
1110 W. Washington St., 5415B
Phoenix, AZ 85007
602-771-4374

Date: 20 July 2021

Comments received during the public comment period are summarized below. The comments are followed by ADEQ’s response shown in *italics*. Comments may have been shortened or paraphrased for presentation in this document. A copy of the unabridged comment is available upon written request from the ADEQ Records Center, recordscenter@azdeq.gov.

Public Notice and Public Hearing Comments

The public comment period began on February 5, 2021 and ended May 31, 2021. Public hearings were held virtually on February 25, 2021 and April 1, 2021.

Comments received during the public comment period are summarized below. The comments are followed by ADEQ’s response shown in italics. Comments are organized as follows:

Commenter #	Source	Method
1	Gregory Droeger	Written
2	Carolyn Shafer, Mission Coordinator and Board Member – Patagonia Area Resource Alliance	Written
3	Chris Werkhoven	Written
4	Gary Townsend	Written
5	Margaret Dawn Walker	Written
6	Andrea Wood, Mayor – Town of Patagonia	Written

Commenter #	Source	Method
7	Chuck and Sarah Klingenstein	Written
8	Claudia Campos	Written
9	Michele Gisser	Written
10	Selso Villegas, Executive Director – Tohono O’odham Nation Water Resources Department	Written
11	Quentin Lewton	Written
12	Sindi M	Written
13	Jeffrey Cooper	Written
14	Christine Dollaghan	Written
15	Nancy and Mary Hale	Written
16	Annicka Campbell	Written
17	John Nordstrom	Written
18	Alex and Jill Johnson	Written
19	Carolyn Shafer	Written
20	Robert Gay	Written
21	Chet and Dawn Busse	Written
22	Larry Langstaff	Written
23	Nancy McCoy	Written
24	Ronald R. Morriss	Written
25	Joan Card, Culp & Kelly, LLP – Counsel to the Nature Conservancy	Written
26	Carolyn Shafer, Mission Coordinator and Board Member – On behalf of the Patagonia Area Resource Alliance; 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, and Tucson Audubon	Written
27	Brent Musselwhite, Director Environment & Permitting – Arizona Minerals, Inc.	Written
28	David Peckham	Written
29	Catherine Williams	Written
30	Dara Rider	Written
31	Dominique Edmondson	Written
32	Vic Bostock	Written

Commenter #	Source	Method
33	Elizabeth Slikas	Written
34	Wendy Puquirre	Written
35	Linda White	Written
36	Kevin Brown	Written
37	Margaret Gallagher	Written
38	J.D. Ruybal	Written
39	Elaine Smith	Written
40	Wendy Emmert	Written
41	Alexandria Cogbill	Written
42	Jane Melkonoff	Written
43	Ajeet Khalsa	Written
44	Nancy Bennett	Written
45	Cole Larson-Whittak	Written
46	Mary Doll	Written
47	Brandon Herman	Written
48	M Leszczynski	Written
49	Brit Rosso	Written
50	Evelina Caffrey	Written
51	Dona LaSchiava	Written
52	Brett Downey	Written
53	Kristi Jenkins	Written
54	Kevin Petty	Written
55	Judith Ulreich	Written
56	Brent Rocks	Written
57	David Schwartz	Written
58	Chris Wren	Written
59	Carrie Darling	Written
60	Dr. Louis Casillas	Written
61	Ernst Bauer	Written
62	Roger Baron	Written

Commenter #	Source	Method
63	Kristin Walsh	Written
64	Wanda Allen	Written
65	Gerry Milliken	Written
66	Jill Paulus	Written
67	Daniel R Patterson	Written
68	Diane McVicker	Written
69	Robert Roffler	Written
70	Charles R. Stack	Written
71	Paul Helbling	Written
72	Cynthia Hicks	Written
73	Marita Woods	Written
74	Elizabeth Rotz	Written
75	Tawnie Mccutchen	Written
76	Nancy Oliver	Written
77	Mary Caldwell	Written
78	Dr. George Pauk	Written
79	James Mulcare	Written
80	Jeff Hansen	Written
81	Michelle MacKenzie	Written
82	Marge Pellegrino	Written
83	Anthony DeCarlo	Written
84	Tracy Elmore	Written
85	Mark Pringle	Written
86	Faulene Main	Written
87	Dr. Loren Wieland	Written
88	Theo Vora	Written
89	Sandy Whitley	Written
90	Matthew McCraw	Written
91	Dr. David Wright	Written
92	CD Girtz	Written

Commenter #	Source	Method
93	Linda Gillaspy	Written
94	Dr. James Gale	Written
95	Tracey Peterson	Written
96	Brian Ainsley	Written
97	Valerie Rounds-Atkinson	Written
98	Jessica Blaylock	Written
99	Sherry Pennington	Written
100	Lynn Shoemaker	Written
101	Dr. Sophia Kathariou	Written
102	Laura Kiholm	Written
103	Margaret Murphy	Written
104	Michael Nelson	Written
105	Jeremy Jonas	Written
106	Gregory C. Freeman	Written
107	Dr. Mary Ann and Frank Graffagnino	Written
108	John Lampson	Written
109	Janice Dowling	Written
110	Judy Whitehouse	Written
111	Karen Loschiavo	Written
112	Lauren Murdock	Written
113	Sharl Heller	Written
114	Dr. Danielle Montague-Judd	Written
115	Rex Oxford	Written
116	Valerie Carrick	Written
117	Liana Luciano	Written
118	David Olson	Written
119	Gilbert Satchell	Written
120	Carroll Munz	Written
121	Stephanie Able	Written
122	Alice Stambaugh	Written

Commenter #	Source	Method
123	Stephen Johnson	Written
124	Dr. Kerby Miller	Written
125	Mike Hamill	Written
126	Nancy O'Byrne	Written
127	Cat Zampini	Written
128	Dana Snell	Written
129	Hannah Lord	Written
130	Edward Scott	Written
131	Eron Lee	Written
132	Erin Morey	Written
133	Paula Hughes	Written
134	Fred Binder	Written
135	Jeremiah Teague	Written
136	Sharon Cox	Written
137	Diana Heymann	Written
138	Christopher Bastek	Written
139	Whitney Judd	Written
140	Paul Blackburn	Written
141	Rebecca Hinton	Written
142	DeeDee Tostanoski	Written
143	Michele Frisella	Written
144	Joan Dobbs	Written
145	Linda Miller	Written
146	Clinton Culberson	Written
147	Miriam Bratten	Written
148	Linda Corder	Written
149	Steve W	Written
150	Luke Metzger	Written
151	Don Steuter	Written
152	Sarah Gonzales	Written

Commenter #	Source	Method
153	Diane Paolazzi	Written
154	Andrew Gowans	Written
155	Walter Pinkus	Written
156	Peg Kazda	Written
157	Marnie Gaede	Written
158	Jane Pauk	Written
159	Dr. Ernst Bauer	Written
160	Salissa Chavez	Written
161	Susan Heath	Written
162	Nancy McLean	Written
163	Karen Kravcov Malcolm	Written
164	Barbara Rosenthal	Written
165	Duncan Brown	Written
166	John Ishikawa	Written
167	Elizabeth Folz	Written
168	Sharon Hill	Written
169	Dean Kendall	Written
170	Andrew Ashburn	Written
171	Kimberly Smith	Written
172	Bobbi Standish	Written
173	Judith Smith	Written
174	Tami Derezotes	Written
175	Marilyn Solamito	Written
176	Brooke Timbrel	Written
177	Fred Hansen	Written
178	Diane Marks	Written
179	Nathan Shineywater	Written
180	Dr. David MacLean	Written
181	Stephen Dutschke	Written
182	Marilyn Majalca	Written

Commenter #	Source	Method
183	Shari Danann	Written
184	Ellen McCann	Written
185	Francis Glad	Written
186	Ruedi Kelsch	Written
187	Nate Byerley	Written
188	Colin Waite	Written
189	Dawn Busse	Written
190	Chase Brendle	Written
191	Kaety Byerley	Written
192	Clare Bonelli	Written
193	Nancy Chismar	Written
194	Sandy Dillon	Written
195	Juliet Jivanti	Written
196	Dr. Douglas Pickrell	Written
197	Janet Winans	Written
198	Sarah Hasted	Written
199	Janice Pulliam	Written
200	Ron Mannhalter	Written
201	Lynn Ashby	Written
202	Andrew Gould	Written
203	Dr. Nasrin Mazuji	Written
204	Dr. Sally Rings	Written
205	Kendall Busse	Written
206	Paula Fischer	Written
207	Linda Staszak	Written
208	Dr. David Staszak	Written
209	Uli Kohl	Written
210	Ulla Pade	Written
211	Thor Stas	Written
212	Eric Rankin	Written

Commenter #	Source	Method
213	Jill Newburg	Written
214	Sean Monahan	Written
215	Georgette Larrouy	Written
216	Dennis and Dena Sohocki	Written
217	Devin Brooke	Written
218	Travis Frampton	Written
219	James Mulcare	Written
220	Robert Giannone	Written
221	Marija Ivok	Written
222	Emily Cowles	Written
223	Paula Hartgraves	Written
224	Lynn Shoemaker	Written
225	Sylvia Barrett	Written
226	Brittany Burgard	Written
227	Amber Longo	Written
228	Bryer Marnin	Written
229	Joan Card, Culp & Kelly, LLP – Counsel to the Nature Conservancy	Oral
230	Tricia Gerrodette	Oral
231	Alex Johnson	Oral
232	Marshall Magruder	Oral
233	Thomas Hathaway	Oral
234	Carolyn Shafer, Mission Coordinator and Board Member – Patagonia Area Resource Alliance	Oral

WRITTEN COMMENTS

Written comments received on the official record were received during the Public Comment Period.

COMMENT NO. 1

As a longtime resident of Santa Cruz County, and one who greatly enjoys our public lands, I strongly encourage you to deny South32's Pollutant Discharge Application. If there is also any existing groundwater removal application, I also strongly entreat the ADEQ to deny it, for the same reasons.

RESPONSE NO. 1

ADEQ is required by state law to issue an AZPDES permit if the application has demonstrated that the facility will meet all state and federal requirements. Arizona Minerals Inc. submitted a complete application that meets all state and federal requirements. ADEQ does not regulate groundwater removal.

COMMENT NO. 2

Patagonia Area Resource Alliance formally requests an extension of 30 days to review the referenced AZPDES permit in light of significant technical information just received, including the ERC January 20 and 25 technical memoranda, among other things.

RESPONSE NO. 2

ADEQ added an extension of 60 days to the public comment period as well as a second public hearing for the draft AZPDES permit modification.

COMMENT NO. 3

To amend an existing, small scale clean-up discharge permit with a discharge permit for a full-scale mining operation raises the question whether the original granting considerations still apply since there is a very large volume of deep aquifer and effluent water involved. A careful analysis of the consequences is therefore warranted. Below is a list of related concerns and opinions:

3.a Flooding Threats: Flooding of private and public property due to the Outfall 002 discharges therefore needs to be assessed, reviewed and damage compensation schemes put in place for loss of life and economic hardship, before considering granting of the addition.

3.b Groundwater and Global Warming: Long term groundwater availability projections for the Sonoita Creek watershed that take local climate changes into account are not included in the South32 permit amendment in spite of the required “Duty to Mitigate”, i.e. whether there is “a reasonable likelihood of adversely affecting human health or the environment.”

3.c Dewatering of the Patagonia Mountains: Simple analysis has shown that, as expected, only during an initial short saturation period the effluent adds to groundwater volume but during the decades after that, most of the effluent, subject to some evapotranspiration losses, will run down the rather steep streambeds and thus eventually end up in Patagonia Lake. Depriving Patagonia residents of a groundwater reserve that can become of critical importance during continued climate changes will be socially and politically unacceptable and must be subject to public scrutiny.

3.d Mine Calamities: The Outfall 002 effluent will be monitored on residual contamination of a wide diversity in chemical and physical nature, all with detailed specifications on detection limits and allowable concentrations. It can always be

argued, however, whether such measures will avoid calamities that occur due to “unforeseen” malfunctioning of treatment equipment and/or containment structures at the mine site whereby a so-called “bypass” is by default allowed to discharge “untreated” effluents. As long as mine practices are not upgraded to current climate conditions, no permit for Outfall 002 should be considered.

3.e Erosion in Contaminated Areas: Relevant to the situation of a dramatically increased stream flow is an expected increase of erosion induced contamination originating from acid mine drainage released during and after 150 years of legacy mining. Chemicals adsorbed to rocks or accumulated in soils and vegetation, as well as having more mineralized rock exposed due to erosion, all lead to an increased load of contaminants in the stream flow.

According to the application, Part 1, section I.1, there only is an obligation that “effluent samples shall be taken downstream from the last treatment process and prior to mixing with the receiving waters”. In practice this should mean that monitoring should not stop close to the point of discharge but there where Sonoita Creek becomes perennial, i.e. just downstream of Patagonia and perhaps more importantly, include samples of the water and bottom soils of Patagonia Lake (see next section). Considering the above it is highly desired to assess contamination levels before and during the release from Outfall 002 all along Harshaw Creek, Sonoita Creek and Patagonia Lake.

3.f Patagonia Lake: Remarkably absent in past contamination studies of the Sonoita Creek watershed done by various agencies is a reporting on Patagonia Lake water and bottom soils. Sonoita Creek, and Alum Gulch for that matter, have been or still are “Impaired Waters” according to recent ADEQ reporting and thus have been delivering contaminated stream flows to Patagonia Lake. Even when the incoming water has allowable levels of such contaminants, high levels in bottom soils can be expected. Without published information on the current level of contamination in the bottom soils of Patagonia Lake and without knowing how much of the effluent’s contaminants will accumulate in the lake, permits that significantly increase the in-stream of “treated” mine waters should not be issued.

3.g The Post-Dewatering Era: Since mine drainage water is part of the water to be released via Outfall 002, there is an obligation to collect and treat drainage water to the requirements of the permit and that should not stop after closure of the operation. An AZPDES permit should not be granted as long as the Plan of Operations does not specifically include a condition that requires treatment of possible mine drainage as long as needed, possibly in perpetuity.

3.h Corporate Interference in Groundwater Supply: Because mining profits will control the perpetuity of the discharges applied for, there is no guarantee whether these discharges will not be interrupted or stopped at all by South32 at any point in time. Consequently, South32 should not be provided with a permit that affects public groundwater availability to Patagonia residents in any form.

3.i It is remarkable that in the Application there is no mention of taking preventive measures to avoid exceedance of the allowed contamination levels in effluents in case

facilities or constructions are partly or completely damaged due to seismic events. ADEQ should not be issued a permit as per Applicant's Amendment but require further analysis and proof of viability of any proposed mitigation approach concerning damages to the environment and groundwater induced by seismic events.

Until studies on these subjects have been completed, reviewed and again commented on by the public, and control over public groundwater has been regulated, ADEQ should not add Outfall 002 to the Outfall 001 permit.

RESPONSE NO. 3

3.a The AZPDES program, as designed by state and federal law, does not regulate or assess flooding impacts.

3.b The AZPDES program, as designed by state and federal law, does not regulate groundwater. The AZPDES program regulates and authorizes the discharge of pollutants to surface waters (Arizona Revised Statutes (ARS) 49-255.01). Local climate changes are not a required component to assess in the AZPDES program when issuing permits.

The AZPDES Standard Condition for "Duty to Mitigate" is to ensure the permittee takes all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of the permit which has a reasonable likelihood to adversely affect human health and the environment. This applies to AZPDES authorized discharges, not impacts outside the scope of the AZPDES program.

3.c The "dewatering" or groundwater pumping referenced in the comment is not regulated by the AZPDES program.

3.d Arizona Minerals Inc. will be constructing a new water treatment plant which will treat the mine drainage and tailings seepage to meet applicable surface water quality standards. Appendix C of the permit describes the AZPDES Permit Standard Conditions and Notifications for bypass and upsets. The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation.

3.e The AZPDES permit requires the permittee to monitor discharges to meet discharge limitations that are protective of the designated uses of the receiving water, Harshaw Creek. All compliance monitoring must be taken after the last treatment process and before mixing with Harshaw Creek.

The narrative standards in Part I.D will ensure the discharge does not cause the growth of algae or aquatic plants that inhibit or prohibit the habitation, growth or propagation of other aquatic life or that impair recreational uses.

3.f Patagonia Lake is downstream of Harshaw Creek. The designated uses and standards set for Harshaw Creek ensure that surface water quality standards provide for the attainment and maintenance of all downstream uses. Therefore, as long as the discharge meets the discharge limitations set in the permit for Harshaw Creek there will be no adverse impacts to downstream waters.

