



# HAVASUPAI TRIBAL COUNCIL

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May 27, 2022

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**Re: The Havasupai Tribe Letter of Opposition Regarding the Pinyon Plain Mine Individual Aquifer Protection Permit**

Dear Mr. Cabrera:

As residents and guardians of the Grand Canyon since time immemorial, the Havasupai Tribe (the “Tribe”) submits this letter of opposition to the Arizona Department of Environmental Quality’s (“ADEQ”) issuance of the Individual Aquifer Protection Permit (the “Permit”) for the Pinyon Plain Mine (formally called Canyon Mine and hereinafter referred to as the “Mine”). We have been at the forefront of opposition to uranium mining within our aboriginal lands for generations. The associated health risks are known and documented, and these negative impacts have disproportionately affected Indigenous populations in northern Arizona; you cannot simply ignore them. If our water source becomes contaminated like we have seen in other areas of Arizona due to uranium mining, we will no longer be able to live in our homes, Supai Village will become extinct, and our time as “The People of the Blue-Green Water” will come to a close.

At each opportunity, the Tribe provided comments and feedback to ADEQ on the Permit. On August 30, 2019, we requested ADEQ deny the General Aquifer Protection Permit Renewal for the Mine.<sup>1</sup> We asked that rather than approve the General Permit, ADEQ issue an Individual

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<sup>1</sup> Letter from Muriel Uqualla, Chairwoman, Havasupai Tribe, to Misael Barera, P.E., Director, Ariz. Dep’t of Env’t Quality (Aug. 30, 2019) (Exhibit A).

Permit for the limited purpose of closing down the Mine and facilitating post-closure activities. The Tribe attended government to government consultations on multiple occasions with ADEQ where we shared our beliefs, traditions, and concerns for our Tribe’s continued existence and how ADEQ could protect that. We even met with ADEQ on August 5, 2021 in person at the site of one of the Tribe’s most sacred sites—Red Butte. At Red Butte, we shared with ADEQ our sacred beliefs and the significance of our aboriginal home. We believed ADEQ representatives heard us that day and would take action to preserve and protect our home, traditions, and rooted existence as a Tribe. Also on August 5, 2021, the Tribe submitted comments regarding the Individual Aquifer Protection Permit.<sup>2</sup> We once again urged ADEQ to issue an Individual Aquifer Protection Permit for the sole purpose of closing down the Mine and facilitating post-closure monitoring, maintenance, and remediation. At each step, ADEQ disregarded our recommendations and moved forward with issuing the Permit.

At this time, the Tribe declines to file an appeal of the Permit. In lieu of an appeal, the Tribe writes this letter in opposition to ADEQ’s Permit issuance. The State’s Aquifer Protection Permit program does not account for the Tribe’s cultural concerns or the inevitable degradation of our sole source of water. Nor does Arizona’s underlying statutory or regulatory framework provide grounds for appeal that consider our unique cultural and public health-related concerns as a Tribal Government that must protect its citizens. Finally, an appeal would not grant the Tribe the remedy that it wants – permanent closure of the Pinyon Plain Mine.

We oppose the deficient Permit for two reasons. First, in failing to adequately consult the Tribe, ADEQ did not acknowledge the Mine’s devastating consequences to our sole source of water and Havasu Springs, a site of immeasurable cultural significance. Second, the Permit lacks any transparency in monitoring or reporting and risks our livelihood and existence by deferring to incorrect and incomplete scientific information.

**I. ADEQ failed to consider the cultural significance of Havasu Springs and the direct consequences of the Mine on the Tribe**

As we articulated in previous comments to ADEQ, the Mineposes acutely elevated dangers to our People, as it has critical implications for the Tribe’s main water supply source: the Redwall-Muav Aquifer (the “R-Aquifer”). Since time immemorial, the Tribe has resided on the banks of

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<sup>2</sup> Letter from Matthew Putesoy, Sr., Vice-Chairman, Havasupai Tribe, to Diana Gutierrez, Groundwater Protection, Ariz. Dep’t of Env’t Quality (Aug. 6, 2021) (Exhibit B).

Havasu Creek at the bottom of the Grand Canyon, on the upper Coconino Plateau (the “Plateau”), and along the Colorado River (much of this area has been formally acknowledged to be the aboriginal territory of the Tribe). The Tribe actively and continuously utilizes the plant,<sup>3</sup> animal,<sup>4</sup> medicinal, cultural, and religious resources on these lands, and intends to do so forever. The R-Aquifer is the regional aquifer of the Plateau and serves as the sole source of water for people across arid northern Arizona. Snowmelt and runoff on the San Francisco Peaks and monsoon events percolate into the soils and vadose zones, filling the R-Aquifer. This water moves underground, past the Mine site, as it makes its way to seeps and springs on the National Forest, on the South Rim of the Grand Canyon, and most importantly to Supai Village, our home at the bottom of the Grand Canyon. This process has occurred for millennia, and our elders understood this water process and how it worked long before scientists confirmed what we already knew. We know and understand our aboriginal lands.

