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C.H. HUCKELBERRY
County Administrator

December 4, 2017

Mr. William James, National Mining Expert
U.S. Army Corps of Engineers
3701 Bell Road
Nashville, Tennessee 37214-2660

Re: **Rosemont Copper Project ACOE Application No. SPL – 2008-00816-MB**

Dear Mr. James:

This letter provides comments concerning Hudbay's final Habitat Mitigation and Monitoring Plan (HMMP; rev. 9/12/17) that was recently submitted in support of the proposed Addendum to the 401 Certification issued for the Rosemont Copper mine. To compensate for the loss of wetlands caused by mining activities, the HMMP proposes two mitigation projects, including substantial dredge and fill effort in Sonoita Creek and the removal of select stock tanks on the Rosemont project site.

In a separate letter to the Arizona Department of Environmental Quality (dated November 17, 2017; a copy of which is attached), we objected to the Certification on a variety of grounds. Because of the different responsibilities associated with your agencies regarding the Clean Water Act, this letter presents our concerns with the HMMP, rather than the Certification Addendum.

This letter is divided into three comment segments about: 1) The overall mitigation proposal, 2) Rosemont stock tank proposal, and 3) the Sonoita Creek project.

1) General Comments

The Section 401 Certification Conditions Based on the Surface Water Mitigation Plan (SWMP) are Unenforceable

The Arizona Department of Environmental Quality (ADEQ) based conditions in the existing Certification on Rosemont's SWMP, a document that was submitted to ADEQ long after the close of the public comment period and approximately one month prior to ADEQ's decision to issue the Certification for the mine. There was no public review or comment.

Nevertheless, ADEQ included conditions in the Certificate based on the SWMP. Because the SWMP-inspired Certification conditions resulted from a violation of Arizona law, they are unenforceable and cannot be relied upon by the Corps for its decision.

The SWMP-based Certification conditions require Rosemont to develop a surface water model to quantify potential changes from baseline conditions throughout development of the project. Rosemont is to determine mitigation measures to maintain and protect downstream water quality and flow. If the plan is unenforceable, then there is no way for the Corps to ensure that aquatic resources will remain unaffected or adequately compensated.

Rosemont, in its HMMP, tries to bootstrap the SWMP into legitimacy by asserting it "supports the determination by ADEQ that the project will have no adverse effect on the currently designated downstream Outstanding Arizona Waters (OAW) in Davidson Canyon and Cienega Creek" (HMMP, p. 60). In that same paragraph, Rosemont seems to suggest that the proposed stock tank mitigation is already approved because it was mentioned in the SWMP.

Relying on the SWMP to justify the stock tank mitigation in the HMMP cannot cure ADEQ's failure to include the plan in the original record offered for public comment. Further complicating the Corps' reliance on this document is the fact that there are subsequent versions of the SWMP, which are not being released for public review.

The Corps Must Issue a New Public Notice because the Current 404 Application does not Properly Describe the Mitigation Activities Proposed

While Rosemont's 404 permit application includes brief mention of the requirement to provide a HMMP prior to 404 issuance, the application includes no information about specific mitigation activities, and fails to include mention of Sonoita Creek as an impacted area. (U.S. Army Corps of Engineers, Public Notice – Application for Permit, Application no. SPL-2008-00816-MB, December 6, 2011, at 12.)

Rosemont acknowledges the lack of relevant information in the 404 permit application, admitting that the FEIS and ROD only "included a generalized description of Sonoita Creek Ranch restoration activities." (Letter to Trevor Baggiore, ADEQ, "Rosemont Copper Project, Clean Water Act Section 401 Water Quality Certification," from Katherine Arnold, Hudbay; September 14, 2017.)

In fact, descriptions of the mitigation activities planned for the Sonoita Creek Ranch mitigation site in the existing record at most include only the "conceptual design" of these activities. Moreover, Rosemont itself makes clear that this new, proposed activity is a significant departure from that conceptual design: "While the conceptual design attempted to bolster the existing system with newly constructed channels, the final design represents a complete restoration of Sonoita Creek and its floodplain." (*Id.*, emphasis added.)