3.g Arizona Minerals is required to treat the water that is discharged from the mine to ensure it meets applicable standards. After dewatering is completed, any discharges to Harshaw Creek will still be regulated under the Clean Water Act and must meet applicable standards.

3.h See response no. 3.b.

3.i The AZPDES program, as designed by state and federal law, does not require consideration of potential seismic events when implementing permit requirements and conditions. Any discharge of pollutants must meet applicable standards.

COMMENT NO. 4

Opposed! This mining project should not be allowed AT ALL. Water is precious and we face extreme shortages for this community. This waste of water does not benefit the community.

RESPONSE NO. 4

ADEQ agrees that water is precious in Arizona. ADEQ works hard to achieve our mission to protect and enhance public health and the environment in Arizona. The AZPDES permit authorizes the discharge of pollutants to Harshaw Creek. ADEQ has modified the existing AZPDES permit to add a new outfall. AMI will be constructing a water treatment plant 2 which will treat mine drainage and tailings seepage to meet applicable surface water quality standards.

COMMENT NO. 5

I would like to express my deep concern regarding Arizona Mining's application for a massive dewatering program at the Hermosa mine near Patagonia. With all due respect, the proposal to draw down 1.6 billion gals of water per year, for at least 4 years, in a desert region such as Southern Arizona, is completely incomprehensible & totally unacceptable. Water is the most precious commodity in the ground, not minerals. It must be protected at all cost. The intention of releasing 4,500gpm of treated water into Harshaw Creek & ultimately Sonoita Creek will adversely impact the incredibly important & biologically diverse riparian system in this region. No modern mining methods adequately remove toxins & contaminants from water used during mining & the release of such into local water courses is a major concern. This proposal MUST undergo thorough investigation by appropriate organizations.

RESPONSE NO. 5

The AZPDES program, as designed by state and federal law, regulates the discharge of pollutants into regulated waters of the US. The program does not regulate dewatering or groundwater pumping. This permit modification to the existing AZPDES permit authorized the addition of a new outfall for discharge to Harshaw Creek.

ADEQ completed a thorough review of the application and modified the permit to authorize the discharge of pollutants from Outfall 002 to Harshaw Creek. Discharge limitations and narrative standards have been established in the permit to ensure the designated uses of Harshaw Creek are maintained and protected.

COMMENT NO. 6

The Town of Patagonia requests ADEQ require Arizona Minerals Inc. (AMI) to seek a new permit for the proposed outfall 002 into Harshaw Creek. We feel the modification of the current permit would not be as substantive in the review of water quality at the discharge point. The discharge point in our opinion, requires its own permit due to the higher quantity of discharge that affects the quality of the water. Harshaw Creek merges with Sonoita Creek which runs through our Town, may eventually affect the underground water quality that our Town wells draw, in supplying water to our 874 citizens.

RESPONSE NO. 6

The major modification to the AZPDES permit required the same substantive review that a new permit would require. Water quality data was assessed and the appropriate discharge limitations were set for Outfall 002 in the same way they would be for a new individual permit. This permit authorizes the discharge of pollutants to Harshaw Creek. Discharge limitations and permit conditions are set to maintain and protect all designated uses of the receiving water.

COMMENT NO. 7

This particular application for a major modification to the current ADEQ permit is troubling for the information that we do not have. And I do not think ADEQ has adequate information. Simply put, our concerns revolve around water quantity reduction, water quality impacts and finally, to water saturation to the discharge creeks that include Harshaw, Alum Gulch and Humboldt Canyon and potential Sonoita Creek. Many of our comments are based upon this quote: "Treated water from WTP2 will be released continuously from Outfall 002 at flow rates up to 4,500 gallons per minute (GPM) or about 6.48 MGD. The highest flow rate is expected to occur in the first years of exploration activities, with flows declining over time. These estimates are based on the Permittee's understanding of aquifer conditions and on-site reuse estimates [emphasis added]." This quote is found in the STATEMENT OF BASIS FOR MAJOR MODIFICATION OF ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT NO. AZ0026387. It does not say anything about ADEQ's understanding and I look forward to transparent information convincing me that there are no impacts

6.48 Million of Gallons per Day (MGD) is a lot of water that will have a significant impact on groundwater and on the surface drainages where that much water is released -- even when treated to state standards. While I would like to trust the mine's statements that they believe the water discharges will not reach the Sonoita Creek drainage I request that third party review be required and made available to the public. Pumping these astounding amounts of water could potentially affect many public and private wells in the area if the modeling is incorrect. I test my well water quality yearly and I do not want its

excellent quality to be endangered. And of huge importance to us is during our significant monsoonal rain patterns occurrence, where will all of the water from those events go if the ground is already saturated with the mine's discharge? This new discharge application should be done with an entirely new permitting process with peer reviewed data that clearly shows the impacts to the entire Sonoita Creek Watershed. And we whole heartedly support the comments filed by Patagonia Area Resource Alliance and we hereby include those comments with our comments.

RESPONSE NO. 7

The AZPDES program, as designed by state and federal law, regulates the discharge of pollutants into regulated waters of the US. The program does not regulate the quantity of discharge from an industrial facility. As long as the permittee meets permit conditions and discharge limitations, they may discharge into Harshaw Creek at the design flow. The AZPDES program does not regulate groundwater.

AMI submitted and ADEQ reviewed documentation with their request for permit modification, which included necessary information for ADEQ to understand the pollutants being discharged and draft appropriate limits in the permit modification.

Regarding narrative standards for the receiving water, see Response No. 3. Regarding comments filed by Patagonia Area Resource Alliance, see Response No. 26.

COMMENT NO. 8

Your imminent decision will further degrade already impaired waters, and will forever negatively impact our business, our livelihoods, our family's future, and more importantly, my health! I plea with you and the Arizona Dept of Environmental Quality to require a new Pollutant Discharge Elimination System Permit to South 32. An amendment to the existing permit is not suitable because the existing permit is significantly different, for a different water treatment plant that discharges significantly less volume into a different waterway.

The longevity of our wells, livelihoods, and biodiversity is at stake. In addition, the proposed 6.48 MGD is an excessive amount of water, that will further negatively impact the region's groundwater for generations to come. On the surface, where that much water is released, the increased levels of lead and cadmium will impact all well users. Furthermore, the release of additional manganese and other metals will potentially impact water quality as well as potentially impair operation of well equipment. - even when treated to state standards.

There are significant concerns about the impacts on wildlife and plant life due to this disruption of natural water flows and cycles in the region. The cumulative impacts of the other mining projects in varying stages of development in the Patagonia Mountains will cause imminent and irreparable negative impact on habitat degradation, species loss, water, light, noise, and air pollution which will have a devastating economic impact for all of us in the community that rely on tourism to make a living. I fully endorse the comments filed by Patagonia Area Resource Alliance and plead with the Arizona Dept of

Environmental Quality to please help us protect the quality of our water - our most important, valuable, and irreplaceable natural resource!

RESPONSE NO. 8

The aquatic and wildlife designated uses and surface water quality standards set for Harshaw Creek will ensure the wildlife and plant life along the receiving water are protected. This segment of Harshaw Creek where the new outfall will be located is not impaired. The discharge limitations and narrative standards set in the permit will ensure that the designated uses of Harshaw Creek are protected and maintained.

See Response No. 6.

COMMENT NO. 9

Some of the reasons I have become so attached to Patagonia are the beauty, the rural landscape, the abundance of wildlife and birds, the quiet and the beautiful night skies. All these things are threatened by the advent of the proposal. "The Statement of Basis states that "Treated water from WTP2 will be released continuously from Outfall 002 at flow rates up to 4,500 gallons per minute (GPM) or about 6.48 MGD". It doesn't take a degree in hydrology to immediately understand the impact of discharging this much water while we undergo one of the worst droughts in Arizona history. Living in an area where the rainfall is so minimal, every drop of water must be valued for the precious resource that all life depends on and not one drop wasted.

There is already compromised water quality due to historic mining and only recently cattle have died from drinking water with high levels of lead. This not only threatens water quantity but also quality. It will disrupt the natural flow of water cycles and have detrimental effects on the wildlife as described in Patagonia Area Resource Alliance's comments. We cannot afford this reckless use of water.

This use of water will destroy habitat for many endangered species as well as ruin the environment for those humans who have moved here and made Patagonia their home. It has the potential to deplete investments that many people have made in homes and land at an age where seniors are the most vulnerable and unable to recover from financial hardship. This would be devastating.

RESPONSE NO. 9

See Responses No. 6 and 7.

No condition of this permit releases the permittee from any responsibility or requirements under the Endangered Species Act. This permit does not authorize the "taking" of endangered or threatened species as prohibited by Section 9 of the Endangered Species Act, 16 U.S.C. 1538.

COMMENT NO. 10

The Tohono O'odham Nation (Nation) has historical, cultural and environmental interests and connections to the Santa Cruz River Basin. WATER QUALITY TESTING SHOULD BE MORE FREQUENT THAN QUARTERLY The applicant, Arizona Minerals, Inc. (AMI), proposes to dewater the local aquifer to allow for the exploration of two existing mine shafts. This requires the permit be modified to allow an additional outfall, and construction of a water treatment plant to treat the mine drainage and tailing seepage. AMI proposes to discharge 6.48 million gallons per day of this treated water into Harshaw Creek, which eventually flows into the Santa Cruz River.

Given that the treatment plant will be brand new, and the performance data as to the efficiency of this treatment plant is not yet available, together with the vast amount of water being discharged into the Santa Cruz River Basin, this department believes that quarterly water testing is inadequate, and would propose weekly testing as the preferred standard to protect the integrity of the surrounding natural environment. Thank you for this opportunity to comment. The Nation appreciates all actions possible and the highest standards of testing to protect the fragile natural environment of the Santa Cruz River Basin.

RESPONSE NO. 10

ADEQ sets monitoring frequencies based on numerous factors. ADEQ assesses the type of facility, the design capacity, and the type of pollutant being monitored. For a major industrial facility, such as a water treatment plant, quarterly monitoring will provide adequate data during the permit term. Additionally, Standard Conditions Section 13(f), requires any plant upset that endangers human health or the environment to be reported within 24 hours.

COMMENT NO. 11

If the water table is above the impermeable rock then a sealed shaft through that zone, or all the way to the ore body, should be considered. There is another option that should be explored if necessary. If water must be pumped instead of dumping it downstream South 32 should be required to pump it back up from where the water originally came from creating a virtuous cycle. I believe mining engineers could find a better solution than dumping the water downstream. And, finally, this kind of dewatering will, in all likely hood, have a drying effect on surrounding vegetation creating an unnecessarily increased wildfire hazard.

The point that I wish to make is that South 32 should be required to demonstrate that their proposed dewatering will not damage the surrounding area or they should develop an alternative to their proposed dewatering

RESPONSE NO. 11

ADEQ received an AZPDES permit application and processed AMI's modification request to add a new outfall for discharges from WTP2. The decision of how to manage

the water is determined by AMI as long as they meet all state and federal requirements. Dewatering is not regulated under the AZPDES program.

COMMENT NO. 12

It has come to our attention that SOUTH32 is seeking a permit from your office to do mining speculation in the Patagonia region. Hundreds of us here in Southern Arizona are certainly opposed to any such activity in this Riparian area. There are so many other mining locations and projects underway in Arizona wilderness areas that we the people don't mind so much if you go there. Please deny South32 request, and leave this whole territory alone.

RESPONSE NO. 12

See Responses No. 1 and 4.

COMMENT NO. 13

The proposed modifications are so significantly different in scale and scope that a new permit is required, with the appropriate analysis and environmental review. The proposed modifications with a new Wastewater Treatment Plant (WTP2) and a completely different discharge point (002) into Harshaw Creek warrants a new Permit.

Harshaw Creek is a significant tributary to Sonoita Creek, with the confluence occurring just upstream of the Town of Patagonia's domestic water system wells. The impact of the proposed modifications in South 32's application on the drinking water supply of Patagonia, is a significant issue that needs to be addressed in a new application. Sonoita Creek has long been recognized as one of the most important of the few remaining perennially flowing streams in the Southwest. The importance of this today cannot be overstated, either ecologically or economically.

This is a remarkably beautiful place that requires careful review and detailed environmental analysis to maintain the diversity present today. Clearly a new permit application is required. The discharge from the proposed WTP2 is estimated to reach nearly 6 ½ million gallons a day. This will create some surface flow and depending upon annual precipitation, could have a significant impact to downstream road crossings.

Furthermore, the discharge could add additional heavy metals and other contaminants to the local ground water downstream of the proposed discharge point. The effects of a prolonged drought on the groundwater will be severe and could be serious exacerbated by this discharge. The continuous pumping of the groundwater to "de-water" the aquifer may have consequences to the regional Sonoita Creek groundwater system. Removal of such a huge quantity of water may cause movement among adjacent groundwater areas impacting the water quality and quantity sustaining the community of Patagonia and the natural system of Sonoita Creek.

An additional issue relates to the vegetative community that will develop as a result of this discharge. Riparian streamside habitat will begin to grow and provide some habitat for breeding birds and other species. The large number of species dependent on this

habitat will find it and begin to colonize it. What happens when the flow is diminished over time and “turned off. Will this habitat be left to slowly dry out and die off?

I would respectfully submit that there is ample reason for ADEQ to require a new permit application from South32. Many questions remain regarding the impact of these proposed modifications to the existing permit. It is significantly different than the existing permit. Sonoita Creek and its watershed is too important and asks for the highest protection possible.

RESPONSE NO. 13

See Response No. 6.

The AZPDES program, as designed by state and federal law, regulates the discharge of pollutants into regulated waters of the US. The program does not regulate discharges to groundwater. The AZPDES permit authorizes the discharge of pollutants to surface waters. The AZPDES program does not regulate the growth of vegetation due to the discharge.

COMMENT NO. 14

We are writing to express significant concerns about the potential impacts – short- and long-term – of the activities for which permission is being requested. We are also deeply concerned about the lack of data that could enable calculations, or even plausible estimates, of the ratio of benefits to harms and risks of the proposed actions.

In our judgment, the proposal to discharge large (and varying) amounts of water, potentially contaminated with large (and varying) amounts of heavy metals into Harshaw Creek and the associated watershed, where flow rates already vary substantially with seasonal conditions and storms, threatens both the physical and economic health of Patagonia and the surrounding area. The changes to flow rates and water composition threaten habitats and migration patterns of common as well as protected and endangered species that frequent the area.

Furthermore, as scientists who have reported on the adverse effects of low levels of lead exposure on children’s cognitive skills, we are extremely concerned about the potential harms of increased levels of lead and other toxins in the WTP2 discharge to the health and development of children in the Patagonia area.

We are in full agreement with the comments submitted by the Patagonia Area Resource Alliance and hereby include those comments with our comments above. Because the proposed action is significantly different from the existing permit (for WTP1, discharging significantly lower flow rates into a different waterway) we respectfully urge the AZDEQ to require a new permit rather than considering an amendment to the existing permit.

RESPONSE NO. 14

Discharge limitations and assessment levels have been set in the permit based on the applicable surface water quality standards of Harshaw Creek. As long as the permittee is meeting the permit limitations and requirements pollutants, heavy metals such as lead, will be below the applicable standard and protective of human health and the environment.

See Response No. 6. Regarding comments submitted by the Patagonia Area Resource Alliance, see Response No. 26.

COMMENT NO. 15

Regarding AMI January Mine Project to discharge treated water into the Harshaw Creek, we strongly suggest that: Water be discharged down other creeks/canyons, such as Hermosa Creek, Corral Canyon, and Goldbaum Canyon. That would be beneficial to wildlife, as well as for recharging the aquifer, and providing water on the Coronado Forest.

RESPONSE NO. 15

AMI's permit modification application requested discharges from Outfall 002 into Harshaw Creek. The AZPDES permit conditions and limits were written to be protective of the designated uses of Harshaw Creek. The Permittee is required to meet all permit limits and conditions to ensure the receiving water is maintained and protected.

COMMENT NO. 16

I am writing to express significant concerns about the potential impacts of the activities for which permission is being requested. We are also deeply concerned about the lack of data that could enable calculations, or even plausible estimates, of the ratio of benefits to harms and risks of the proposed actions.

As I have learned about the proposal to discharge large (and varying) amounts of water, potentially contaminated with large (and varying) amounts of heavy metals into Harshaw Creek and the associated watershed, I have become increasingly worried about the ramifications for Patagonia and the beautiful way of life that so many people share in this area. This corridor, which is biologically diverse and rich, will be significantly impacted and threatened by these changes to flow rates and water composition. We are also concerned about the impact of these changes on tourism and interest in the area.

Furthermore, my parents are scientists who have reported on the adverse effects of low levels of lead exposure on children's cognitive skills. They are extremely concerned about the potential harms of increased levels of lead and other toxins in the WTP2 discharge to the health and development of children in the Patagonia area.