These springs that omit from the rock walls and the ground are sacred, and we have served as the keepers of these springs since time immemorial. Over 95% of R-Aquifer spring discharge emerges from Havasu Springs and downstream springs of Havasu Creek.<sup>5</sup> The blue-green color of Havasu Creek is from where our name is derived. We are the *Havasuw 'Baaja*, the People of the Blue-Green Water. Our identity as a people is intrinsically intertwined with the health of Havasu Creek and the environment to which it gives life. We use this water for drinking, gardening and irrigating, municipal uses, and cultural and religious uses. The R-Aquifer, which the Coconino Aquifer (the “C-Aquifer”) feeds to an uncertain degree, serves as the sole source of water for all uses in our home in Supai Village. If the water source becomes contaminated like we have seen in other areas of Arizona due to uranium mining, we will no longer be able to live in our homes and

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<sup>3</sup> Tribal members have stopped harvesting certain plants, including medicinal plants like cedar and sage, near the Mine site (which is within the Tribe’s Traditional Cultural Property designation and should be freely available to the Tribe) due to concerns about the excess discharges and spraying activity at the Mine, and the elevated contaminants in those waters. Tribal members also have concerns about soil impacts due to the spraying and windy conditions on the Plateau. They have used Geiger counters near the mine site and have detected high levels of radiation.

<sup>4</sup> Tribal members have observed and are greatly concerned about small animals that they hunt for food on the Plateau, such as rabbits, crossing through the fence at Canyon Mine and drinking from the uncovered impoundment there. Tribal members have also observed birds drinking from the uncovered impoundment.

<sup>5</sup> Donald J. Bills, Marilyn E. Flynn & Stephen A. Monroe, U.S. Geological Surv., *Hydrogeology of the Coconino Plateau and Adjacent Areas, Coconino and Yavapai Counties, Arizona: Scientific Investigations Report 2005-5222 Version 1.1* (2007) (Exhibit C); 2 A.R.S. § 12-910(E).

Supai Village will become extinct. It is for these reasons that we adamantly oppose mining operations at the Mine and ADEQ's issuance of the Permit.

In responding to comments, ADEQ ignored the risks to the Tribe we raised in our written comments. Despite our comments expressing our fears and the magnitude of risk this issue presents, ADEQ did not acknowledge the cultural significance of Havasu Creek. ADEQ merely pointed to the "significant flow path" between the Mine and Havasupai tribal lands as reassurance.<sup>6</sup> And, despite significant uncertainty to the contrary and a mounting need for additional site-specific information and studies, ADEQ stated that it is "extremely unlikely that the mining activities could impact water quality."<sup>7</sup> ADEQ's conclusion is callous and ignores the great risk posed to the Tribe if the Agency's decades-old conclusion is proven to be incorrect.

Throughout the permitting process, ADEQ fell short of its commitment to tribal consultation and collaboration. ADEQ's Tribal Consultation and Collaboration Policy (the "Policy") attempts to "recognize and respect Tribal Sovereignty and the principles of government-to-government relationships and to promote coordinated collaboration."<sup>8</sup> Yet ADEQ's permitting decisions and process were antithetical to its written consultation policy. For example, the Policy acknowledges that we know and understand our aboriginal lands, recognizing "the value of Tribal traditional knowledge."<sup>9</sup> Further, the Policy recites ADEQ's commitment to consultation, viewing it as "a shared responsibility" with "the purpose of mutual understanding during the development of...matters that will, or are reasonably believed to, have the potential to affect federally recognized Tribes."<sup>10</sup>

ADEQ failed to meet its written consultation-related commitments. ADEQ did not honor or even acknowledge the Tribe's traditional knowledge or genuine interests. ADEQ broke its promise to build toward mutual understanding of issues that will affect the Tribe. Despite words stating otherwise, the Policy proved to be grandstanding, full of unmet promises and ADEQ turned its back on its Tribal commitments.

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<sup>6</sup> Ariz. Dep't of Env't Quality, Summary and Response to Comments 11 (Apr. 28, 2022) (hereinafter "Response to Comments").