In the request to modify its Certification, the mitigation activity at issue involves discharge of dredge and fill materials into WUS, and is exactly the kind of activity that must receive a 404 permit to proceed. (See 33 CFR §323.3(a).) In addition, because it is reasonably related to the Rosemont Project, it must be included in the same permit application as the Rosemont Project. (33 CFR §325.1(d)(2).)

However, this activity is not yet included in the Rosemont Project 404 permit application despite the fact that it significantly alters the application's description of the Project. There will a large amount of dredged and fill material involved in this activity, which is obviously the key point for the issuance of a 404 permit and Certification. In fact, Rosemont admits this project and the associated discharge of dredge and fill into WUS is significant enough to require mitigation of its own: "While 8.9 acres will be filled, waters of the U.S. will be created in the restored floodplain, for an overall net gain in waters of the US, sufficient to mitigate this activity and the [Rosemont Mine] Project." (Letter to U.S. Army Corps of Engineers, "Rosemont Copper Project, Clean Water Act Section 404 Permit," from Katherine Arnold, Hudbay; September 22, 2017.)

Public notice and comment is required for 404 permit applications so the public can weigh in on whether the activity involving discharge of dredge and fill into Sonoita Creek is in the public interest. The law requires that "the notice must...include sufficient information to give a clear understanding of the nature and magnitude of the activity to generate meaningful comment." (33 CFR §325.3(a).) While the Corps did issue a public notice for the original 404 application, that notice obviously did not include enough information to provide the public with "a clear understanding of the nature and magnitude of the activity," considering the notice was issued six years before Rosemont revealed this proposal to significantly increase the direct impacts to WUS in a location far removed from the mine site.

Rosemont proposes that the Sonoita Creek project will benefit the conditions along the Creek. However, without more information about what Rosemont intends, and a chance for the public to thoroughly review and comment on that information, a decision by the Corps to accept the mitigation plan solely based on Rosemont's representations would seem arbitrary and capricious.

Even if the Corps agrees that the Sonoita Creek impacts to WUS would eventually improve the conditions, denying the public a direct conduct to provide input to the Corps would seems a breach of the Corps' public trust responsibilities. This project is located in a different watershed, and affects a different set of community members. Community members who held no interest in the previous public notices may be interested to comment on the Sonoita Creek project.

For instance, the Nature Conservancy manages land downstream, but they have not been provided an invitation to respond to the Corps. As far as we can tell, their staff had no idea that the Rosemont proposal mentioned their work out of context.

Mitigation Sites in the Watersheds of Impact are Still Available

The Rosemont Mine is in the Cienega groundwater basin, but the overwhelming majority of the proposed mitigation for the Rosemont Mine will be directed to Sonoita Creek, a tributary that flows to the southwest to the upper Santa Cruz River. The proposed mitigation does not—and cannot—offset the mine's significant degradation of the Davidson Canyon Outstanding Waters and degradation of the intermittent flows of Barrel Canyon, which flow north. Because of the geographic and hydrological disconnection between the area of impact and the Sonoita Creek mitigation site, the Sonoita Creek restoration effort will not provide any mitigation for impacts caused by the mine. While both sites are within the greater Santa Cruz River watershed, they are hydrologically separated by over 125 miles.

Hudbay's description of the evolution of the mitigation packages omits the fact that Hudbay and its predecessor have rejected many opportunities to mitigate the impacts within the Cienega Creek watershed. There are many private and state land parcels in the Cienega Creek watershed and outside the Davidson Canyon watershed that still could be acquired for permittee-based mitigation. We provided a parcel-level list to the Forest Service and other resource agencies as early as December 23, 2009. We provided a map to the U. S. Army Corps on December 30, 2013, showing the state and private lands available in the watershed.