We are in full agreement with the comments submitted by the Patagonia Area Resource Alliance and hereby include those comments with our comments above. Because the proposed action is significantly different from the existing permit (for WTP1, discharging

significantly lower flow rates into a different waterway) we respectfully urge the AZDEQ to require a new permit rather than considering an amendment to the existing permit.

RESPONSE NO. 16

See Responses No. 6 and 14 .

Regarding comments submitted by the Patagonia Area Resource Alliance, see Response No. 26.

COMMENT NO. 17

I have grave concerns about South32's plan to drawdown our aquifer, and I need to understand what legal and/or financial remedies are available to homeowners impacted by this program. Any disruption to my continued use of my well on my property will not be tolerated.

RESPONSE NO. 17

The AZPDES program, as designed by state and federal law, regulates the discharge of pollutants into regulated waters of the US. The program does not regulate dewatering. ADEQ cannot provide legal advice regarding legal or financial remedies available to homeowners.

COMMENT NO. 18

We are concerned that the effects of the Harshaw/ Sonoita Creek Watershed by the proposed De-Watering Plan of South 32 Inc. for its Hermosa Mine will have significant and deleterious impacts on the downstream alluvial and riparian drainage area in several ways, both immediate and for the long term. Those possible effects should be carefully and thoroughly considered, studied, and assessed by any permitting agency involved.

Among the host of possible/probable influences:

1. We believe careful study of the results of large scale alteration within the drainage of the various biosystems including aquatic, riparian, plants and animals in terms of both quality and quantity of the planned water discharge. Could be tremendous volume of discharge water.
2. We also believe studies should be conducted on the effects to the entire water shed by the increase in alluvial ground water levels as well as surface water resulting from such a large volume discharge and the desiccation of the same area afterwards. This particularly affects us as to the risks posed by increased ground water level upon the potential for larger and quicker flash flood events downstream (which happen as a normal monsoon-related phenomenon already).
3. We are concerned that the De-Watering of a high elevation aquifer will cause change in the discharge patterns of the few and very important natural springs in the area's surrounding hills.
4. Also, of concern are erosion-related degradations of the roads and stream crossings that would be caused both by higher surface flow and higher saturation

of adjacent alluvial ground. There are several such crossings in the 8 - 10 miles of downstream watershed that already present safety maintenance and impasse problems.

This last issue may fall outside the purview of the permitting agency and so we would appreciate referral or information leading to those agencies that may be concerned with the health and wellbeing, and indeed, future sustainability of public life in this region.

RESPONSE NO. 18

The AZPDES program regulates the discharge of pollutants to waters of the U.S., and cannot require broad environmental impact assessments of downstream impacts, nor can the program regulate groundwater pumping and impacts associated such pumping. See Response No. 3.e.

COMMENT NO. 19

I hereby reference and incorporate all comments submitted by Patagonia Area Resource Alliance. Those comments address the many reasons why:

- In a time of climate crisis and mega drought, there is a great concern about the amount of water proposed to be discharged and the impact upon the region's groundwater.
- Public health concerns due to further degradation of already impaired waters; of special concern are increased levels of lead and cadmium, for example.
- There are public health concerns over increased levels of lead and cadmium impacting well users.
- This proposed action should be a new permit not an amendment to the existing permit because it is significantly different from the existing permit for a different water treatment plant discharging significantly less volume into a different waterway.
- The release of additional manganese and other metals will potentially impact water quality as well as potentially impair operation of well equipment.
- There are significant concerns about the impacts on wildlife and plant life due to this disruption of natural water flows and cycles.

RESPONSE NO. 19

Regarding comments submitted by Patagonia Area Resource Alliance, see Response No. 26.

COMMENT NO. 20

In addition to fully and deeply endorsing PARA's suggested wording below, I want to add five brief points, and to thank you for reading.

1. The proposed discharge, at 4500 down to 3000 gpm is thus 1000 to 1500 times the Monkey Springs contribution, and must be capable of profoundly altering both surface flow patterns and aquifer levels.

2. The guarantee of treating mineralogically complex and potentially highly toxic drainage water, dynamically with no major storage tanks or ponds, as it's pumped to the plant, must be very strong and clear in the treatment plant's design. The proposed treatment process must be given full approval by totally independent technical geochemical experts not remotely connected with the company, i.e. corruption-proof peer review.

3. What are the waste products of the chemical and mechanical treatment processes of the water treatment plant, and where do they go? What are the protective measures that will be taken for the shipment of chemicals and treatment plant waste, through the town, and in the whole of their routes? The safety of this part of the proposed process must also be fully detailed and independently approved.

4. Any South32 proposal that says "if there's a flooding problem downstream of our discharges, we'll help you out with it," is unacceptable, suggesting that they know of the possibility of saturating ground in Harshaw and Sonoita creek areas, and thus increasing the chances for flooding with (hopefully!) future monsoon rains. The flood of 1938, and other more recent rises of Sonoita creek out of its banks, are not being forgotten out of the cultural memory around here, and John Hayes' modeling of the flood zones for Santa Cruz County, gives a starkly real mapping of the extent of possible damage. State of the art highly sophisticated, corruption-proof modeling must be brought to bear to clarify scenarios for any discharge of the proposed magnitude, and to see if any such scenarios "prove" that such a volume is OK.

5. The larger climate change connections should not be forgotten. What comes out of tailpipes and coal-burning regional powerplants is not invisible gases magically wafted away by friendly breezes, it's part of the deterioration of livability for anything that breathes.

PARA-originated comments which I endorse fully. These are just a few of my concerns and I hereby include much more detailed comments by the Patagonia Area Resource Alliance into my comments.

RESPONSE NO. 20

The AZPDES program, as designed by state and federal law, regulates the discharge of pollutants into regulated waters of the US. The program does not regulate surface flow patterns or aquifer levels, nor authority over the treatment process so long as pollutant limits are met. Solid wastes generated at the site and chemicals transported to or from the site are governed by federal and state solid waste and chemical safety rules, not AZPDES permits. AZPDES permits do not address flooding or air pollutants related to climate change. Regarding comments submitted by PARA, see Response No. 26.

COMMENT NO. 21

We are in full agreement with the comments submitted by the Patagonia Area Resource Alliance and hereby include those comments along with our comments. Because the

proposed action is significantly different from the existing permit (for WTP1, discharging significantly lower flow rates into a different waterway) we respectfully urge the AZDEQ to require a new permit rather than considering an amendment to the existing permit. We are writing to express significant concerns about the potential impacts of the activities for which permission is being requested. We are also concerned about the lack of data that could enable calculations, or even plausible estimates, of the ratio of benefits to harms and risks of the proposed actions.

The proposal to discharge large amounts of water, potentially contaminated with large amounts of heavy metals into Harshaw Creek and the associated watershed, where flow rates already vary substantially with seasonal conditions and storms, threatens both the physical and economic health of Patagonia and the surrounding area. The enormous amount of ground water proposed to be drawn up from the local area watersheds needs a new comprehensive study of the impact of dewatering our local aquifers. This Sky Island area, has been experiencing severe drought and climate change. Water is our life source, the quality of, amount of and/or the increase of the water discharged could all have long lasting effects. Our concern for the survival of this unique biologically diverse area in which we live, work and play is imperative.

The proposed actions will occur in the middle of the extraordinarily rich and biologically diverse corridor that connects the Patagonia Mountains to other Sky Island ranges and watersheds, including the pristine San Rafael Valley and the Huachucas. The changes to flow rates and water composition threaten habitats and migration patterns of common as well as protected and endangered species that frequent the area, including the rare birds that draw tourists from around the world to Patagonia. Negative effects on other human activities that boost economic activity from Sonoita to Patagonia to Nogales, such as hiking, bicycling, and astronomy, are likely.

Furthermore, scientists have reported on the adverse effects of low levels of lead exposure on children's cognitive skills, we are extremely concerned about the potential harms of increased levels of lead and other toxins in the WTP2 discharge to the health and development of children in the Patagonia area. We also find it very discerning that a company, SOUTH32, would consider this change in plans to be so minor that a new permit is not required.

RESPONSE NO. 21

The AZPDES program protects human health and the environment by setting pollutant limits protective of designated uses of waterbodies. However, impacts on tourism are outside the ambit of the AZPDES program.

See Responses No. 14 and 26.

COMMENT NO. 22

I have a big problem with letting foreign, for-profit mining companies pollute the streams and use up ground water in the area! I would like you to turn down the request for modifying the pollution discharge by Arizona Minerals, Inc! Once a mining company starts pumping water, the chemicals they might introduce to it, or the soil and rock

contaminants, they mix in with it, would have downstream consequences that this biologically rich area does not deserve! The Patagonia area is known world-wide for its plant and animal diversity. There are many scarce plants and animals that collectively provide a much more valuable resource in this area of Arizona. I hope you see the importance that thousands of others place on clean water in Harshaw and Patagonia Creeks and the Santa Cruz River!!! Besides the ranchers that need clean water for their cattle in the area, most other residents wish for no introductions of pollution to their water systems! Turn down the request to modify their AZPDES!

RESPONSE NO. 22

See Responses No. 1 and 4.

COMMENT NO. 23

Anything that could potentially have a negative impact on the beauty, wildlife, and tourism economy of the Patagonia Mountains and its environs needs to be evaluated carefully and thoroughly. Because the current request by South 32 is to discharge significantly more water at a different site, a new permit needs to be required. This new release of water could have serious negative impacts on plants and wildlife, further degrade already impaired waterways, and release increased levels of lead, cadmium and manganese and other metals. How will this amount of discharged water affect the region's groundwater? I hereby include the comments from the Patagonia Resource Alliance with these comments.

RESPONSE NO. 23

The AZPDES program, as designed by state and federal law, regulates the discharge of pollutants into regulated waters of the US. The program does not regulate groundwater.

Regarding the suggestion of a new permit see Response No. 6.

Regarding the comments from the Patagonia Area Resource Alliance, see Response No. 26.

COMMENT NO. 24

I share and echo the same concerns that have been presented in a filing by Patagonia Area Resources Alliance. (PARA) Arizona Minerals proposal to discharge 6.48 MPG into the Sonoita, Harshaw and Santa Cruz basins is massive and has the propensity to negatively impact these basins. All available scientific information should be studied before authorizing the amendment to the existing permit. I respectfully request Arizona Minerals' request for permit amendment be denied and a new permit application be filed and approved only after pertinent and scientific studies have been performed.

RESPONSE NO. 24

See Response No. 26.

COMMENT NO. 25

This firm serves as outside counsel to The Nature Conservancy (“TNC”) and submits these comments on TNC’s behalf. Given TNC’s overall mission, its vision for the Sonoita Creek watershed, and its property interest in the Preserve, TNC is concerned about the potential adverse effects of the proposed permit modification to the Arizona Minerals, Inc. (“AMI”) AZPDES Permit No. AZ0026387. TNC objects to the proposed permit for the following reasons: The proposed permit modification does not include water quality-based effluent limitations and therefore does not protect designated uses in Harshaw and Sonoita Creeks. The proposed permit modification inaccurately suggests that effluent data is required to determine “reasonable potential” for a water quality standards violation; ADEQ can and should impose water quality-based effluent limits despite any shortage of effluent data. The proposed permit modification seemingly ignores the applicant’s own proposal to meet water quality-based effluent limitations with the construction and use of a new water treatment plant. The proposed permit modification authorizes the discharge of an “impaired” water, which is the antithesis of a proper AZPDES authorization. The proposed permit modification is an arbitrary and capricious departure from ADEQ’s approach to the same permit, different outfall, without explanation or justification. These objections are described in more detail below.

- I. Under ADEQ’s proposal, the new discharge is subject solely to TBELs that apply to the mining sector. ADEQ’s proposed permit modification does not include QBELs for the new discharge and therefore does not protect the water quality of the receiving waters—Harshaw Creek and downstream Sonoita Creek, including TNC’s Preserve. Under Title 18, Chapter 11, Article 1 of the Arizona Administrative Code, Surface Water Quality Standards, Harshaw Creek is designated by ADEQ for the following uses: aquatic & wildlife ephemeral water, partial body contact, and livestock watering. Sonoita Creek downstream of the confluence with Harshaw Creek, including that portion within the Preserve, is designated in rule by ADEQ to be protected for the following uses: aquatic & wildlife warm water, full body contact, fish consumption, irrigation, and livestock watering. The proposed permit modification is in error because it does not include effluent limitations that protect these uses designated by ADEQ, which is inconsistent with the goals, authorities, and requirements of the Clean Water Act. ADEQ’s proposal includes only applicable TBELs, which represents a minimum standard that is not designed to protect designated uses. ADEQ’s proposal does not, but should, also include more stringent QBELs that protect the designated uses of the receiving waters. By including only TBELs, ADEQ’s proposal fails to ensure the protection of native and endangered fish and other aquatic organisms, wildlife, irrigators, ranchers, and people who recreate in Harshaw Creek and downstream Sonoita Creek, including the Preserve. ADEQ’s proposal therefore is inconsistent with the goals and requirements of the Clean Water Act. Moreover, ADEQ’s proposed rationale fails to recognize the tools available under EPA regulations and guidance to establish QBELs in this proposed permit modification, as outlined in section II.
- II. Under governing federal law, AZPDES permits must include conditions “necessary to achieve water quality standards established under section 303 of the CWA.” The procedures for determining the permit conditions necessary to

achieve water quality standards are outlined in federal regulations and EPA guidance. The two principal guidance documents are the 2010 “National Pollutant Discharge Elimination System (NPDES) Permit Writer’s Manual” and the 1991 “Technical Support Document for Water-quality Based Toxics Control,” both of which implement the governing regulations and which ADEQ’s AZPDES permit writers are known to follow. When the permitting authority determines...that a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the allowable ambient concentration of a State numeric criteria within a State water quality standard for an individual pollutant, the permit must contain effluent limits for the pollutant. This means that the “permit must contain effluent limits for the pollutant” that prevent excursions above the applicable numeric criteria for the pollutant. Further, EPA interprets CWA section 301(b)(1) to require discharge permits to contain effluent limitations that meet water quality standards, even when TBELs apply. In this case, ADEQ has instead proposed solely TBELs with limits that represent significant excursions above the numeric criteria that protect aquatic life, the very thing the Clean Water Act is intended to prevent. Clearly, ADEQ’s proposal does not meet the requirements of applicable federal law and guidance for preventing excursions above state water quality standards. As stated in the federal regulations, WQBELs are needed if there is a “reasonable potential” the discharge will cause or contribute to an excursion above a numeric criterion within an applicable water quality standard. ADEQ’s Statement of Basis for the proposed permit modification states that a “reasonable potential” determination, or RP, cannot be determined because the proposed “new treatment system and effluent (discharge) data are not yet available.” Because ADEQ concludes that data are required to determine RP, ADEQ proposes to omit WQBELs from the permit for the new proposed discharge, requiring only the aforementioned nominal and unprotective TBELs, and the monitoring of a list thirteen additional parameters in relation to unenforceable “assessment levels.” However, ADEQ unduly limits its authority and ability to impose protective WQBELs in this proposed permit modification. CWA regulations and guidance specifically authorize and explain a process for determining RP in the absence of effluent data. Section 6.3.3 of the NPDES Permit Writer’s Manual, entitled “Conducting a Reasonable Potential Analysis without Data,” provides considerations for a permit writer to conduct a “qualitative approach to determining reasonable potential.” Species sensitivity data, adopted water quality criteria, designated uses, and dilution information are identified as types of information for a permit writer’s qualitative analysis of the potential for an exceedance of a water quality standard. Further, EPA’s applicable Technical Support Document contains a section that more thoroughly identifies the qualitative approach to RP in the absence of data. Section 3.2, entitled “Determining the Need for Permit Limits Without Effluent Monitoring Data for a Specific Facility,” describes that “the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable.” Like the Permit Writer’s Manual, section 3.2 of the TSD lists relevant factors for qualitative RP determination, which include dilution, type of industry, type of receiving water, and downstream designated uses. ADEQ did not conduct a qualitative RP analysis for this draft permit modification as indicated in the Statement of Basis. If ADEQ had chosen to conduct a qualitative RP, it would have recognized the lack of dilution at critical conditions in the unnamed stream

at the outfall and in Harshaw Creek (both of which ADEQ considers to be ephemeral streams) and addressed this factor with an RP determination and inclusion of WQBELs as permit conditions. A qualitative RP analysis also would have recognized and incorporated the permit applicant's own plans to build a multi-million-dollar treatment plant to ensure water quality standards are met and protecting downstream uses. ADEQ's failure to incorporate AMI's treatment plant plans is a particularly baffling act that this comment letter addresses in section

- III. In addition, ADEQ has failed to issue a finding about the status of the new proposed discharge as an existing or new source or a new discharger in accordance with the Clean Water Act and applicable rules. New source performance standards (NSPS) may apply to the new discharge authorized by ADEQ's proposed permit modification. The application of NSPS could result in a permit modification more protective of water quality. At a minimum, ADEQ's Statement of Basis should include an analysis and finding regarding the status of the new proposed discharge as an existing or "new source," or a "new discharger," and how such status affects the conditions of the proposed permit.