<sup>7</sup> *Id.*

<sup>8</sup> Ariz. Dep't of Env't Quality, *Tribal Consultation and Collaboration*, Policy No. 0100.2022 at 1 (Jan. 1, 2022), [https://static.azdeq.gov/legal/subs\\_tribal\\_govt\\_policy.pdf](https://static.azdeq.gov/legal/subs_tribal_govt_policy.pdf).

<sup>9</sup> *Id.* at 2.

<sup>10</sup> *Id.*

Moving forward, the Tribe requests improved communication and collaboration with ADEQ concerning the Mine. ADEQ must comply with the Policy by providing concrete and substantial steps toward recognition of our traditional knowledge, improved consultation, and greater coordination. To this aim, we request regular meetings and communication opportunities with ADEQ. Further, the Tribe requests that ADEQ develop a formal agreement with the Tribe regarding the Mine.<sup>11</sup>

## **II. The Permit results in significant transparency issues and gaps in information**

The Tribe remains concerned about the substantial risk posed by the Mine. The Tribe has two major concerns regarding transparency and gaps in information. First, the Permit does not require disclosure of necessary information regarding the Mine’s operations and data to the Tribe. Second, ADEQ’s decision relies on gaps in scientific and technical information that gambles with the Tribe’s water, health, and culturally significant sites.

First, the Tribe requests that ADEQ resolve transparency issues in the Permit by agreeing to the regular and mandatory release of any data, documents, and reports to the Tribe. There are many instances where the Permit requires the mining company, Energy Fuels Resources, Inc. (“EFRI”), to conduct sampling or reporting. To begin, the Permit provides a process for establishing alert levels (“ALs”) and aquifer quality limits (“AQL”) for point of compliance (“POC”) wells.<sup>12</sup> In this process, EFRI must gather at least 10 rounds of ambient groundwater monitoring data to establish the current water quality in the C- and R-aquifers before mining activity occurs.<sup>13</sup> Next, EFRI must establish ALs for all constituents with an established numeric AQL and AWQS for each POC well and for any new or replacement well.<sup>14</sup> Subsequently, the Permit requires quarterly groundwater monitoring at each point of compliance well.<sup>15</sup> EFRI must also inform ADEQ or the Groundwater Protection Value Stream when it exceeds an operational performance level, exceeds an alert level, violates discharge limits, or if an unauthorized discharge

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<sup>11</sup> *Id.* at 3 (“ADEQ will enter into agreements when considered mutually appropriate by ADEQ and an interested Tribe and as authorized by law”).

<sup>12</sup> Ariz. Dep’t Env’t Quality, Permit No. P-100333, Individual Aquifer Protection Permit § 2.5.3 (Apr. 28, 2022) (hereinafter “Permit”).

<sup>13</sup> *Id.* § 2.5.3.2.

<sup>14</sup> *Id.* §§ 2.5.3.3, 2.5.3.4.

<sup>15</sup> *Id.* § 2.5.3.6.

occurs.<sup>16</sup> The Permit also includes other reporting requirements, such as an initial monitoring report, quarterly wastewater monitoring, annual reports, and a groundwater monitoring demonstration report.<sup>17</sup>

To improve transparency surrounding the Mine, ADEQ must provide any and all alerts, data, documents, and reports generated by EFRI to the Tribe. For the reasons previously discussed, this information is crucial to the Tribe, yet the Permit fails on transparency grounds. EFRI must maintain copies of monitoring laboratory analyses and Chain-of-Custody forms.<sup>18</sup> The Permit further allows such monitoring data to be available for review by ADEQ personnel upon request.<sup>19</sup> Similarly, the Permit includes instructions to submit self-monitoring report forms, provides reporting deadlines for each report type, and requirements to report exceedances to the Groundwater Protection Value Stream or ADEQ.<sup>20</sup> However, the Permit's monitoring procedures exclude requirements to disclose any of these alerts, data, documents, and reports to the Tribe or the public.

The Tribe requests that ADEQ enters an agreement to provide Mine-related alerts, data, documents, and reports to the Tribe: disclosure should be mandatory and preemptive. ADEQ should require EFRI to electronically provide all sampling data and reports to ADEQ within 7 days of completion. Subsequently, ADEQ should electronically provide any sampling data and reports to the Tribe within 7 days of EFRI providing them. The Tribe requests any alerts, data, documents, and reports associated with (**but is not limited to**) the following Permit sections:

- Discharge monitoring (§ 2.5.1)
- Facility / Operational Monitoring (§ 2.5.2)
- Groundwater Monitoring; Ambient Groundwater Quality Monitoring (§ 2.5.3.2)
- Alert Levels for Point of Compliance Wells (§ 2.5.3.3)
- Aquifer Quality Limits for POC Wells (§ 2.5.3.4)
- Aquifer Quality Limit for Uranium for POC Wells (2.5.3.4)
- Compliance Groundwater Quality Monitoring for POC Wells (§ 2.5.3.6)
- Exceeding of Alert Levels and Performance Levels (§ 2.6.2)
- Discharge Limit Violation (§ 2.6.3)

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<sup>16</sup> See, e.g., *id.* §§ 2.6.2, 2.6.2.1.1, 2.6.2.1.3, 2.6.2.3, 2.6.2.3.2, 2.6.3, 2.6.3.1, 2.6.3.2, 2.6.3.3, 2.6.3.4, 2.6.4, 2.6.5.2, 2.6.5.3, 2.6.5.4, 2.7.3.