In 2014, we provided to Rosemont information about the Apache Springs real estate offering located on Gardner Canyon. Rosemont declined to purchase the property after investigating the cost. Gardner Canyon, like Barrel Canyon, is an important tributary emanating from the Santa Rita Mountains to upper Cienega Creek. Like Barrel Canyon, it is a significant source of groundwater underflow and surface water to upper Cienega Creek. The acquisition offered an opportunity to improve aquatic resources by reducing irrigation and other water uses, and restoring the intermittent streamflows within the watershed of impact.

Another strategy for keeping mitigation in the watershed would be to preserve or re-habilitate the headwaters streams located at the Broadtop Butte, Copper World and Peach-Elgin patents. These headwater streams are close in proximity and very similar in nature to the headwater streams affected at Rosemont. The company rejected the proposal in order to maintain these areas for future exploitation.

Seasonal Discharges Can Augment Flows

The mine will reduce stormwater runoff to Davidson Canyon through diversions, impoundments and other alterations of the watershed. Seasonal discharge of groundwater derived from the Santa Cruz basin and/or pit dewatering can partially address immediate

effects of diverting and capturing stormwater runoff in the watersheds tributary to Davidson Canyon. This strategy would be more certain to mitigate reduction of on-site flows than removal of stock tanks.

If one is to believe Tetra Tech's modeling, the pit water is predicted to be of good quality and the dewatering wells should be of better quality. If it is not, then good quality groundwater from the Upper Santa Cruz Basin is also being pumped over the crest of the Santa Rita Mountains for the mine, and could be made available for discharge at times when there is abundant process water from the pit dewatering and hillslope runoff catchments. This mitigation would be fundamental in providing the "wet" water so critical to the downstream riparian areas and to restoring reduced flows. Mixing of these two waters is also feasible for discharge down canyon of the mine.

To evaluate these alternative sources of water seriously, there would have to be some analysis of the expected rates of competing water demand on a monthly, weekly, and daily basis. Given that the Mine Plan of Operations has now been submitted, there should be sufficient information on which to base expected rates of use. An analysis of the frequency and duration of times when excess supply could be sent to streamflow is needed.

The total dewatering of the Rosemont basin area over the 20-year mining period will exceed 15,000 acre-feet, and much of that is expected in the early years. Advance mitigation of the impacts of diversions and impoundments may be possible with Santa Cruz basin groundwater when dewatering and surface-water diversions produce sufficient supply for construction and operation. Conversely, when seasonal supply from surface water diversions produces water in excess of the mine's demand, dewatering wells could be discharged to streams.

After closure, as the pit refills with water, pit water could be pumped downgradient to help avoid evaporative losses to the pit lake, if the water would meet state standards. An adaptive management scheme can be developed to pump the pit water downstream over time to help replenish areas that would become dewatered as a result of the pit. Downgradient wells could also benefit from this mitigation measure.

An AZPDES permit would needed to meet federal and Arizona water quality standards for either type of groundwater discharge to onsite streams. Except for dissolved oxygen, there should be, at minimum, no water quality issues with using the Santa Cruz basin groundwater.

Central Arizona Project (CAP) Water Could be Used to Augment Flows

Hudbay has a joint operating agreement to use CAP water from Community Water Company's allocation. The partners are presently constructing the pipeline from the CAP turnout along the Old Nogales Highway. The possibility of constructing an interconnection between the "Project Renews" pipeline and the water supply pipeline across State Trust

lands to bring CAP water to the mine operations in order to reduce on-site diversions of groundwater and surface water should be explored.

2) Comments: Stock Tank Mitigation Plan

This portion of the HMMP proposal relies on removing berms associated with four stock tanks located on the Rosemont property. We welcome mitigation opportunities that would be located in the Rosemont headwaters, but this particular mitigation will do nothing to address the long-term volumetric reductions of flow due to the mine, and raises new concerns about water quality impacts.