- IV. The Proposed Permit Disregards the Applicant's Water Treatment Proposal
AMI's AZPDES permit application, dated August 14, 2020, requests a modification to the current AZPDES permit that adds an outfall from a planned new water treatment plant, WTP2, constructed primarily to treat the groundwater pumped from the mine dewatering operation. According to the application, WTP2 is designed to treat the water to meet standards that protect aquatic organisms and wildlife. According to the supplemental information provided by AMI in the application: The design basis for metals removal by WTP2 was removal to levels less than the most stringent of the Arizona surface water quality standards (SWQSS) for the designated uses of Harshaw Creek (using A&Wedw criteria rather than A&We criteria..., aquifer water quality standards (AWQSS), and applicable technology-based effluent limitation guidelines. However, ADEQ has proposed effluent limitations that ignore AMI's proposal to treat to water quality standards (A&We) without explanation or rationale. TNC disagrees that A&We (rather than A&Ww) is the appropriate water quality standard for the new discharge to Harshaw Creek, as indicated in section I of this letter, however, TNC appreciates that AMI's plans for mine dewatering include compliance with WQBELs to protect downstream uses that goes well beyond ADEQ's proposed TBELs, which do not protect uses at all. In addition to being unjustified, ADEQ's disregard of AMI's plans for the discharge, is irrational in this context. Permittees want and need to know the most stringent effluent limitations that may apply to a discharge so they may plan for the proper design and financing of treatment infrastructure. Permittees may be notified of these requirements in one of a few ways, including by providing permit applicants with preliminary effluent limitations or a compliance schedule for achieving WQBELs. In this case, ADEQ would leave the permit applicant guessing as to the anticipated water quality targets for the new discharge. Effluent limitations prepared by the permitting authority generally come before and drive the plans for treatment infrastructure that meet water quality standards, not follow them. This typical approach explains AMI's expectations that ADEQ would apply WQBELs and its proactive plans to

treat the water prior to discharge. ADEQ's proposal turns the typical approach on its head. TNC has no basis to believe that AMI would disregard its plans for WTP2 if ADEQ's proposed permit modification became final and effective, and TNC expects AMI would build and use the treatment plan prior to discharge. However, without the inclusion of WQBELs in the permit for AMI's new discharge to Harshaw Creek, ADEQ (and the public) would not be able to enforce an AZPDES compliance action for AMI to build and use WTP2 to meet effluent limitations that protect downstream water. Enforceable WQBELs in the permit are the best and intended mechanism to ensure the permit applicant builds and uses the water treatment plant.

- V. The Proposed Permit Would Authorize the Creation of an Impaired Water. Impaired status is not desirable. Remarkably, however, ADEQ's proposed permit modification would authorize the creation of an impaired stream. Currently, Harshaw Creek is deemed by ADEQ to be an ephemeral stream, meaning it flows only in response to precipitation and there would be no dilution at "critical flow." However, the new discharge to be authorized under ADEQ's proposal would create continuous perennial flow, according to AMI's application. The proposed permit modification would allow that continuous flow—that new perennial stream—to be impaired. The permit holder could comply with the permit conditions, yet the receiving waters would not the numeric criteria that protect the inevitable use of that new perennial stream by aquatic organisms, wildlife, livestock, and people. As described in section II of this comment, ADEQ's proposal would allow the discharge of these parameters at levels up to 50 times greater than the level protective of aquatic life. These levels of these parameters could indeed be toxic to aquatic life, including indirectly and directly lethal. This is precisely why ADEQ adopted numeric aquatic life criteria for these (and other) parameters that protect fish and other aquatic organisms. It is indeed baffling that ADEQ would permit the creation of a new perennial stream that could be toxic to the living things that would typically inhabit it. This paradoxical approach to permitting belies ADEQ's mission and purpose to protect the environment, defies reason, and promotes uncertainty and waste.
- VI. The Proposed Permit is Contrary to Law, Not Supported by Substantial Evidence, Arbitrary and Capricious or an Abuse of Discretion Finally, ADEQ's proposal for the new proposed discharge represents an unjustified departure from the approach to the existing Alum Gulch discharge from the mine that would be authorized in the same permit. Outfall 001 from the existing water treatment facility to Alum Gulch currently is subject to WQBELs and would continue to be under ADEQ's proposal. The mine has been leaking poor quality water and acid mine drainage to Alum Gulch for decades, rendering it an impaired water and resulting in the establishment of a TMDL for certain metals and pH. A number of actions have been taken over the years to improve water quality leaking to Alum Gulch, including most recently, this permit applicant's activities under ADEQ's Voluntary Remediation Program to capture and treat the discharge. Unlike the current ADEQ proposal for the new discharge to Harshaw Creek, in ADEQ's 2018 permit decision for the Alum Gulch discharge, ADEQ established protective WQBELs in addition to effluent limitations based on waste load allocations from the TMDL. While ADEQ apparently based its 2018 permit decision in part on the

availability of water quality data (and the TMDL), as described above in section II, such data is not necessary for a determination by the permit writer that RP exists and WQBELs are warranted. In 2018, ADEQ applied the WQBELs appropriately stating in the Fact Sheet (the former name for an AZPDES Statement of Basis): Because flow from the outfall will reach a segment of Alum Gulch that is 0.17 miles downstream with different designated uses, the most stringent downstream designated uses will be applied. ADEQ has inexplicably abandoned this kind of rationale for the proposed new discharge, with a much larger flow (6.48 mgd versus .172 mgd), a much higher potential for the establishment of aquatic life and other new uses in Harshaw Creek, and a much more likely impact to existing downstream uses, including those on TNC's Preserve and further downstream on Sonoita Creek. ADEQ's proposed decision fails both to justify its departure from this approach captured in the 2018 permit decision and adequately protect impacted downstream uses and applicable water quality standards. For this an all the reasons described in this letter, the proposed permit modification of AZPDES No. AZ0026387 is contrary to law, not supported by substantial evidence, arbitrary and capricious or an abuse of discretion.

TNC requests that ADEQ withdraw and reissue the draft proposed permit modification with water quality-based effluent limitations for the new proposed discharge that protect designated uses in Harshaw Creek and Sonoita Creek at and downstream from the Preserve. TNC further requests that ADEQ's reissued proposal also address the additional issues raised in this comment letter. This will allow TNC, other interested parties, and the public the opportunity to review and provide additional comment prior to the issuance of a final AZPDES permit that authorizes a new discharge.

RESPONSE NO. 25

I & II. ADEQ has revised the discharge limitations in the permit to include water quality-based effluent limitations. The revised draft permit and statement of basis were re-public noticed to allow additional time for review and comments. The WQBELs are set based on the designated uses of Harshaw Creek. Per A.A.C. R18-11-104(F), the designated uses and standards set for Harshaw Creek took into consideration the applicable water quality standards for downstream surface waters and ensured that the water quality standards that are established for an upstream surface water also provide for the attainment and maintenance of the water quality standards of downstream surface waters.

III. The outfall 002 does not meet the definition of new source or new discharger. The definitions of New Discharger and New Source in A.A.C. R18-9-A901 are stated as follows:

'New Source' means any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced:

a) After the promulgation of standards of performance under section 306 of the Clean Water Act that are applicable to the source, or

b) After the proposal of standards of performance in accordance with section 306 of the Clean Water Act that are applicable to the source, but only if the standards are promulgated under section 306 within 120 days of their proposal.

'New Discharger' includes an industrial user and means any building, structure, facility, or installation:

- a) From which there is or may be a discharge of pollutants;*
- b) That did not commence the discharge of pollutants at a particular site before August 13, 1979;*
- c) That is not a new source; and*
- d) That has never received a finally effective NPDES or AZPDES permit for dischargers at that site.*

The definition of "site," in 40 CFR 122.2, referenced in 40 CFR 122.29 (adopted by A.A.C. R 18-9-A905), reads as follows: "Site means the land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity."

The standards of performance under section 306 of the Clean Water Act applicable to ore mining are listed in 40 CFR 440, Sub Part J. The technology-based effluent limitation guidelines and the new source performance standards for ore mining were both promulgated in 1982. The mine workings and historic tailings at the site date back to the first half of the 20th century, and seepage from the mine workings likely predates August 13, 1979. The January Mine operation is not a New Source because the operation is on a site that was active as an ore mine prior to 1982. Additionally, this concern is moot because the WQBELs in the permit are at least as stringent as new source performance standards.

The discharge from the January Mine site is not a new discharger because (1) the discharge of pollutants from the site predates August 13, 1979, (2) it is not a New Source, and (3) the Site has already been issued a finally effective AZPDES permit.

Additionally, ADEQ used A&Wedw standards to calculate limits as AAC R18-11-113(D) requires ADEQ to "use the water quality standards that apply to an effluent-dependent water to derive water quality-based effluent limits for a point source discharge of wastewater to an ephemeral water."

IV. The permit modification now includes WQBELs for Outfall 002. The permit's WQBELs use A&Wedw water quality standards as required by AAC R18-11-113(D) for point source discharges to ephemeral waters. Harshaw Creek's designated uses and water quality standards are set by rule in AAC R18-11 Appendix B, and must undergo rulemaking to change such standards.

V. Authorizing this discharge will not create an impaired water because the permit includes WQBELs that are protective of aquatic life. The WQBELs are based on designated uses and water quality standards for Harshaw Creek as set in rule in AAC R18-11 Appendix B. Rulemaking would be required to change the designated uses.

VI. This permit modification to the existing AZPDES permit authorized the addition of a new outfall for discharge to Harshaw Creek. ADEQ completed a thorough review of the application and modified the permit to authorize the discharge of pollutants from Outfall 002 to Harshaw Creek

COMMENT NO. 26

[Section numbering added for clarity.] On behalf of the Patagonia Area Resource Alliance (PARA) and the above listed organizations, please accept these comments and objections to the request by Arizona Minerals, Inc. (AMI) to modify its existing Arizona Pollutant Discharge Elimination System (AZPDES) Permit No. AZ0026387 for the January Mine/Hermosa Project. PARA would be remiss if we failed to also point out that AMI's dewatering activities are intentionally designed to draw down the aquifer in this region for industrial extractive purposes. However, given the importance of the Patagonia Mountains and the existence of immense biodiversity in this region, the depletion of the aquifer will almost certainly harm or even destroy numerous springs and seeps, and other surface water features, at a time when the existence of these critical water resources and the habitat they support are already under pressure from drought and climate change. The groundwater dependent ecosystems (GDEs) are valuable in their own right and the loss of these GDEs should not be lightly brushed aside by ADEQ or AMI. While these comments are directed at the ADEQ's potential issuance of a Draft AZPDES Permit to AMI to discharge this mine dewatering and depressurization water to Harshaw Creek, the water does not come from thin air – it comes from the region and it is currently an important part of the function and health of this important and biodiverse place. Additionally, it is PARA's understanding that AMI/South32 has commissioned a study from Clear Creek Associates to consider concerns raised by the Town of Patagonia associated with the dewatering and discharge that is the subject of this permit. It is our understanding that this study results will soon be presented publicly. We do not know if any of the information associated with this study has been provided to ADEQ, however given the scope and importance of the results set forth in this study, ADEQ should wait to take any further action on this draft AZPDES permit until it has an opportunity to review this information. For the reasons set forth herein, AMI's application to modify its existing AZPDES permit should be rejected by ADEQ as both improper and incomplete.

A. In addition, the current Draft Permit should be withdrawn, additional studies should be conducted, and a separate, individual AZPDES permit should be developed by ADEQ for this new discharge that, among other things, incorporates water quality-based effluent limitations (WQBELs) that are properly protective of downstream human health and wildlife and aquatic resources in conformance with the Clean Water Act, 33 U.S.C. §§ 1251, et. seq, applicable EPA guidance, and Arizona law.

B. The current draft AZPDES permit for WTP2 discharge to Harshaw Creek is wholly insufficient for protecting downstream waters. The technology-based standards currently in Table 1.c of the draft permit must be replaced with water quality-based standards that are protective of ALL downstream water uses, including drinking water.

C. The high recreational and ecological value of Harshaw Creek must be considered in any permit to discharge. The consumption of this water by endangered species and other wildlife plus increased recreational exposure by human visitors as a result of new

perennial flow from WTP2 requires a higher level of protection than that offered in the current draft permit.

D. Harshaw Creek currently contains sources of contaminants from legacy mining activities and natural background. This contaminant loading must be assessed in a new TMDL for lower Harshaw Creek to determine the WTP2 discharge limits that will protect all downstream water users, especially those consuming drinking water from the alluvial aquifers that will be impacted by WTP2 discharge.

E. Harshaw Creek will become perennial for several years as a result of WTP2 discharge. The impacts of this perennial flow on existing Critical Habitat must be evaluated through an Environmental Assessment (EA) or Environmental Impact Statement (EIS) process prior to approval of any discharge. Furthermore, the cumulative impacts of creating a perennial flow, and then removing it years later, on species who have grown dependent on that water source must also be evaluated in an EA/EIS process.

The hydrologic system requires an integrated hydrologic modeling tool to assess the complex groundwater-surface water dynamics and to evaluate the real risk of contaminant transport from WTP2 and Harshaw Creek to the drinking water wells downstream.

F. The distribution of proposed contaminant limits between Alum Gulch and Harshaw Creek discharges is unjustifiably lopsided, with some loading in Harshaw Creek (WTP2) amounting to nearly 10 times that permitted for Alum Gulch (WTP1). The WTP2 limits should be as protective as those for Alum Gulch, particularly in light of the real risk to downstream drinking water wells in and near the Town of Patagonia.

G. Significantly more frequent and more spatially distributed compliance monitoring will be needed to ensure the health and safety of all downstream water users.

H. The effluent limits for Outfall 002 should be based on a more detailed and recent TMDL to allow for waste load allocation. Permit limits for Outfall 002 effluent should be expanded to include all parameters with a reasonable potential to exceed water quality standards for the designated uses in Harshaw Creek. The contribution of particulate metal to the streambed and its resuspension during storm events must also be evaluated and included in the TMDL. A more reliable evaluation of WTP2 discharge is needed to determine if WQBELs are needed for all the parameters measured.

I. A 2016 study of water and soil samples from legacy mines in Harshaw Creek showed that additional metals should have enforceable discharge limits in Outfall 002, including at a minimum nickel and selenium. Until additional studies are completed to determine which COCs should be moved from the assessment level to the discharge limit category, the permit should not be approved.

J. The uncertainty in WTP2 influent chemistry is high. No information is presented on expected changes in groundwater chemistry resulting from blasting of the exploration adit or how the leaching tests used to estimate influent chemistry were conducted or how the results were selected. No information on the water quality or expected flow rates for the individual sources to WTP2 is included in any document associated with the AZPDES

draft permit. Much more information on the influent sources is needed to evaluate the reliability and variability of the influent chemistry.

K. The limited results presented for the treatment plant suggest that the uncertainties associated with using it are high because of the lack of agreement between the selected reference sites and WTP2 influent chemistry and the fact that it is an experimental technology. The results also indicate that, if the results are correct, substantially lower effluent limits and assessment levels can be used for Outfall 002 without additional treatment costs. The missing data and information needed to lower the uncertainty about performance of the water treatment facility are so extensive that the permit should not be issued until additional studies and evaluations have been conducted.

L. Major discrepancies exist between the Draft AZPDES permit and the Draft APP, including in applicable water quality criteria, points of compliance, the type and amount of information provided, and the measurement of metal concentrations. These issues have not been resolved but need to be to reach consistency between surface water and groundwater protection of the watershed and downstream/downgradient locations.

M. ADEQ should require compliance, at a minimum, with the more stringent A&Wedw standards in the effluent. The water quality effects on domestic wells in lower Harshaw Creek and the town of Patagonia from Outfall 002 should be evaluated in an environmental review. The AZPDES permit should use the most stringent standards applicable for all designed uses in downstream/downgradient water that could be affected by Outfall 002 discharge.

N. The outcomes (positive and negative) of creating an extended perennial reach in Harshaw Creek have not been examined in the draft AZPDES permit, the draft Aquifer Protection Permit (APP), or associated documents. An environmental review is needed before the permit is approved. In addition, the presence of an existing perennial reach on required water quality standards needs to be fully evaluated before a final permit is approved.