<sup>17</sup> *Id.* §§ 2.5.3.3, 2.5.3.4.

<sup>18</sup> *Id.* § 2.5.

<sup>19</sup> *Id.*

<sup>20</sup> See, e.g., *id.* §§ 2.6, 2.7.

- Liner Failure, Containment Structure Failure, or Unexpected Loss of Fluid (§ 2.6.3.1)
- Overtopping of a Surface Impoundment (§ 2.6.3.2)
- Inflows of Unexpected Materials to a Surface Impoundment (§ 2.6.3.3)
- Slope and Berm Failures (§ 2.6.3.4)
- Aquifer Quality Limit Exceedances (§ 2.6.4)
- Emergency Response and Contingency Requirements for Unauthorized Discharges (§ 2.6.5)
- Discharge of Hazardous Substances or Toxic Pollutants (§ 2.6.5.2)
- Discharge of Non-Hazardous Materials (§ 2.6.5.3)
- Reporting and Recordkeeping Requirement (§ 2.7)
- Self-Monitoring Report Form (§ 2.7.1)
- Permit Violation and Alert Level Status Reporting (§ 2.7.3)
- Initial Monitoring Report (§ 2.7.4.1)
- Annual Report (§ 2.7.4.2)
- Groundwater Monitoring Demonstration Report (§ 2.7.4.3)

Further, the Tribe requests that ADEQ promptly provides updates on the ambient groundwater monitoring period and the establishment of ALs and AQLs. The Tribe also requests ADEQ immediately notify the Tribe in cases of exceeding performance levels, alert levels, discharge limit violations, or any other requirement where EFRI must notify ADEQ or the Groundwater Protection Value Stream. ADEQ must preemptively provide data, reports, documents, and alerts to the Tribe. Entering into a formal agreement regarding transparency is a crucial step – this agreement will ensure that the Tribe gets the data and information necessary for self-preservation and will aid ADEQ in beginning to fulfill its consultation requirements under its own policy.

Second, ADEQ’s permitting decision is gambling with the Tribe’s water, health, and culturally significant sites. The decision creates an assumption of risk to these resources and values to which the Tribe does not consent. ADEQ’s decision disregards that previous assumptions for this Mine site were wrong. The Tribe believes additional site-specific information, scientific studies, and hydrogeological information are needed and remain pertinent.

ADEQ’s previous assumptions for this Mine have been wrong and the latest science continues to highlight the significant outstanding questions and information that is needed to conclude, as ADEQ has, that this Mine does not pose a risk to the aquifers that feed the Grand Canyon and Havasu Creek and Springs.

Site-specific developments since 2016 have proven that there is appreciable water in the C-aquifer. Since then, the mine shaft has been continually flooding, and since 2017 the annual

average of pumped water from the mine shaft is around 10 million gallons of water. This indicates that significant volumes of water are present in the C-aquifer. ADEQ is incorrect to continue to trivialize the quantity of this water. Even using gallons per minute (gpm), the amount of water flooding the mine workings is significantly greater than even reliable seeps and springs in the Grand Canyon.<sup>21</sup> Another factor likely influencing groundwater on the South Rim is that since the 1980s new groundwater wells have been drilled, which could change groundwater directional flow.

Three recent USGS peer-reviewed studies have also indicated that there is connectivity between the C- and R-aquifers and connectivity between the C-aquifer and R-aquifer to Grand Canyon seeps and springs. All three of these studies focused on groundwater along the South Rim of the Grand Canyon encompassing the Coconino Plateau north to south from the South Rim to the San Francisco Peaks.<sup>22</sup> These studies also indicate the complexity of the region, as stated in Solder et al., “[t]he simply layered geology exposed in the Grand Canyon Region obscures the complex character of the perched and regional groundwater-flow systems<sup>23</sup>. . . Understanding the occurrence and movement of groundwater in the Coconino and Redwall-Muav aquifers is limited by complex structural geology and a lack of data from wells intercepting the aquifers. Regional fractures and faults act **both** as barriers and preferential pathways for horizontal and vertical groundwater movement and are associated with the development of karst conduits.”<sup>24</sup>

