David Levene

Letters against issuing the mining permit. Grisel Levene. David Levene

12/29/2023

Dear Arizona Department of Environmental Quality,

I'm writing to urge you to deny South32's Hermosa permit renewal (#AZ0026387) for discharging pumped aquifer "waste" water into Harshaw and Alum creeks. The possible impacts are unacceptable and fall under two main categories:

1. dewatering due to aquifer pumping, and
2. chemical and physical disturbances due to increased flow rates in Harshaw and Alum creeks.

First: reducing the water table level in these mountains will deny numerous seeps, springs, and livestock tanks of their water supply. The change in hydraulic gradients around the mine will very likely change the "paths of least resistance" where current springs emerge, permanently drying natural water sources. Such sources of water that provide rare and essential habitat for various imperiled species, including the Mexican Jaguar, are irreplaceable and already threatened by a changing climate. Furthermore, tens of thousands of acres of livestock rangeland will very likely be severely impacted as groundwater fed livestock tanks are dried.

Expected harms from water discharges are also deeply concerning. Up to 5.5 million gallons of water per day will be dumped into Harshaw Creek and up to 172,000 gallons per day into Alum Creek. Such large volumes will far exceed the usual intermittent and base flows in these creeks, and will even surpass Sonoita Creek's flow rate by over three times. This could result in significant consequences, including severe upstream erosion, excessive downstream sedimentation, and the potential burial of vital water sources. Including notably, seven rheocrene seeps/springs in Harshaw Creek and one in Alum Creek. The concern is heightened due to the unique and biodiverse nature of the areas immediately surrounding springs. Estimates propose that these refuge-like areas may harbor more than 20% of endangered and threatened species in the area, a remarkable statistic given their relatively small land surface area, as indicated by the Springs Stewardship Institute. Such large volumes of water introduced into these creeks will lead to reduced tree recruitment for riparian species like cottonwoods and sycamores — over time, significantly changing both the landscape, and its species composition.

Further, Because the water discharges are continuous, the affected landscape will become water-logged, meaning a reduced capacity for soils and sediments in arroyos to absorb high volumes of water in heavy rain events, making downstream flash flooding more intense and less predictable; significantly increasing the danger to residents, property, and public infrastructure during storms.

Additionally, high rates of flow could liberate and transport high volumes of numerous toxic heavy metals extant within the sediments of both Lower Hershaw and Alum creek, a remnant of legacy acid mine drainage resulting from two generations of under-regulated mining practices. It has been well documented that both creeks are severely impaired as demonstrated in the 2012 University of Arizona thesis "*Bioaccumulation of Heavy Metals from Soils to Plants in Watersheds Contaminated by Acid Mine Drainage in SE Arizona, Katherine Eddleman*" where in for example, soil samples from Lower Harshaw creek were determined to be "anomalously high in arsenic (97.2 ppm) and lead (1919.5 ppm)" (Eddleman, 2012). These numbers are alarming, especially when taken with the very real probability of such contaminants being transported by south32 Hermosa discharge into the groundwater basin from which Patagonia wells pull for residential use. Not to mention the introduction of this contaminated water into the federally recognized impaired surface waterway that is Sonoita creek. The Arizona Department of Environmental Quality seems to be either unaware or unconcerned with these threats, as past versions of both the National Pollutant Discharge Elimination System and Aquifer Protection Permits only name a single actual point of compliance 200 feet downstream of the outfall. I argue that South32 aims to use Harshaw creek and Alum creek as natural pipes to discharge their water, and that the true point of discharge is not where they release it from their plant, but where it comes into contact with the vital waters of Sonoita creek and Patagonia municipal sources.

At the very least, ADEQ must create additional points of compliance and require South32 to fund continual remediation of those contaminated creek beds if they seek to pump water into them, which endangers not only the health of the delicate riparian ecosystem, but also the residents of Patagonia, and visitors to the area who enjoy the drinking water, recreation, and fish that would be made hazardous if you choose to do nothing.

For all these reasons, I strongly urge you and the Arizona Department of Environmental Quality to deny the permit for this project.

Sincerely,

David Levene

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