O. Translator studies should be required to evaluate the portion of effluent metals from Outfalls 001 and 002 that will be present in the dissolved form in Alum Gulch and Harshaw Creek before a final permit is issued.

P. The Discharges to be Authorized under the Draft Permit Threaten the Public Health and Downstream Species, Including Species and Habitat Protected under the Endangered Species Act. It is for these reasons, among others, that PARA urges ADEQ to press pause on this permit and take the time needed to develop a protective permit with water quality-based effluent limits for discharges from WTP2 that provide the most stringent protections for downstream uses, including the use of surface water and groundwater as domestic water sources in downstream locations.

Q. A TMDL Must be Completed for the Full Length of Harshaw Creek Prior to the Issuance of Discharge Permit to AMI. AMI's Application to Modify its Existing AZPDES Permit Is Improper. ADEQ also does not have the legal authority to merely "modify" the existing AZPDES upon AMI's request – absent a showing that AMI meets the very limited and specific "for cause" standards outlined under 40 C.F.R. § 122.62

R. ADEQ Does Not Have Sufficient Information Before It to Issue the Requested Permit. What is clear, however, is that ADEQ does not have the information it needs under the Clean Water Act and applicable authorities to issue an AZPDES permit to AMI for the proposed discharge to Harshaw Creek.

S. On behalf of the Patagonia Area Resource Alliance (PARA), the above listed organizations, and the Town of Patagonia, please accept these supplemental comments and objections to the request by Arizona Minerals, Inc. (AMI) to modify its existing Arizona Pollutant Discharge Elimination System (AZPDES) Permit No. AZ0026387 for the January Mine/Hermosa Project. While ADEQ has revised the proposed Draft Permit, the revisions remain inadequate to protect the existing water uses, human health, and the biologically diverse environment of the Patagonia region. Because the vast majority of the concerns outlined in PARA's previous comments and the technical analysis of PARA's experts (Attachments A & B) on the Draft Permit have not been addressed by ADEQ in the revised Draft AZPDES Permit, these comments and attached technical expert reports are expressly incorporated here by reference, as if stated in full. AMI's application to modify its existing AZPDES permit – and the Draft Permit itself – still must be rejected by ADEQ as improper and incomplete. As discussed in greater detail in PARA's prior comments and below, the Draft AZPDES Permit should be withdrawn, additional studies should be conducted, and a separate, **individual** AZPDES permit should be developed by ADEQ for this new discharge that is properly protective of downstream human health and wildlife and aquatic resources in conformance with the Clean Water Act, 33 U.S.C. §§ 1251, *et. seq.*, applicable EPA guidance, and Arizona law.

- The quarterly sampling requirement is unchanged and is still far less frequent than is needed to protect surface water and underlying groundwater systems.
- The metals limits are specified for TOTAL recoverable metals, not dissolved metals, even though many Designated Use Standards are based on dissolved metals (*see* Tables 1 and 3).
- Different narrative requirements for Alum Gulch and Harshaw Creek in Part I Sections D, G, and H appear arbitrary and require explanation.
- Part 1, Section E describes the effluent sampling point as: “Effluent samples shall be taken downstream from the last treatment process and prior to mixing with the receiving waters.” Given this sole compliance point downstream of the Hermosa Project site, how with the narrative limits described in Part 1, Sections D-F be evaluated? Additional compliance points are necessary downstream of outfalls 1 and 2 to ensure compliance with the surface water quality limits specified in the Draft AZPDES permit.
- No hydrologic study has been conducted to examine the range of potential outcomes from the proposed discharge at Outfall2 on downstream drinking water aquifers in Harshaw and Sonoita creek valleys. A FULL integrated modeling study is required to assess the concurrent and closely coupled impacts of mine dewatering and long-term discharge to Harshaw Creek (refer to Draft APP comments by Lacher and Prucha, 2021).

ADEQ must address the above listed failings in the Draft AZPDES Permit as well as all of the objections and legal comments contained in PARA's original objections, including Attachment A and Attachment B, as well as the Lacher Supplemental Report, attached hereto. Anything short of this violates existing law and threatens downstream surface water uses.

RESPONSE NO. 26

A, B, F, H, I, P. The final permit includes WQBELs, which are protective of downstream designated uses, as promulgated in AAC R18-11 Appendix B and required by AAC R18-11-104(F). The ADEQ process for issuing a new permit is the same as modifying an existing permit, so there is no substantive difference between a new permit issued for outfall 002 and this permit modification to include outfall 002.

C. The final permit includes WQBELs based on Aquatic and Wildlife effluent-dependent waters (A&Wedw). This standard, based in rule at AAC R18-11, is protective of use of an effluent-dependent water by animals, plants, or other organisms for habitation, growth, or propagation. Also, see response No. 9.

D & Q. The segment of Harshaw Creek where the new outfall is located is not an impaired water. There is no current TMDL for this segment. Permit limitations and conditions have been set to ensure protection. Water bodies are regularly assessed for impairments by ADEQ for impairments and listed on the CWA 303(d) list, but that process is not a prerequisite for permit issuance.

ADEQ has the legal authority to modify the existing AZPDES permit upon AMI's request, under 40 C.F.R. § 122.62(a)(1) which allows AMI to request a modification when there are "material and substantial alterations or additions to the permitted facility or activity..." The addition of a new outfall is such an alternation. AMI properly submitted a permit modification request, including sufficient information.

E. This AZPDES permit authorizes the discharge of pollutants to a WOTUS. Addressing groundwater, whether through an Environmental Assessment (EA) or Environmental Impact Statement (EIS) or other process, is beyond the statutory authority of ADEQ's AZPDES program. The designated uses and water quality standards for Harshaw Creek are set in rule at AAC R18-11 Appendix B. Those standards are updated every three years. If Harshaw Creek's flow changes, amendments can be made by rulemaking.

G. See response No. 10.

J, K & R. ADEQ has sufficient information to issue this permit. A thorough review of the application was completed and the Department received all necessary components and information for ADEQ to make a permitting decision.

L. The AZPDES and APP programs regulate surface and groundwater, respectively. Protective standards and points of compliance are necessarily different to reflect the different nature of the receiving water and uses.

M. The permit uses WQBELs based on the designated uses of the receiving water; Aquatic & Wildlife effluent-dependent water and Partial Body Contact. The WQBEL is calculated based on the most stringent applicable standard for the receiving water.

N. See response No. 26 E.

O. As stated in 40 CFR 122.45, all permit effluent limitations, standards, or prohibitions for a metal shall be expressed in terms of “total recoverable metal” as defined in 40 CFR part 136.

S. Comment 26.S was a supplementary comment on the draft permit, received during the extended public comment period. Responses 26.A-R address the majority of the concerns expressed in Comment 26.S. ADEQ has the legal authority to modify the existing AZPDES permit upon AMI’s request, under 40 C.F.R. § 122.62(a)(1) which allows AMI to request a modification when there are “material and substantial alterations or additions to the permitted facility or activity...” The addition of a new outfall is such an alternation. AMI properly submitted a permit modification request, including sufficient information.

All permit limitations are set at end-of-pipe. As long as samples are taken after the final treatment process and before mixing with the receiving water they are valid for compliance purposes. Narrative standards do not have end of pipe monitoring requirements but are still enforceable by ADEQ.

Regarding a new permit, see Response No. 6. Regarding WQBELs, ADEQ has added WQBELs to outfall 002. Also see Response No. 25.

COMMENT NO. 27

Arizona Minerals Inc. (“AMI”) submits the following comments on the draft permit amendment and corresponding statement of basis. AMI supports issuance of the permit modification with some minor revisions, as discussed below.

Although AMI does not believe that all of Harshaw is a water of the United States (“WOTUS”) regulated under the Clean Water Act (“CWA”), some portion of the Creek that may be reached by the discharge may be a WOTUS. AMI does not agree that all of Harshaw Creek is an intermittent water, as has been suggested in the current public process. For example, we believe that the stretch into which the discharge from Outfall 002 will occur is clearly ephemeral. We note in this regard that all of Harshaw Creek, and all of Sonoita Creek above the Town of Patagonia’s wastewater treatment plant outfall, are currently classified as ephemeral. However, AMI is willing to assume for purposes of this permit proceeding that some portion of Harshaw Creek downstream of its discharge, and that may be reached by the discharge, may be non-ephemeral and may constitute a WOTUS under either the Navigable Waters Protection Rule (“NWPR”) (see 85 Fed. Reg. 2229 (April 21, 2020)) or the law applicable to defining WOTUS that was in existence prior to adoption of the NWPR (as established in a rulemaking finalized in October 2019, see 84 Fed. Reg. 56626 (October 22, 2019)). Using conservative estimates (e.g., no evapotranspiration whatsoever), the consultant concluded that the maximum flow could reach 9.36 miles from the outfall, which would still place it within Harshaw Creek.

Therefore, the proposed discharge is not anticipated to reach Sonoita Creek. Although the law on CWA jurisdiction remains uncertain and fluid due to extensive and ongoing litigation, AMI remains committed to securing and complying with AZPDES permits for its surface water discharges.

At a public hearing on the draft permit, a comment was made that additional receiving waters (portions of Sonoita Creek downstream of the Town of Patagonia) should be identified as receiving waters, consistent with the approach taken for Outfall 001 when the 2018 AZPDES permit was issued. However, the situations are quite different. In the case of discharge from Outfall 002, the maximum flow is conservatively estimated to travel roughly 9.36 miles. There are no waters or portions of waters with different designated uses in that flow path; as noted above, the entirety of Harshaw Creek is assigned the designated uses of aquatic and wildlife (ephemeral), partial body contact and agricultural livestock watering. For these reasons, there is no need to identify an additional receiving water for purposes of this permit.

A permit modification is an appropriate way to add the new outfall and a modification is subject to the same substantive water quality requirements as a new permit. AMI is aware that comments have been made suggesting that it is not appropriate for ADEQ to process AMI's application as a permit amendment, arguing instead that a new permit is required because a new permit would involve more rigorous controls on discharge water quality. There is no basis for such a claim. The substantive water quality requirements for a non-minor permit modification such as the one proposed by AMI are the same as those that would be applicable to an application for a new permit. AMI is aware of no water quality requirement that could be imposed in a new permit that would not also be imposed in a modified permit for the same discharge. AMI also notes that on a procedural level, ADEQ extended the public notice period for an additional 30 days beyond that originally announced (the total comment period ran from February 5, 2021 to April 7, 2021), and scheduled a second public hearing as well. This proposed permit modification allowed as much or more public participation than would be required for a proposed new permit. For these reasons, AMI supports ADEQ's decision to process the application as a permit amendment, as AMI requested. Because this is a permit modification, only the modified provisions are reopened and subject to public comment. When an AZPDES permit is modified, only the conditions subject to modification are reopened. Therefore, only those provisions of the draft permit related to Outfall 002, or otherwise changed from the currently applicable permit, are being reopened and thus subject to public comment.

ADEQ's approach of including only technology-based effluent limitations in the draft permit is defensible and consistent with EPA guidance, but AMI also would support inclusion of appropriate water quality-based effluent limitations for Outfall 002 in the final amended permit. a. ADEQ's approach in the draft permit (including only technology-based effluent limitations) is defensible: ADEQ's approach in the draft permit was to include only technology-based effluent limitations ("TBELs") in Table I.c (effluent limitations for Outfall 002) because there is no effluent data to review³; in the absence of such data, there is no ready basis to identify what pollutants will be present in the discharge at levels that may create a reasonable potential to cause or contribute to an excursion above an applicable surface water quality standard in the receiving water. That approach is defensible under controlling regulations and guidance. In an AZPDES permit, WQBELs are required only for those pollutants with reasonable potential to cause

or contribute to an excursion above a surface water quality standard. See 40 C.F.R. § 122.44(d)(1)(i) (incorporated by reference at A.A.C. R18-9-A905(A)(3)(d)). 3 WTP 2 has yet to be constructed. ADEQ's proposal to defer inclusion of WQBELs until there was effluent on which to perform a reasonable potential analysis approach is consistent with the EPA's National Pollutant Discharge Elimination System (NPDES) Permit Writer's Manual, EPA-833-K-10-001 (September 2010) (the "Manual"). ADEQ has adopted the Manual as a substantive policy statement to use in drafting AZPDES permits. See 20 Ariz. Admin. Reg. 3451 (Dec. 12, 2014). The Manual allows the permitting agency to defer imposition of WQBELs until effluent data is available, perhaps coupled with requirements to monitor effluent and a permit reopener. See Manual, §§ 6.2.1, 6.3.2 & 6.3.3. It is AMI's understanding that the approach reflected in the draft permit is the one ADEQ commonly takes with respect to discharges from not-yet-constructed treatment plants where effluent data is not available, and that it is the approach taken with respect to Outfall 001 in the current AMI permit for parameters other than those covered by the Alum Gulch TMDL. ADEQ's proposed approach is therefore reasonable and legally defensible. b. AMI nevertheless would support inclusion of appropriate WQBELs for Outfall 002: Nevertheless, AMI would support an ADEQ decision to include appropriate WQBELs in the final permit. In the absence of effluent data from WTP 2, AMI would support an approach that applied the governing Harshaw Creek surface water quality standards as end-of-pipe discharge limits. The Manual allows (but does not require) the permitting agency to impose WQBELs based on data other than effluent data from the proposed discharge source, so this approach would not be inconsistent with the Manual. As ADEQ notes in the proposed Statement of Basis, the uses assigned to Harshaw Creek are aquatic and wildlife (ephemeral), partial body contact and agricultural livestock watering (see A.A.C. Title 18, Chapter 11, Article 1, Appendix B); however, pursuant to A.A.C. R18-11-113(D), ADEQ would use the more stringent effluent-dependent water aquatic life criteria to develop permit limits for a discharge into Harshaw Creek. AMI supports inclusion of the numeric surface water quality standards to protect these uses as WQBELs in the final permit. As reflected in our AZPDES application, WTP 2 has been designed to meet the most stringent of applicable surface water quality standards for Harshaw Creek, technology-based effluent limitations, and aquifer water quality standards (the latter of which will be imposed as discharge limits in the APP that is also needed to authorize discharge from Outfall 002). c. AMI's application provides a basis for selecting a conservative hardness level to use in developing WQBELs for hardness-dependent metals: If ADEQ decides to include WQBELs in the final permit, it will have to select a hardness level to use to develop WQBELs for hardness-dependent metals where the aquatic life use has the most stringent associated water quality criteria. A conservative approach would be to use the lower end⁴ of the hardness range of the WTP 2 influent sources, as reflected in data included by AMI in its application (258 mg/l⁵), as the hardness for developing WQBELs. AMI would support such an approach. d. Future revisions to WQBELs for Outfall 002 added in this modification that are based on WTP 2 effluent data will not trigger anti-backsliding concerns: Once ADEQ has effluent data to consider, it will be able to perform a more complete reasonable potential analysis using that data. Based on that review, ADEQ may conclude that some parameters included in Table I.c in this permit modification do not in fact create a reasonable potential for an excursion above a surface water quality standard, and therefore propose removing WQBELs for those parameters. In that scenario, removing a WQBEL will not constitute prohibited anti-backsliding because the future decision would be based on information not available at the time of this permit

amendment (i.e., actual effluent data showing a lack of reasonable potential) that would have justified a less stringent limitation had it been available now. See 33 U.S.C. § 1342(o)(2)(b)(i). Likewise, once it has actual effluent data, ADEQ will be able to refine the hardness value used to calculate criteria for hardness-dependent metals for which WQBELs are set in the current permit modification. Should that hardness value be higher than the value used to set initial WQBELs, that would result in somewhat less stringent WQBELs. In that scenario, however, the WQBEL would still be based on the same hardness-dependent equation that represents the surface water quality standard. Again, the anti-backsliding prohibition would not be triggered because the actual effluent hardness data would represent information not available at the time the initial WQBELs were set in this permit modification (based on conservatively estimated hardness data).

e. AMI does not oppose an extended or additional comment period to allow the public an opportunity to comment on the proposed WQBELs: Should ADEQ decide to extend or reopen the comment period in order to allow the public to comment specifically on any newly proposed WQBELs, AMI would not oppose that decision. We do not believe such an extended or reopened comment period is legally required, but AMI is supportive of the public being allowed to comment on that proposed change. Such an extension or reopening of the comment period would be consistent with A.A.C. R18-9-A908(A)(4) and with the Manual (§ 11.3.2). During any reopened comment period, comment would be limited to the topic that

4 The lower the hardness, the more restrictive the associated water quality standard.

5 See AZPDES application, Section C.2, Attachment B, Table 2.1 (showing a hardness range of 258-340 mg/l). As noted in that table, the treatment process is not anticipated to change the hardness of the water being treated. ADEQ determined justified the reopening (i.e., the proposed WQBELs). See A.A.C. R18-9- A908(A)(4). The amended permit is not for a “new source” as that term is defined in the implementing regulations.