Solder et al. also revealed that previous assumptions that the South Rim groundwater was primarily sourced from snowmelt and winter rains at higher elevations are now expected to be

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<sup>21</sup> According to ADEQ, the mine shaft flooding is 19 gallons per minute. Response to Comments at 8. In comparison, Grapevine spring, reliably used as a water source in the Grand Canyon, is most recently discharging at a rate of under 9 gpm. U.S. Geological Surv., *USGS 362727116013501 230 S17 E53 21CAC 1 Grapevine Springs*, National Water Information System, <https://waterdata.usgs.gov/nwis/uv?362727116013501> (last visited May 26, 2022). Other seeps and springs in the Grand Canyon have been documented at even lower gpm flow rates, ranging from values as low as .44 gpm (Miner’s Spring) to 2.7 gpm (Burro Spring). *Id.*

<sup>22</sup> John E. Solder, Kimberly R. Beisner, Jessica Anderson & Don J. Bills, *Rethinking groundwater flow on the South Rim of the Grand Canyon, USA: characterizing recharge sources and flow paths with environmental tracers*, 28 *Hydrogeology J.* 1593–1613 (2020) (Exhibit D) (hereinafter “Solder et al. 2020”); John E. Solder, & Kimberly R. Beisner, *Critical evaluation of stable isotope mixing end-members for estimating groundwater recharge sources: case study from the South Rim of the Grand Canyon, Arizona, USA*, 28 *Hydrogeology J.* 1575-1591 (2020) (Exhibit E) (hereinafter “Solder and Beisner 2020”); Kimberly R. Beisner, John E. Solder, Fed. D. Tillman, Jessica R. Anderson, & Ronald C. Antweiler, *Geochemical characterization of groundwater evolution south of Grand Canyon, Arizona (USA)*, 28 *Hydrogeology J.* 1615-1633 (2020) (Exhibit F) (hereinafter “Beisner et al. 2020”).

<sup>23</sup> Solder et al. 2020 at 1595 (emphasis added).

<sup>24</sup> Solder et al. 2020 at 1595 (internal citations omitted) (emphasis added).



overestimated. A meaningful portion of winter recharge occurs at lower elevations. There is likely mixing of shallower and deeper water at the Mine: “Canyon Mine Observation well screened in the Coconino aquifer is **similar** to nearby Redwall-Muav aquifer wells. **This finding suggests a hydrologic connection in the area of Canyon Mine or similar recharge sources and groundwater velocities to that hydrologic position in the two systems.**”<sup>25</sup>

Companion studies, Solder and Beisner 2020 and Beisner et al. 2020, also do not support ADEQ’s groundwater flow model as remaining current. Collectively, these studies indicate the need for a **new** conceptual model that reflects the more complex reality of the groundwater flow path and recharge on the South Rim and where the Pinyon Plain Mine is located.

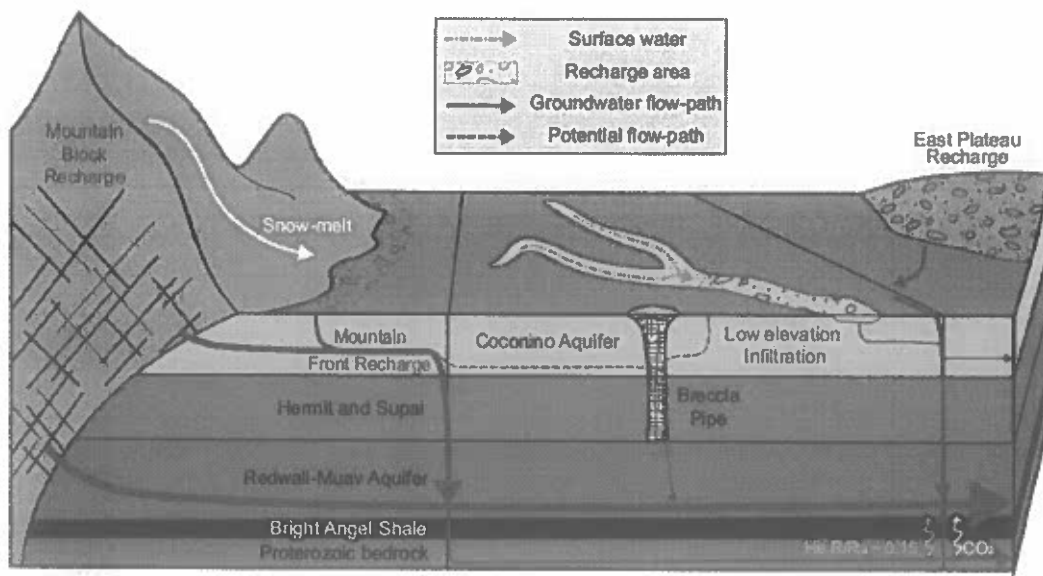


Fig. 7 Conceptual groundwater flow diagram for the South Rim, Grand Canyon, USA. Groundwater recharge sources labeled with blue text. Relative flow amounts indicated by size of flow-path arrows. Hydrogeology generalized from Fig. 2 with major features labeled with

black text. Dissolved gases (orange is He; white is CO<sub>2</sub>) sourced from bedrock and transported along faults indicated by curve arrows at bottom right

Since the public comment period, two additional peer reviewed USGS studies have been released. The first study, released last fall, presents an assessment of uranium in groundwater in the Grand Canyon Region.<sup>26</sup> Of the 206 groundwater sites sampled, 177, or 86%, had maximum

<sup>25</sup> Solder et al. 2020 at 1604 (emphasis added).

<sup>26</sup> Fred D. Tillman, Kimberly R. Beisner, Jessica R. Anderson & Joel A. Unema, *An assessment of uranium in groundwater in the Grand Canyon region*, 11 Scientific Reps. (2021) (Exhibit G) (hereinafter Tillman et al. 2021).

uranium concentrations that were less than the EPA drinking water standard. However, and very concerning, of the 11 sites where uranium concentrations in groundwater were above the EPA drinking water standard, 8 of the sampling sites were in proximity to uranium mines.<sup>27</sup> Said(?) another way, where uranium contaminations were in exceedance of EPA drinking water standards, 81% of these locations were in close proximity to uranium mining operations. Although this study acknowledges the need for additional research to continue to investigate the link between uranium mining and pollution and stopped short of asserting any conclusive effects of such mining and pollution, the fact that water quality is overwhelmingly unpolluted while 81% percent of the polluted samples were in proximity to breccia pipe uranium mines is a compelling indicator of significant risks such mining poses. Coupled then with the uncontested conclusion that “timing of potential effects [from uranium mining on water quality] may take many years to reach groundwater discharge locations” it is evident that precaution as opposed to throwing risk to the wind is the warranted regulatory action.<sup>28</sup>

The second study was released by USGS this year, and again underscores that “there is insufficient hydrogeologic information to accurately simulate groundwater flow in much of the [Grand Canyon Region]. . . Additional data that would be necessary for a numerical model include additional measurements of groundwater levels in the regional aquifer, estimates of hydrogeologic properties from pumping tests in the regional aquifer, location and nature of system boundaries, effects of geologic structure on groundwater flow, and additional discharge measurements at R-aquifer springs.”<sup>29</sup> Specific to Cataract groundwater system, this study acknowledged the critical need for additional information before a conclusion ultimately could be reached as to the lack of risk that the Mine poses:

It is important to determine flow vectors to the R-aquifer either in the subsurface or overland, that can be expected from contaminant sources including mines ore and waste rock stored on the surface and mine production water. Of particular concern are migration pathways to the swallow holes in the floor of Cataract Creek upstream from Havasu Springs. No quantitative works has been carried out in the form of dye traces to determine flow rates between Havasu Springs and the sinks in the floor of Cataract Creek in the fault zone 40 miles upstream. The transmissive

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<sup>27</sup> *Id.* at 12.

<sup>28</sup> *Id.*

<sup>29</sup> Jacob E. Knight & Peter W. Huntoon, U.S. Geological Surv., *Conceptual Models of Groundwater Flow in the Grand Canyon Region, Arizona. Scientific Investigations Report 2022-5037* at 33 (2022) (Exhibit H).

character of the R-aquifer, particularly where it is fractured by highly conductive extensional faults, remains unquantified.

The setback and temporal behavior of the groundwater divide behind the South Rim of the Grand Canyon have not been adequately delineated. The divide separates groundwater discharge to numerous small springs along the walls of the Grand Canyon from regional flow in the R-aquifer that moves away from the canyon toward Havasu Springs.<sup>30</sup>

Collectively, these studies, although continuing to provide some additional insight as to hydrogeology on the South Rim, all have a consistent theme: there remains significant and substantial uncertainty about the hydrogeology and the implications of uranium mining and water quality. Yet, despite the agreement that more information is needed to fully understand the hydrogeology and the risks that uranium mining poses to the Tribe and aquifers and seeps and springs on the South Rim, ADEQ's taken a cavalier approach that accepts risk despite it never being the one that would bear the consequences—that falls uniquely to the Havasupai Tribe.<sup>31</sup>

ADEQ takes a band-aid approach that fails to understand the full extent of the problem. ADEQ asserts ongoing site-specific monitoring will provide the data necessary to provide insight, stating “regional scale questions are addressed by required, ongoing, site-specific monitoring” and “[m]onitoring the response of the system over the life of the project and after dewatering stops will provide data necessary to confirm or refine the regional flow direction.”<sup>32</sup> ADEQ cannot rely on monitoring as a method of understanding risks and problems with the Mine. Ongoing monitoring is insufficient and falls short of understanding the geologic and hydrogeologic structures surrounding the Mine. ADEQ must better understand the site through additional studies and not just wait idly for disaster to strike.