a. AMI’s mine is an existing source: ADEQ has correctly concluded that the permit amendment does not involve a new source. As defined in federal and state regulations, whether a source is “new” is determined based on whether it was first established prior to the promulgation of source-specific effluent limitation guidelines (“ELGs”). ELGs for mines were established in 1982, and this mine existed long before that time. ADEQ properly determined that the site was an existing source when it issued the current AZPDES permit for Outfall 001 in January 2018. That decision was not appealed by any party that had submitted comments to the contrary in the public comment process for that permit. At ADEQ’s request, AMI submitted an analysis of the new source issue on September 3, 2020, pointing out why the discharge from Outfall 002 will not be from a new source as that term is defined in CWA regulations. See Letter of Clarification from Brent Musslewhite (AMI) to Jessica Kohls (ADEQ) (September 3, 2020) (copy included as Attachment 2). As discussed in the September 3 letter, WTP 2 is not a new source because there are no ELGs independently applicable to it. Rather the “source” for ELG purposes is the mine, which has existed in some form since long before the adoption of ELGs applicable to mines in 1982. Therefore, the mine is an existing source rather than a new source. ADEQ’s conclusion that AMI is not a new source is consistent with treatment of the issue by ADEQ and the U.S. Environmental Protection Agency (“EPA”) at other mines in Arizona. Both agencies consistently stress that mines are by definition large and evolving sources. Only when a mine component is independently subject to a different ELG is that component treated as a new source. Additional outfalls are routinely added to existing sources without triggering a new source finding. Subsequent to AMI’s submission of the September 3 letter, the Maricopa County Superior Court issued a decision on the new source issue in the mining context, in

an appeal of an AZPDES permit reissuance for Resolution Copper Mining LLC. See San Carlos Apache Tribe et al. v. State of Arizona, No. LC2019-000264-001 DT (March 25, 2001). In that decision, the court upheld the decisions of ADEQ and the Water Quality Appeals Board that a new shaft and other components at an existing mine did not constitute new sources. In doing so, the court “look[ed] to the mine as a whole as the operative unit for new source analysis,” rather than looking at particular components or sources of water. This recent decision supports the new source analysis already provided by AMI.⁶ b. Regulating the mine as an existing source rather than a new one will not produce any relaxation of treatment standards: Moreover, properly treating the mine as an existing source rather than a new one will have no practical effect on the quality of the discharge of treated water from WTP 2. That is because the TBELs applicable to this existing source are identical to the new source performance standards (“NSPS”) that would apply if the mine were a new source. For purposes of the TBELs, AMI’s planned lead/zinc/silver mine is governed by the ore mining and dressing TBELs promulgated by EPA (and incorporated by reference by ADEQ, see A.A.C. R18-9-A905(A)(9)). Specifically, the mine is governed by the requirements of Subpart J of Part 440, which is applicable to copper, lead, zinc, gold, silver and molybdenum mines. Within Subpart J, the requirements applicable to mine drainage imposed by the best practicable technology (“BPT”) and best available technology (“BAT”) TBELs, which are applicable to existing sources, are collectively just as stringent as the NSPS TBELs for mine drainage. Compare 40 C.F.R. §§ 440.102(a) (BPT) & 440.103(a) (BAT) with 40 C.F.R. § 440.104(a) (NSPS). As a result, Table I.c of the draft permit (applicable to the new Outfall 002) contains proposed TBELs equal to the NSPS TBELs.⁷ Identifying the mine as a new source (contrary to the determination made when the current permit was issued in 2018) therefore would have no practical effect on the terms of the permit. Furthermore, for the reasons described above and in Attachment 2, the mine is not a new source.⁸ 6 As is the case at AMI’s site, development of a new shaft at the Resolution mine required extensive dewatering, with the AZPDES permit authorizing the discharge of treated water from that shaft (among other sources). 7 Outfall 002 will not discharge to an impaired water, so the prohibition on new sources or new dischargers to an impaired water (40 C.F.R. § 122.4(i), reflected in the AZPDES regulations at A.A.C. R18-9-A903(7)) is not relevant to this modification. A portion of Harshaw Creek is listed as impaired for copper and pH, but Outfall 002 will release water to the Creek below the end of the impaired segment. The impaired segment ends at 31°27’43” N/ 110°43’21” W. See https://static.azdeq.gov/wqd/wqa/appendixb_by_categories.pdf (Appendix B to most recent CWA § 305(b) assessment report (2016), identifying upper Harshaw Creek as a Category 4A water). Outfall 002 is located at 31°27’94” N/ 110°43’19” W. 8 Nor can the site be considered a “new discharger” as defined in 40 C.F.R. § 122.2 and A.A.C. R18-9-A901(24). This is true for several reasons, one of which is that the site previously received a finally effective AZPDES permit, thus precluding new discharger status. An individual AZPDES permit was issued to the former site owner (ASARCO, Inc.) for the site in 2001, authorizing seepage discharges and discharges from the January Adit (both of which are influent sources for the treatment plants associated with both Outfalls 001 and 002). Because Harshaw Creek is not assigned an aquatic and wildlife (warm water) or aquatic and wildlife (cold water) designated use, the dissolved oxygen standard should be revised (Part I.G), and the suspended sediment standard should be removed (Part I.H), in the final modified permit with respect to discharge from Outfall 002. As noted above, Harshaw Creek is assigned the aquatic and wildlife (ephemeral) designated use. Pursuant to A.A.C. R18-11-113(D), the aquatic and wildlife (effluentdependent water) use, rather

than the aquatic and wildlife (ephemeral) use, will be used to develop WQBELs for Outfall 002. Two proposed limits in the draft permit should be modified before issuance of the final permit in order to reflect the uses assigned to Harshaw Creek, insofar as those proposed limits apply to Outfall 002 discharge. a. Dissolved oxygen: The limit for dissolved oxygen (“DO”) in the draft permit (Part I.G) imposes a standard that is based on the aquatic and wildlife (warm water) use. The DO standard for the aquatic and wildlife (effluent-dependent water) use instead should be used with respect to Harshaw Creek (the receiving water for Outfall 002 discharges). That standard is a single sample maximum of 3.0 in a sample taken from three hours after sunrise to sunset, and a single sample maximum of 1.0 in a sample taken from sunset to three hours after sunrise. See A.A.C. R18-11-109(E).9 Part I.G should be modified to reflect this standard. b. Suspended sediment: The suspended sediment standard in Part I.H of the draft permit also is based on the aquatic and wildlife (warm water) use. There is no suspended sediment standard for waters assigned the aquatic and wildlife (effluent-dependent water) use. See A.A.C. R18-11-109(D)(1). The final permit should clarify that the limit contained in Part I.H applies only to Alum Gulch (the receiving water for Outfall 001 discharges). It also may be prudent to reflect the other provisions of A.A.C. R18-11-109(D)(1) in Part I.H, specifically the provisions stating that: (1) compliance is assessed based on the median of at least four samples collected at least seven days apart; and (2) results of samples collected during or within 48 hours after a local storm event shall not be used in calculating a median value. ADEQ is not required to consult with the U.S. Fish and Wildlife Service when issuing an AZPDES permit. At one of the public hearings on the draft permit, a comment was made that ADEQ should consult with the United States Fish and Wildlife Service (“FWS”) regarding AMI’s 9 For all uses, the DO standard is also met if the percent saturation of dissolved oxygen is greater than 90%. See A.A.C. R18-11-109(E)(1) application. This is not the case. The requirement under the Endangered Species Act (“ESA”) to consult with the FWS on the effects of a proposed action applies only to federal agencies, not state agencies. See 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.03 (both imposing the ESA § 7 consultation requirement only on federal agencies). See also *National Association of Home Builders v. Defenders of Wildlife*, 551 U.S. 644, 653 (2007) (noting that “§ 7(a)(2)’s consultation requirement does not apply to permitting decisions by state authorities”). When EPA issues a NPDES permit, it must consider the effects of various other federal laws, including the ESA. See 40 C.F.R. § 122.49. Significantly, 40 C.F.R. § 122.49 is not one of the federal regulations incorporated by reference as an AZPDES program standard, confirming that ADEQ as a state agency is not bound by the same obligations as a federal agency. See A.A.C. R18-9-A905(A) (not listing 40 C.F.R. § 122.49 as a regulation incorporated by reference). Likewise, the agreement between EPA and ADEQ setting out the terms under which ADEQ would assume implementation of the NPDES program does not require ADEQ to consult with the FWS. See *National Pollutant Discharge Elimination System Memorandum of Agreement Between the State of Arizona and the United States Environmental Protection Agency Region 9* (2002). Thus, ADEQ is not required to consult with FWS on the issuance of this permit modification. Similarly, ADEQ is not required to coordinate with FEMA. Several comments at one of the public hearings suggested that ADEQ may have an obligation to coordinate with the Federal Emergency Management Agency (“FEMA”) on flooding issues. No such legal obligation to consult with FEMA exists. The NPDES regulations do not require even EPA, when issuing NPDES permits, to work with FEMA. See 40 C.F.R. § 122.49 (listing considerations under other federal laws and not including flood control statutes among those laws).

Moreover, as noted above, as a state agency, ADEQ is not required to consider those other federal laws listed in 40 C.F.R. § 122.49 when issuing AZPDES permits. Nor does any state law require ADEQ to consult with FEMA. For these reasons, ADEQ is not required to coordinate with FEMA regarding the issuance of this permit modification. Even if consideration of potential flood impacts were an appropriate factor for ADEQ to analyze in issuing an AZPDES permit, no significant flood impacts are raised by this amendment application. To support its August 2020 APP application, AMI provided ADEQ with an analysis of how the maximum proposed discharge from WTP 2 would affect inundation levels associated with various flood events along Harshaw and Sonoita Creeks. The analysis concludes that even at maximum discharge volume (4500 gpm), the proposed WTP 2 discharge is expected to have minimal impact on inundation levels during the various size storm events. See Ecological Resource Consultants, Water Treatment Plant 2 Discharge Compared to Natural Storm Events (January 25, 2021) (included as Attachment 3). Statement of Basis. Some suggestions and clarifications on the statement of basis prepared to accompany the draft permit amendment are reflected on Attachment 4.

Arizona Minerals Inc. (“AMI”), an existing AZPDES discharger, submits the following comments on the above-referenced draft permit amendment and corresponding statement of basis. The amendment would authorize discharge from a new Outfall 002 of water treated by an additional treatment plant referred to as water treatment plant 2 (“WTP2”). This is the second round of public comment on the draft permit modification: subsequent to the first round of comment, based on comments received from AMI and members of the public, ADEQ modified the permit to include water quality-based effluent limitations in addition to technology-based effluent limitations. Rather than simply issuing the permit with the new, more stringent discharge limitations, ADEQ elected to submit the permit amendment for a second round of public comment.

AMI supports ADEQ’s proposed modification of the permit. AMI also hereby incorporates by reference its prior comments on the initial draft permit amendment, dated April 7, 2021 (supplemented in some cases with additional comments below on topics also addressed in the earlier comments). To the extent relevant, AMI also incorporates by reference its comments on the draft APP amendment that are also being submitted today. With the exception of the first comment, which suggests some clarifying language be added in the permit or statement of basis with respect to the function of the assessment levels being proposed in Table 2.b, the comments below are supportive of the draft amendment as proposed by ADEQ. The comments below primarily address concerns and criticisms raised by other entities in the first round of public comment on the proposed amendment. AMI believes these concerns or criticisms are misplaced.

The proposed limits are conservative in another fashion as well. For each of the parameters listed above, the water quality standards are expressed as dissolved (see A.A.C. Title 18, Chapter 11, Article 1, Appendix A), but the proposed permit limits based on those dissolved standards are expressed as total recoverable, as required by regulation.³ See Table 1.c, footnote 2 of the proposed permit amendment. The primary difference in the two types of analysis is that in testing for dissolved metals, the sample is passed through a 0.45 micron filter before processing, meaning that any metals that are bound to particulate matter large enough to be filtered out are not detected in the dissolved sample analysis process. As a result, dissolved metal levels should be equal to

or lower than total (or total recoverable⁴) metals levels. Establishing total recoverable permit limits based on dissolved surface water quality standards is thus inherently conservative. ADEQ's recognition of this fact explains why the permit allows AMI the option of conducting a translator study to address the relationship between total recoverable and dissolved metals (see Part IV.B of the proposed amendment).

For the foregoing reasons, the proposed WQBELs are conservative and clearly protective of applicable surface water quality standards.

ADEQ identified appropriate designated uses for establishing WQBELs (A&Wedw, PBC, AgL): ADEQ utilized the A&Wedw, PBC and AgL5 uses to develop WQBELs in the draft permit. These are the uses identified by rule for Harshaw Creek, as modified by operation of A.A.C. R18-11-113(d). See A.A.C. Title 18, Chapter 11, Article 1, Appendix B.

Public comment was received arguing that additional uses for segments of Sonoita Creek below the effluent-dependent water ("EDW") stretch referenced above should be utilized to establish WQBELs. AMI does not believe the discharge from WTP2 will reach this segment, as discussed in its initial comments and Attachment 1 to those comments. The comment argued that AMI's analysis was flawed, and that an "integrated hydrological model" should instead be used. To our knowledge, the model suggested by the comment, unlike AMI's analysis, does not incorporate any site-specific measurements or data. ADEQ therefore would be justified in basing its decision on AMI's analysis. Even if it did not, however, the nearest downstream water from WTP2 that is not classified as ephemeral in Appendix B is the EDW portion of Sonoita Creek below the Town of Patagonia's wastewater treatment plant. That segment has exactly the same designated uses that ADEQ utilized to derive the WQBELs in the draft permit (A&Wedw, PBC, AgL). ADEQ's utilization of these designated uses to derive WQBELs in the draft permit is therefore appropriate.

Public comment also argued that portions of Harshaw Creek were non-ephemeral. Even if that were the case, the appropriate procedure for ADEQ to modify the designated uses applicable to some or all portions of the creek would be through a rulemaking, just as the current uses were established. The comment does not appear to understand that ADEQ cannot in a permit process simply ignore the uses established in rule, especially given that the bases for the factual assertions advanced in the comment (e.g., personal conversations with Forest Service personnel, student thesis, etc.⁷) have no independent regulatory significance. The process for modifying designated uses is distinct from the permit issuance process.

AMI also notes that the most stringent surface water quality standard used to derive the WQBELs in Table 1.c (for cadmium, copper, lead, mercury, zinc, pH) in the draft permit is the standard associated with the A&Wedw use. For each of those parameters, the standard associated with the A&Wedw use is the same as the standard associated with the aquatic and wildlife (warm water) ("A&Ww") use. Likewise, the standards associated with the PBC use for the parameters in Table 1.c are the same as those associated with the full body contact ("FBC") use (although both are less stringent than the standards associated with the A&Wedw use, and thus were not used to develop the proposed WQBELs). Therefore, identifying uses associated with a far downstream, non-ephemeral

water (e.g., portions of Sonoita Creek downstream of the EDW stretch associated with the Town's treatment plant), or assuming – despite the classification in Appendix B - that portions of Harshaw are non-ephemeral, would have no effect on the effluent limits proposed in Table 1.c. Finally, the comment also argued that criteria to protect the drinking water source (“DWS”) designated use should be used to develop WQBELs. This is neither appropriate nor legally justified for the AZPDES permit because the DWS use is not applied anywhere in Harshaw Creek or Sonoita Creek (or even the Santa Cruz River, the next downgradient water below Sonoita Creek). However, the APP amendment for WTP2 as proposed includes end-of-pipe discharge limits set at levels equal to aquifer water quality standards (“AWQS”), which are tied to Safe Drinking Water Act primary MCLs. The draft APP also includes alert levels set at 80% of AWQS. Therefore, the discharge from WTP2 will protect drinking water uses by requiring compliance with AWQS at the point of discharge. For these reasons, ADEQ used appropriate designated uses to derive WQBELs in the draft permit.

A permit amendment (rather than a new permit) is appropriate to authorize the discharge from Outfall 002: As discussed in AMI's initial comments: (a) an application for a non-minor permit modification uses the same form as an application for a new permit; (b) the public notice and comment provisions for a non-minor permit modification are the same as those for a new permit; and (c) the legal standards that must be met for a non-minor permit modification are the same as those for a new permit. Accordingly, requiring a new permit would make no substantive difference in the permit conditions.