Based on ADEQ's incorrect and insufficient understanding of the underlying hydrogeologic structures, the Tribe renews our request for additional studies as well as the use of a hydrogeological framework model (“HFM”). ADEQ used a Conceptual Site Model (“CSM”) and argued it is functionally the same as the HFM.<sup>33</sup> However, HFM is a quantitative analysis,

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<sup>30</sup> *Id.* at 30.

<sup>31</sup> Response to Comments at 13 (“Tracer testing of karst features north of the Grand Canyon, noted in some comments, shows this concern is valid. ADEQ agrees with the need to continue research of the regional groundwater systems”).

<sup>32</sup> *Id.* at 10.

<sup>33</sup> *Id.* at 8.

while CSM is non-qualitative.<sup>34</sup> ADEQ admitted that the CSM is based on only “direct geological observation of the structure and saturation of the aquifer units” and argued that “numerical modeling is not needed at this time given the ongoing direct and continuous measurement of aquifer hydraulic properties and responses.”<sup>35</sup> Despite ADEQ’s contentions, an HFM is still necessary. An HFM is a basic and essential step that ADEQ has refused to undertake. Yet an HFM will yield a better understanding of groundwater flows in ways that direct geological observation cannot.

The Tribe further renews its request for tomography of the Mine site. Tomography is a method of producing a three-dimensional image of the internal structures of a solid object through observation and recording of the differences in the effects on the passage of waves of energy impinging on those structures.<sup>36</sup> Tomography is needed to better understand the effects of fractures and boreholes on the underground vertical movement of water.<sup>37</sup> ADEQ dismissed tomography, stating “the geology is well understood because of the density of data from logs of wells and exploratory boreholes. EFRI and its predecessors completed a total of 150 holes (45-surface and 105-underground) totaling 92,724 linear feet from 1978 to 2017.”<sup>38</sup> Instead, ADEQ suggested groundwater monitoring allows understanding of “the gradient and flow direction,” while “shaft pumping defines the aquifer yield.” However, tomography is widely used in hydrogeology to determine the permeability of fractured rock.<sup>39</sup> And conducting such analysis would inform a critical information gap for the karst aquifer system that is influenced by faults and fractures and should be done instead of assuming the characteristics of the wells and exploratory boreholes are consistent throughout the site. ADEQ never tested its hypothesis that the geology is fully understood. Moreover, ADEQ has never tested whether fractures and boreholes are well-healed enough to prevent contamination at the Mine. Instead, ADEQ prefers waiting for disaster to strike using groundwater monitoring and shaft pumping. ADEQ should do its due diligence and better understand the Mine site’s hydrogeology through tomography-related studies.

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<sup>34</sup> See Public Comment of Professor David K. Kreamer, Ph.D, regarding Application of Pinyon Plain Mine (formerly known as Canyon Mine) for an Individual Aquifer Protection Permit (APP) No. 100333, LTF 84446 at 4 (Aug. 6, 2021) (hereinafter “Kreamer Comments”) (Exhibit I).

<sup>35</sup> Response to Comments at 8–9.

<sup>36</sup> Kreamer Comments at 9.

<sup>37</sup> *Id.*

<sup>38</sup> Response to Comments at 14.

<sup>39</sup> See Kreamer Comments at 9.

In gambling with the permitting decision, ADEQ could also leave the Tribe with additional risks and costs upon mine closure. The Mine’s current bond would not be sufficient to remediate contamination and monitor any aquifer pollution. Arizona statute requires EFRI to “...demonstrate financial responsibility to cover the estimated costs to close the facility and, if necessary, to conduct post-closure monitoring and maintenance.”<sup>40</sup> ADEQ claims the financial assurance mechanism (FAM) is “adequate to conduct closure/post closure activities detailed in the approved closure/post-closure plan.” Further, “[i]n a March 10, 2021 letter from the USFS to the Permittee, the USFS confirms that the ‘cost estimate conforms to USFS guidance for reclamation bond estimation and is therefore acceptable.’”<sup>41</sup>

The Mine’s FAM amount – \$1,539,816.00 – could leave the Tribe financially responsible for remediating contamination that we opposed and attempted to prevent today. The financial assurance amount confirms the need for additional scientific studies. ADEQ should prove its assertion that this amount is adequate by demonstrating full knowledge of the Mine and its hydrogeology. At the very least, the Tribe formally requests that ADEQ provide the March 10, 2021, letter from the USFS to the EFRI. Further, the Tribe requests copies of any communications concerning financial assurances with EFRI.