AMI is neither a new source nor a new discharger: As explained in its prior comments (and Attachment 2 to those comments), the AMI mine source is not a new source as defined in federal and state law. Those comments will not be repeated in this letter, but are incorporated by reference as noted above. Both ADEQ and EPA have routinely recognized in AZPDES and NPDES permit renewals for other mines in Region 9 that adding additional outfalls or internal facilities at mines established prior to the 1982 adoption of effluent limitation guidelines for the mine source category does not turn an existing mine source into a new source. The mine is the source, and both agencies recognize that mines are evolving operations. AMI's AZPDES permit adopts the most stringent applicable effluent discharge limitations, and the new source label would not produce more stringent permit conditions. ADEQ's and EPA's interpretation of the new source regulations was recently confirmed as correct by the Superior Court of Arizona, Maricopa County, in a challenge to renewal of an AZPDES permit held by Resolution Copper. There, as here, the agencies and the Court agreed that the evolution of the operations at a mine first established prior to 1982 does not create a new source. Public comment was also received arguing that AMI, if not a new source, is a new discharger. That assertion is also inconsistent with the applicable regulations, which exclude from the definition of new discharger facilities added at sites previously granted a finally effective NPDES or AZPDES permit. See A.A.C. R18-9-A901(24); see also 40 C.F.R. § 122.2. The mine site now owned by AMI is such a site; a finally effective AZPDES permit was issued to a prior site owner (ASARCO, Inc.) in 2003. See Permit No. AZ0025054 (issued December 2003). Moreover, the current (2018) permit being amended is itself a finally effective AZPDES permit previously issued at the site. There are thus two previously issued, finally effective AZPDES permits for the site, both of which prevent AMI from being considered a “new discharger” for purposes of this amendment. AMI does support the suggestion made by one comment that ADEQ should add a discussion of the basis for

its conclusion that AMI is neither a new source nor a new discharger in the final Statement of Basis and/or the response to comments

Lower Harshaw Creek is not currently classified as impaired or non-attaining and no TMDL is required; for this reason (and because AMI is neither a new source or a new discharger), the limitations found at 40 C.F.R. § 122.4(i) and A.A.C. R18-9-A903(7) do not apply. The 2016 and 2018 impaired waters lists do not identify lower Harshaw Creek as impaired or non-attaining. The 2016 CWA § 305(b) assessment and accompanying list of waters by assessment category identify only the upper ~3.3 miles of Harshaw Creek (i.e., the portion covered by the 2003 TMDL addressing copper and pH) as non-attaining, including it in category 4A (impaired waters where a TMDL has been completed).⁸ This portion of the creek is above proposed outfall 002. No full CWA § 305(b) assessment was done in 2018, but the 2018 impaired waters (category 5) list does not include any portion of Harshaw Creek.⁹ Those lists were subject to public notice and comment before being finalized (see A.R.S. § 49-232(A)), and were required to be reviewed and approved by EPA (see 33 U.S.C. § 1313(D)(2) & 40 C.F.R. § 130.7(d)).¹⁰ It is therefore inaccurate to suggest that the lower portions of Harshaw Creek (including areas at and below proposed outfall 002) can be classified as impaired.¹¹ Because lower Harshaw Creek is not currently listed as impaired, no TMDL is required to be developed for it. See A.R.S. § 49-234(A) (ADEQ to develop TMDLs “for those navigable waters listed as impaired pursuant to this article . . .”) (emphasis added); 40 C.F.R. § 130.7(c)(1) (TMDLs to be developed for waters listed as impaired by a state). Because lower Harshaw Creek is not listed as impaired, and because AMI is not a new source or new discharger (as discussed above and in AMI’s prior comments), the limitations on discharges from new sources and new dischargers to impaired waters (40 C.F.R. § 122.4(i) & A.A.C. R18-9-A903(7)) are not triggered. The comment references various sources to argue that lower Harshaw Creek should be considered impaired for copper and pH, citing a report from NextGen Engineering for copper and one from Brown et al. for pH. A permit proceeding is not the appropriate forum for considering whether a water segment should be listed as impaired – an entirely separate process exists for identification and listing of impaired waters. See A.R.S. § 49-231 et seq.; 40 C.F.R. § 130.7. Furthermore, the information cited by the comment is of limited utility at best. The NextGen presentation¹² is the source for the assertion that copper levels are elevated in lower Harshaw Creek. The comment reproduces a figure from the NextGen presentation that purports to indicate one sample result exceeding copper in Harshaw Creek, but provides no values. It is also not clear who took the sample, or whether it was collected with appropriate QA/QC for possible listing purposes. Similarly, for pH, the comment includes a figure from the Brown et al. study.¹³ The figure shows portions of Harshaw Creek in green, indicating a pH range of 5.2-7.5, but the source, number and date of samples supporting this characterization is not clear. Moreover, only pH below 6.5 would not meet surface water quality standards, and it is not clear how many (if any) samples were below that limit. address contaminated sediment transport. Regardless of whether that suggestion has any merit, a permit proceeding is not the proper forum to address that issue – particularly a permit proceeding dealing with a different segment of Harshaw Creek than is addressed in the current TMDL. 7. Permit limits expressed as total recoverable are protective of water quality standards expressed as dissolved; no translator study is needed prior to permit issuance: Public comment was received noting that the AZPDES permit expresses limits for metals as total recoverable whereas the surface water quality standards for those metals are often expressed as dissolved. This is true: as noted above, AZPDES

regulations require that permit limits be expressed as total recoverable (see 40 C.F.R. § 122.45(c), incorporated by reference at A.A.C. R18-9-A905(A)(3)(e)), whereas surface water quality standards to protect the aquatic life uses for most metals are expressed as dissolved in A.A.C. Title 18, Chapter 11, Article 1, Appendix A.15 However, the conclusion then drawn by the comment– that total recoverable permit limits are not protective of dissolved standards – is flawed. As noted above, samples for the dissolved fraction of a metal are passed through a 0.45 micron filter before analysis, while samples for total recoverable metals are not filtered. As a result, total recoverable metals results include metals bound to larger solid particles, whereas dissolved metals results do not. Total recoverable metals levels thus are expected to be the same or higher than dissolved metals levels. Expressing permit limits as total recoverable, but basing those limits on dissolved water quality standards, is therefore conservative and arguably over-protective (as is the imposition of WQBELs at total recoverable levels that are in most cases below dissolved water quality standards, as proposed in this amendment). No modification of the draft permit is therefore required, nor is a translator study needed prior to permit issuance. If anything, a translator study would be expected to increase the proposed permit limits (i.e., allow discharge of a higher level of a total recoverable metal that would still be protective of a dissolved metal standard in the receiving water).¹⁶ That is why the permit allows – but does not require – the permittee to perform a translator study. Finally, the comment argued that the existing TMDL for upper Harshaw Creek (covering a stretch that terminates above the proposed WTP2 outfall) needs to be revisited to and specifies that any modified permit limits resulting from that study will not be considered anti-backsliding (see Part IV.B of the permit). Anti-backsliding is a consideration only if permit limits are being made less stringent.

8. Differences in limits, points of compliance, and metals sampling between the APP and AZPDES permits are easily explained and driven by the differing legal requirements of each program, and there are no functional differences in required metals analysis: Public comment was received noting that there are different permit limits, points of compliance and metals analysis requirements between the proposed amended AZPDES and APP permits. This is largely true, but again does not mandate any changes to the permit.

With respect to permit limits, AZPDES and APP permits are designed to protect different resources. AZPDES limits are developed to protect the designated uses of the receiving surface water (in this case, A&Wedw, PBC and AgL, as discussed above). See 40 C.F.R. § 122.44(d) (incorporated by reference at A.A.C. R18-9-A905(A)(3)(d)) (permits must achieve water quality standards adopted pursuant to the CWA). These surface water quality standards have been adopted by rule at A.A.C. Title 18, Chapter 11, Article 1. By contrast, APP permits are designed to protect groundwater for use as a drinking water, and an APP must ensure compliance with aquifer water quality standards. See A.R.S. § 49-243(B)(3).

These aquifer water quality standards have been adopted by rule at A.A.C. Title 18, Chapter 11, Article 4. Discharge from WTP2 requires both APP and AZPDES permits and will have to meet the limits in both permits. There is no need (and dubious legal authority) to include APP limits in an AZPDES permit or vice versa, given that AMI will be required to comply with both permits.

With respect to points of compliance, both the AZPDES and APP permits impose

limits end-of-pipe (i.e., at the point of release into the environment). The APP has an additional downstream point of compliance designated, as mandated by A.R.S. § 49-244, but because AWQS are being imposed as end-of-pipe permit limits, ADEQ is not proposing to require a well to be drilled at that distant location (~9.37 miles from the point of discharge) at this time. The AZPDES statute and regulations have no corresponding requirement or authority for establishing downgradient points of compliance. Finally, with respect to metals sampling, the proposed AZPDES permit amendment requires sampling for total recoverable metals (see Tables 1.c and 2.b, footnote 2), as required by governing regulation (discussed above), whereas the proposed APP permit amendment requires monitoring for total metals (see Table 4.2.2, footnote 8). However, there is no practical difference between the two types of metals analysis (total and total recoverable). Devin McAllister May 29, 2021 Page 13 See, e.g., 40 C.F.R. § 136.3, Table I.B, footnote 4 (“For the determination of total metals (which are equivalent to total recoverable metals) the sample is not filtered before processing. . . Regardless of the digestion procedure, the results of the analysis after digestion procedure are reported as total metals.”) (emphasis added).¹⁷ Any differences between limits and points of compliance between the AZPDES and APP permits are therefore functions of the differing programs under which those permits are issued, and require no modifications to either permit. Nor is there any functional difference in the type of metals sampling required under the two permits. No NEPA or other “environmental review” is required prior to permit issuance: Public comment suggested that ADEQ was required by NEPA or the Endangered Species Act (“ESA”) to assess potential adverse effects on endangered species before issuing the permit amendment. This is not the case. Modification of an AZPDES permit by ADEQ is not a “major federal action” subject to NEPA. NEPA applies only to major federal actions significantly affecting the quality of the human environment. See 42 U.S.C. § 4332(C). Therefore, no EA or EIS must be prepared by ADEQ. To the extent that EPA maintains authority to ensure ADEQ properly implements the Clean Water Act, 33 U.S.C. § 1371(c)(1) expressly provides that actions by EPA other than directly issuing a NPDES permit to a new source (or providing federal assistance for construction of new publicly owned treatment works) are not “major federal actions” for NEPA purposes. As discussed in AMI’s initial comments, the ESA does not impose on ADEQ a duty to formally consult with the Fish and Wildlife Service (“FWS”) on issuance of the permit amendment. Like NEPA, the ESA consultation requirement applies only to federal agencies. See 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.03; *National Association of Home Builders v. Defenders of Wildlife*, 551 U.S. 644, 653 (2007) (noting that “§ 7(a)(2)’s consultation requirement does not apply to permitting decisions by state authorities”). 10. No different permit conditions are authorized or required based on speculative impacts to endangered species: Public comment suggested that the discharge might adversely affect threatened or endangered species. There is no designated critical habitat for aquatic species along Harshaw Creek and, to AMI’s knowledge, no threatened or endangered aquatic species are present in the creek. Moreover, the comment did not identify any specific adverse effects to threatened or endangered species that would be caused by the discharge of high-quality treated water. As noted above, the draft permit imposes WQBELs that are generally more stringent than aquatic and wildlife surface water quality standards. Furthermore, Arizona’s standards are based on EPA’s recommended aquatic life water quality criteria developed under § 304(a) of the CWA. Those criteria are designed to protect the vast majority of species nationwide,¹⁸ which would include species that may be listed as threatened or endangered. Thus, legal issues aside, there is no factual basis to conclude that AMI’s

discharge, which will be required by the terms of the AZPDES permit to be equal to or better than applicable water quality standards, will adversely affect threatened or endangered species. In addition, despite the fact that ADEQ is not required to consult with FWS when issuing an AZPDES permit or amendment, there are mechanisms for federal agencies to express concerns on a draft AZPDES permit if they believe a proposed discharge will adversely affect endangered species. EPA reviews all draft AZPDES permits and amendments, and no permit may be issued if EPA objects to the permit. See A.A.C. R18-9- A908(C). Furthermore, EPA has entered into a memorandum of agreement (“MOA”) with FWS regarding implementation of ESA issues in the NPDES program, including as part of EPA review of state-issued permits. See Memorandum of Agreement Between the Environmental Protection Agency, Fish and Wildlife Service and National Marine Fisheries Service Regarding Enhanced Coordination Under the Clean Water Act and Endangered Species Act, 66 Fed. Reg. 11202 (February 22, 2001). Pursuant to that MOA, FWS will contact a state if it believes that a proposed permit will have a more than minor detrimental effect on listed species or critical habitat. If unable to work out the issue with the state, FWS will contact EPA, which will in turn attempt to work with the state to ensure that the permit complies with all CWA requirements. EPA will object to a permit that it believes will likely jeopardize the continued existence of a threatened or endangered species or result in the destruction or adverse modification of designated critical habitat. To AMI’s knowledge, EPA has not raised any concerns that the proposed discharge will have adverse effects on endangered species, nor has FWS or any other wildlife agency made any comments to ADEQ regarding the proposed discharge. This supports the conclusion that the discharge is not expected to have adverse impacts on threatened or endangered species. Finally, the proposed permit amendment also includes requirements that AMI periodically demonstrate that the water discharged through outfall 002 does not adversely affect wildlife by requiring periodic whole effluent toxicity testing (see Part II.C). This provides an additional means of demonstrating lack of adverse impact to aquatic species, including threatened and endangered species.

In the absence of comments from EPA or a wildlife agency on this permit, and in the further absence of any specific alleged harm to threatened or endangered species that will be caused by the proposed discharge of water that meets (or is of higher quality than) applicable aquatic and wildlife surface water quality standards,²⁰ ADEQ has no legal basis to deny, delay or condition the permit modification.

The proposed discharge from WTP2 will not cause any appreciable increase in flood flows in the Town of Patagonia: Public comment asserted that the proposed discharge from WTP2 would cause an increase in flooding in the Town of Patagonia (the “Town”). AMI questions whether this is an issue that ADEQ can validly consider when issuing an AZPDES permit. Even if it is, however, two separate studies have been prepared and submitted into the record in the APP proceeding, both demonstrating that no appreciable increase in flooding impacts will occur. The first study was prepared by Environmental Resource Consultants, Inc. (“ERC”) and submitted to ADEQ in January 2021. The study concluded that AMI’s discharge would have minimal impact on flood flow elevations in Harshaw Creek or Sonoita Creek. See Ecological Resource Consultants, Inc., Water Treatment Plant 2 Discharge Compared to Natural Storm Events (January 25, 2021) (copy included with AMI’s April comments on the initial draft permit amendment). The second study was jointly commissioned by AMI and the Town, and performed by

Clear Creek Associates, LLC (“Clear Creek”). That study focused on possible impacts from WTP2 flows on flood flows in Sonoita Creek in the vicinity of the Town. In a deliberate attempt to be conservative, Clear Creek assumed that AMI’s maximum permitted discharge (4500 gpm) would reach a point in Harshaw Creek just above its confluence with Sonoita Creek (i.e., no infiltration or evapotranspiration whatsoever would occur as the discharge flowed along Harshaw Creek), and then analyzed the expected impact of that flow on various flood events. Clear Creek concluded that the inflow would result in minimal impacts to flood flows in the Town during the simulated 2-year, 10-year and 50-year, 24-hour storm events, with projected surface water elevation increases of under one inch in all cases. See Clear Creek Associates, Evaluation of Planned Discharges to Harshaw Creek, Arizona Minerals Incorporated, Patagonia Arizona (May 2021). 21 Together, the two studies demonstrate that AMI’s proposed discharge is not expected to have any appreciable impact on flood flows in the Town. 12. Concerns about conveyance of upstream natural contaminants and upstream legacy mining pollution are speculative and outside the scope of AZPDES permit requirements: Public comment asserted that the discharge would have a high probability of conveying pollutants from upper Harshaw Creek (above the proposed outfall), such as contaminated sediment or pollution from natural sources, downstream rather than letting those pollutants infiltrate into natural pore space. Such concerns are speculative, as even the comment appears to concede by referring to “potentially increased” contaminant levels and the “potential” for impact. The scope and extent of upstream legacy or natural pollution is not described. In addition, there is no discussion or acknowledgement of the extent to which any such contaminants would be diluted by the high-quality discharge from WTP2. Finally, there is no explanation as to why the conveyance of “natural” levels of pollutants is or should be limited by the AZPDES permit program. Moreover, considerations such as this are typically not part of the process for issuing AZPDES permits, which focuses on controlling the quality of the permittee’s discharge at the point of discharge (here, Outfall 002), using TBELs and WQBELs, as is proposed in this draft permit modification. The comment also contends that contaminated sediment from upstream of the outfall could be transported to Patagonia Lake. Presumably this can also occur currently as a result of a rain event or series of events, so it is not clear why this potential, to the extent it exists, (4500 gpm) would reach a point in Harshaw Creek just above its confluence with Sonoita Creek (i.e., no infiltration or evapotranspiration whatsoever would occur as the discharge flowed along Harshaw Creek), and then analyzed the expected impact of that flow on various flood events. Clear Creek concluded that the inflow would result in minimal impacts to flood flows in the Town during the simulated 2-year, 10-year and 50-year, 24-hour storm events, with projected surface water elevation increases of under one inch in all cases. See Clear Creek Associates, Evaluation of Planned Discharges to Harshaw Creek, Arizona Minerals Incorporated, Patagonia Arizona (May 2021). 21 Together, the two studies demonstrate that AMI’s proposed discharge is not expected to have any appreciable impact on flood flows in the Town. 12. Concerns about conveyance of upstream natural contaminants and upstream legacy mining pollution are speculative and outside the scope of AZPDES permit requirements: Public comment asserted that the discharge would have a high probability of conveying pollutants from upper Harshaw Creek (above the proposed outfall), such as contaminated sediment or pollution from natural sources, downstream rather than letting those pollutants infiltrate into natural pore space. Such concerns are speculative, as even the comment appears to concede by referring to “potentially increased” contaminant levels and the “potential” for impact. The scope and extent of upstream legacy or natural

pollution is not described. In addition, there is no discussion or acknowledgement of the extent to which any such contaminants would be diluted by the high-quality discharge from WTP2. Finally, there is no explanation as to why the conveyance of “natural” levels of pollutants is or should be limited by the AZPDES permit program. Moreover, considerations such as this are typically not part of the process for issuing AZPDES permits, which focuses on controlling the quality of the permittee’s discharge at the point of discharge (here, Outfall 002), using TBELs and WQBELs, as is proposed in this draft permit modification. The comment also contends that contaminated sediment from upstream of the outfall could be transported to Patagonia Lake. Presumably this can also occur currently as a result of a rain event or series of events, so it is not clear why this potential, to the extent it exists, should affect ADEQ’s processing of the proposed permit modification. The comment argues that this means a FBC use should be used to derive permit limits, but it is unclear how different limits on the quality of the discharge would prevent the transport of sediment from upstream that is conveyed to Outfall 002. Moreover, as noted above, the PBC standards are the same as the FBC standards for the pollutants listed in Table 1.c (and both are less stringent than corresponding aquatic and wildlife standards), so using a FBC use to derive permit limits would result in no change to the limits proposed in the current draft permit modification. For all these reasons, speculative concerns about conveyance of contaminated sediment or natural pollution should not affect ADEQ’s processing of the proposed permit modification. 13. Uncertainty in influent chemistry is not high, and information on flow rates for various influent sources were provided in the application: Public comment was received arguing that significant uncertainties regarding influent flow chemistry exist. Specifically, the comment argued that no information was provided on how the chemistry in water drawn from shafts would change as a result of blasting (referencing ammonia and nitrate), and that it was not clear how leaching tests were performed on the rock types expected to be encountered as exploration advanced. The comment also asserted that AMI provided no information on expected water quality or flow contributions from individual sources to WTP2. As an initial comment, the plant is designed to provide effective treatment across a wide range of influent concentrations and is not dependent for success on influent chemistry falling within certain ranges (as discussed in comment 14 below). The primary source of influent to WTP2 at all times is expected to be natural groundwater withdrawn in advance of underground workings progressing. Variations in influent chemistry caused by the influence of other sources directed to WTP2 is expected to be minor. Blasting is expected to have minimal effect on the chemistry of water treated at WTP2. Generation of ammonia and nitrate residues from blasting will be minimized as part of AMI’s blasting program.²² Any remaining ammonia and nitrates residues in water from the exploration shaft or decline will be heavily diluted by the natural groundwater that will make up the majority of the influent to WTP2.

Water to be withdrawn from the exploration decline or shaft is a relatively small proportion of total influent (which will be comprised primarily of natural groundwater at all times), so the analysis of anticipated shaft or decline water quality or changes therein have relatively little impact on the anticipated influent quality. WTP2 was designed to provide effective treatment across a wide range of influent chemistry, so even if that chemistry did vary, it is not expected to affect plant performance. Moreover, despite the expected low level of variability in influent and effluent chemistry, ADEQ developed its proposed WQBELs using a CV that assumed a high level of effluent variability, thereby building a degree of conservatism into the permit. With respect to contributions of

individual sources to expected influent quality, information on estimated flow rate ranges for each individual source was included on Form 2C, Section II.B of AMI's AZPDES application. Information on expected chemistry for each individual source was considered in putting together table 2.1 in the BQE Water document attached to that application (Section C.2, Attachment B). The range of expected values based on available data for each source were evaluated and the highest and lowest values expected in the influent were identified in table 2.1 of that document based on the range of volumes of each source expected to be present in the influent. It is important to note in this context that an AZPDES permit governs discharges, and the purpose of influent characterization is largely to ensure that the planned treatment processes are appropriate for the water to be treated. Precise characterization is unnecessary; it is sufficient to generally characterize the water in order to select effective treatment methods. AMI has done that and has performed testing to ensure plant performance across a range of influent chemistry, as described in the documents comprising Section C.2, Attachment B of AMI's AZPDES application.

14. Uncertainties associated with WTP2 are not high: Public comment argued that uncertainties associated with WTP2 are high because of differences in water chemistry between selected reference sites and anticipated WTP2 influent, and because the proposed technology is not commonly used (indicating that lime precipitation is more common). The term "experimental" is even used. Finally, the comment notes that dewatering water may be acidic if it is withdrawn from the vicinity of acid-generating rock. With respect to differences between reference site chemistry and projected WTP2 influent chemistry for some parameters, this is not a legitimate concern because WTP2 is not designed to treat only pollutants falling within a certain range in the influent. The effluent quality achieved by treatment processes that remove dissolved metals from solution by chemical precipitation (whether lime or, as proposed here, sulfide) is determined by the solubility of the solids (precipitates) formed in the process. This means that metal concentrations in the effluent do not depend on the feed concentrations but rather on the solubility of the solids produced in the treatment process. For example, the solubility of lead sulfide is very low and is reached regardless of whether the influent contains 0.1 ppm or 10 ppm of lead. The solubility of metal-sulfide solids formed when sulfide is added to feed water is several orders of magnitude lower than the corresponding metal-hydroxides formed when lime is added. Consequently, significantly lower effluent concentrations can be reached for most metals by using sulfide (as proposed for WTP2) instead of lime. Although lime has been used widely by the industry for decades, modern mine water treatment systems that are required to comply with increasingly stringent discharge limits use sulfide (with or without ferric iron) to achieve the target effluent quality. As discussed in AMI's application materials, selenium (in the form of selenate) is the only species that is not removed in the proposed water treatment by precipitation. Instead, it is removed by ion exchange (IX). IX is a well-known water treatment process used by many industries for the production of ultrapure water. These include boiler feed water treatment for steam electric power plants, food, and pharmaceutical industries. Similar to precipitation processes, IX can meet fixed effluent water quality targets over a wide range of influent water concentrations. It is true that at higher selenium concentrations in the plant feed, the IX resin will have to be regenerated more frequently because the total mass of selenium captured by the resin increases. However, the relationship between the feed concentration of selenium and the frequency of resin regeneration is known and the engineering design for WTP2 takes this into account. Although it may not be as common as lime precipitation, the technology proposed for WTP2 is far from experimental. The basic

metals treatment technology used in WTP2 is common and well understood (sulfide precipitation, flocculation, clarification, filtration, thickener, sludge filter press). All reference sites presented in the permit application are industrial scale plants that underwent rigorous regulatory review and approval processes and have been in active operation for long enough to serve as a reliable reference. None of the sites use lime treatment and all of them use treatment processes that constitute the basis of the design for water treatment at WTP2. The additional selenium removal process is relatively new but hardly experimental, having been used successfully at several sites. The BQE document attached to AMI's AZPDES application (Section C.2, Attachment B) explains the basis for the selection of the proposed treatment technique rather than lime precipitation (better effluent quality, smaller amounts of residues). In fact, a public comment acknowledged that the proposed treatment method has advantages over lime precipitation.

With respect to the potential for dewatering water to occasionally be acidic (which is speculative), the plant design includes constant pH monitoring and adjustment through the addition of NaOH which ensures that pH is controlled in the circumneutral range across the treatment process and the final effluent pH is within the range acceptable for discharge (6.5 - 9.0). As described above, significant uncertainties do not exist with respect to the ability of WTP2 to treat the influent to meet proposed permit limits. Assertions that AMI's dewatering efforts will result in drying up seeps and springs and damage groundwater-dependent ecosystems are speculative and consideration of these effects are outside the scope of ADEQ's AZPDES authority. Moreover, the AZPDES permit does not authorize groundwater withdrawal, and consideration of any potential effects of such withdrawal is not within the scope of ADEQ's regulatory authority under the AZPDES program. Speculative assertions regarding effects on GDEs do not provide a rationale to delay or deny issuance of the modification.

RESPONSE NO. 27

Using ADEQ's waters of the U.S. screening toolkit, Harshaw Creek was determined to be likely intermittent flow regime. ADEQ evaluated the riparian corridor vegetation of Harshaw Creek (reach AZ15050301-025B), as riparian corridor vegetation is indicative of at least intermittent flow. Our analysis showed greater than 80% presence of riparian corridor vegetation, established using GIS tools and 2017 imagery from the U.S. Geological Survey's National Agriculture Imagery Program. Riparian vegetation corridor of 50% or greater is indicative of at least intermittent flow. Based on this flow regime and the hydrologic connection to a downstream Traditionally Navigable Water (TNW), Harshaw Creek is a water of the U.S. and regulated through the AZPDES program.

Regarding the public comments that AMI chose to respond to, all of ADEQ's responses can be found in this responsiveness summary.

COMMENT NO. 28

I am deeply concerned about the potential of the proposed Hermosa mine project (among others) to damage the water supply to the town and neighbors of Patagonia. Already we are experiencing shortages and prolonged drought. Protecting the water of existing

populations is far more essential than a mining enterprise. Sufficient water resources must be guaranteed to the community!

RESPONSE NO. 28

The AZPDES program, as designed by state and federal law, regulates the discharge of pollutants into regulated waters of the US. The program does not regulate groundwater withdrawal.

COMMENT NO. 29-228

Patagonia is home to the federally threatened Mexican spotted owl and western yellow-billed cuckoo, and the area provides important habitat for the endangered jaguar and ocelot. Both the Mexican spotted owl and jaguar have designated critical habitat in and around the Project area. The Patagonia Mountains are headwaters for waterways that provide essential water to downstream ecosystems and human communities and are recharge areas for groundwater aquifers. I am concerned about the impacts on wildlife and plant life due to this disruption of natural water flows and cycles.

In a time of climate crisis and mega drought, I am very concerned about the amount of water proposed to be discharged and the impact upon the region's groundwater. I am concerned about further degradation of already impaired waters, especially about increased levels of lead and cadmium. I understand that local well owners are concerned about increased levels of lead and cadmium in their wells. The release of additional manganese and other metals will potentially impact water quality as well as potentially impair operation of well equipment.

This proposed action should be a new permit not an amendment to the existing permit because it is significantly different from the existing permit for a different water treatment plant discharging significantly less volume into a different waterway. These are just a few of my concerns and I hereby include much more detailed comments by the Patagonia Area Resource Alliance into my comments.

RESPONSE NO. 29-228

No condition of this permit releases the permittee from any responsibility or requirements under the Endangered Species Act, which covers listed species and critical habitats. This permit does not authorize the “taking” of endangered or threatened species as prohibited by Section 9 of the Endangered Species Act, 16 U.S.C. 1538.

The permit includes WQBELs for lead and cadmium, which are protective of designated uses for Harshaw Creek.

Regarding the comment on a new permit, see Response No. 6.

ORAL COMMENTS

Oral comments were received during the public hearings held on February 25, 2021 and April 1, 2021.

COMMENT NO. 229

ADEQ's permit for new discharges to Harshaw Creek inexplicable and unjustifiably fails to protect any downstream designated water use. Instead of incorporating water quality-based effluent limitations to the draft permit, ADEQ has proposed only technology-based effluent limitations. Clearly, water quality-based effluent limitations are necessary to protect downstream water quality and should apply to the new discharge from the mine. The new discharge to Harshaw Creek will create a perennial stream that aquatic and other wildlife surely will inhabit and utilize. ADEQ's failure to include in the draft permit water quality-based effluent limits for toxic pollutants such as copper and cadmium and conflicts with the requirements of the Clean Water Act, applicable EPA guidance and state law. The draft permit disregards the mine company's permit application which assumes water quality-based effluent limits will apply and includes plans for meeting them. On this point while we have no reason to doubt that AMI will build and use the treatment plant they have planned to attain the appropriate water quality standards, under the terms of this draft permit, ADEQ and the public would have no ability to enforce that action.

The following statement from the current permit "Because flow from the outfall will reach a segment of Alum Gulch 1.7 miles downstream with different designated uses the most stringent downstream designated uses will be applied" without an explanation, ADEQ abandoned that approach in this draft permit. The rules and federal guidance that govern ADEQ's AZPDES permit decisions clearly allow ADEQ to impose protective water quality-based effluent limitations to this new proposed discharge and ADEQ should do so. In closing, for the reasons I have summarized redact the draft permit and ADEQ withdraw and reissue a new draft permit for public review that incorporates effluent limitations that protect the designated uses downstream on Sonoita Creek as ADEQ did in the 2018 AZPDES permit for the mine's discharge to Alum Gulch.

RESPONSE NO. 229

See Response No. 25.

COMMENT NO. 230

Sonoita Creek, as you ADEQ mentioned, does have an endangered species. I don't think you have at this point adequately assessed how a perennial flow will affect those species. They are used to somewhat drier conditions, usual fluctuations in Arizona. An increase of an estimate up to 5-acre feet a day, which is an astonishing amount, will dramatically change that habit and background. I believe ADEQ has a responsibility to address that quantity issue as well as quality because of the federal protections.

Will Fish and Wildlife Service be consulted regarding the impact of this proposal on habitat downstream, habitat for listed species, as well as impact for dewatering of the

aquifer. Will FEMA be consulted for what is essentially a constant flood situation and what could be the impact on downstream lands, such as the Paton Center, which is world famous for birding, and the Nature Conservancy's property as well.

RESPONSE NO. 230

Regarding endangered species, see Response No. 9.

Fish and Wildlife Service is provided a draft copy of the permit and statement of basis during an informal review period. The AZPDES program, as designed by state and federal law, regulates the discharge of pollutants into regulated waters of the US. The program does not regulate the potential for flooding, therefore FEMA was not consulted as part of this permitting process.

COMMENT NO. 231

Does this permit application have to do with change in the alluvial groundwater downstream and in Harshaw Canyon all the way down passed the nature conservancy on Sonoita Creek and possibly to the Santa Cruz? That's going to change the hydrology in the area. It's going to change the flood factors and I was wondering besides taking the groundwater off the mountain and letting it go down to the sea a little more quickly than it is used to. Is that indeed part of this permit process and if not, why not?

RESPONSE NO. 231

The AZPDES program, as designed by state and federal law, regulates the discharge of pollutants into regulated waters of the US. The program does not regulate changes in alluvial groundwater.

COMMENT NO. 232

In Tables 2.a and 2.b, there are the following differences:

1. Barium and Boron are not included in 2.b but in 2.a?
2. ALs are very different in 2.a and 2.b, why?
3. Arsenic has a potable water value not to exceed 10 ppb while 2.a is 123 ppb and 2.b is 246 ppb, why?

RESPONSE NO. 232

The assessment levels are based on the receiving water standards for Outfalls 001 and 002. Table 2.a is for discharges from Outfall 001 to Alum Gulch and is not included in this permit modification. Table 2b is part of this modification and protects the designated uses and applicable surface water quality standards for Harshaw Creek. Potable water is not a designated use for the receiving waters.

COMMENT NO. 233

Timeframe for issuing the permit after the public comment periods have concluded?

RESPONSE NO. 233

ADEQ is required to respond to all public comments and will issue the permit once responsiveness summary is completed in July 2021.

COMMENT NO. 234

Please reject the pending significant amendment and begin a new permit process for this proposed discharge, which is dramatically different from the original permit. Please obtain all the information requested in our formal comments which will be filed on or before April 7th.

RESPONSE NO. 234

See Response No. 26.A.

Everyone who commented during the public comment period has the right to file an appeal and request a hearing on the final decision as an appealable agency action under A.R.S. § 41-1092.03 by filing a written Request for Hearing or Notice of Appeal within 30 days of receipt of this notice. A Request for Hearing or Notice of Appeal is filed when it is received by ADEQ's Hearing Administrator as follows:

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

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