### **III. Requested Actions**

To comply with ADEQ’s core statutory duty to “protect the environment” and its written policies concerning Tribal consultation, the Tribe requests entering a formal agreement with ADEQ that includes the following actions:

- **Improved consultation and coordination in compliance with ADEQ’s own policy** through increased communication and regular meetings with the Tribe. The Tribe requests that ADEQ recognizes and evaluates “the value of Tribal traditional knowledge” in any future decisions, communications, or meetings.
- **Compulsory disclosure of monitoring processes, reports, alerts, and documents** from ADEQ to the Tribe. ADEQ must compel EFRI to provide any monitoring information routinely and promptly to ADEQ. In turn, ADEQ must also provide any

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<sup>40</sup> A.R.S. § 49-243(N)(3).

<sup>41</sup> Response to Comments at 54.

Mine alerts, information, documents, data, or reports to the Tribe. ADEQ should also keep the Tribe informed on EFRI's process of monitoring ambient groundwater and the subsequent establishment of AQS. In any instance where EFRI provides alerts to ADEQ or the Groundwater Protection Value Stream, ADEQ must immediately notify the Tribe. Further, the Tribe requests that ADEQ supply any and all reports or documents containing alerts, monitoring processes, or data to the Tribe electronically within 7 days of submittal to ADEQ.

- **Allow third-party monitoring by the Tribe at EFRI's expense** because the Tribe is concerned with lack of data sharing and access to information. This will allow the Tribe to have access to POC wells on a regular basis. The frequency of third-party monitoring will be addressed in the formal agreement.
- **Development of new hydrogeologic studies** using the Hydrogeological Framework Model and tomography to more accurately define the discharge impact area before mine operations, during mine operations, closure, and post-closure periods. The importance of new hydrogeologic studies cannot be overstated because of the need for sound information upon which ADEQ and stakeholders can rely in protecting something so vital to public health and safety in a desert environment as drinking water.
- **A meaningful demonstration that EFRI has the financial capabilities to close and ensure proper post-closure care of the facility**, pursuant to the requests listed here, and in an amount far greater than the \$1,539,816.00 currently proposed. This request includes the March 10, 2021, letter from the USFS to the EFRI and any other communications concerning financial assurances with EFRI.

#### **IV. Conclusion**

Since the Mine's inception, ADEQ has ignored our good faith efforts to protect our public health and safety. We once again ask why ADEQ would jeopardize so much for the sake of a uranium mine that, in 30 years, has yet to produce a single ounce of uranium ore? We request that you hear our voices and take the appropriate steps to safeguard our people and the vital aquifers of northern Arizona. At this juncture, we request that ADEQ enters into a formal agreement with the Tribe that ensures significant and meaningful consultation, transparency concerning the Mine,

and a commitment to new technical and scientific studies. We hope ADEQ improves its relationship with the Havasupai Tribe, not only relating to the Pinyon Plain Mine but regarding all ADEQ permitted activities in northern Arizona.

As the protectors of the land, our Tribe and Elders have fought uranium mining for decades, gaining allies along the way who stand shoulder to shoulder with us as we work together, not just to protect our sole source of water, but our cultural identity as Havasupai People. The negative impacts of the Mine are widespread, yet no one will be impacted to the degree of the Havasupai if the Redwall-Muav Aquifer reaches toxic contamination levels. We are the People of the Blue-Green Water because our home has been at the bottom of the Grand Canyon along the blue-green waters of Havasu Creek since time immemorial. If the R-Aquifer becomes contaminated, and we must abandon our ancestral home of Supai Village, we will leave the blue-green waters of Havasu Creek behind and consequently will cease to be the *Havasuw 'Baaaja*. While we may still breathe air, we, the People of the Blue-Green Water, will have become extinct.

Sincerely,



Edmond Tilousi  
Havasupai Tribe Vice Chairman

Cc: Trevor Baggiore, Director, Water Quality Division  
Diana Gutierrez, Groundwater Protection  
Ethan Leiter, Unit Manager, Groundwater Protection Individual Permits Unit  
Naveen Savarirayan, Manager, Groundwater Protection