Impacts of the Mine on Volumetric Reductions Have Been Underestimated

In previous correspondence to you, we questioned the evaluation that the mine's impact to flows at Davidson Canyon is only a 4.3% reduction (SWCA Environmental Consultants. 2012d. *Method for Estimating Flow in Davidson Canyon*. Memorandum to file from DeAnne Rietz, SWCA Environmental Consultants. Phoenix, AZ). Using Hudbay's own model (Zeller, M. E., 2011. Predicted Regulatory [100-Yr] Hydrology and Average-Annual Runoff Downstream of the Rosemont Copper Project, Tucson, Arizona: Tetra Tech, July 11), staff determined the impact is a 26% reduction in flows.

While Hudbay has observed lower volumes of flow out of Barrel Canyon at the USGS gage on Highway 83 than their model predicted, it does not follow that contribution is only 4.3% of this observed flow. It is worth noting that their period record for this gage (2009-present) is one of the driest periods in recorded history.

Reducing Impacts Runoff Should Come Before Mitigation

Volumetric reductions will occur directly from dredging and discharge of fill into various WUS, and indirectly from dewatering activities. Of the direct impacts, Pima County recognized the need to retain contact water to detain pollutants, but there is no requirement to impound runoff against the waste pile. Construction of bypasses to route this impounded water downstream could minimize the impacts of the dredge and fill activities.

The Stock Tank Mitigation Strategy Has Not Been Shown to be Effective

Even if the volumetric impacts of the Rosemont mine had not been underestimated, the removal of four stock tanks will not significantly re-dress the diminution of runoff caused by various dredge and fill, impoundment and diversion activities. There are various reasons why:

1. Two of the four stock tanks in the Rosemont mitigation strategy are usually dry. Staff reviewed available aerial images (9-17 imagery dates) to determine how frequently the stock tanks held water. Rosemont Crest Tank was dry 53% of the time, and never more than 1/3 full. Barrel Canyon East Dam Tank was dry 56% of the time. McCleary Stock Tank was

dry 31% of the time, and never full. Gunsight Tank was dry only 17% of the time, but when it was wet, it only partially filled.

2. Staff reviewed the TetraTech memorandum dated July 14, 2017 on which the mitigation strategy was based. TetraTech did not verify the actual field capacity of any of the stock tanks, and observed sediment in all of the tanks. How much volume the tanks could actually supply has not been evaluated. In addition, runoff from Barrel Canyon East Dam's watershed will be compromised by the mine footprint, which reduces the watershed area contributing runoff.

3. The estimated additional yield by removing stock ponds (section 2.2.3) is inaccurate because:

a. The assumption that the ponds fully capture all water upstream is flawed for the following reasons:
    i. Ponds are typically designed with spillways which are overtopped, so the assertion that all water upstream of stock ponds is captured by them is false.
    ii. Ponds are notoriously leaky, so water seeps under the embankment and may flow out downstream as subsurface return flow.
b. The 2012 Tetra Tech regression equation was used to estimate these yields, but the equation was developed with datasets from watersheds with a larger area, and therefore cannot be extrapolated to watersheds contributing to stock ponds.

4. In order to conclude there is value in the stock-tank removal, it would be necessary to evaluate the future conditions without the removal of the stock tank berms and compare the with- and without-project futures. This analysis has not been performed. Future conditions would include new diversions intended to route runoff into upper McCleary and away from the plant site, a major road crossings, and removal of vegetation. These alterations may have unintended consequences such as additional sediment. Indeed, the Final Environmental Impact Statement (FEIS) does predict additional sediment as a consequence of the overall mine impact. Even if the stock tanks effectively rob the stream of runoff today, when taking into account the alterations of the upper McCleary hydrology and sediment transport, would the magnitude of their effect on watershed hydrology still matter under the future conditions that would be imposed by the applicant?

5. The effect of the sediment control/MSGP outfalls on the mitigation strategy has not been evaluated. According to the FEIS, the sediment control structures are around six feet high, with berms of 100 to 200 feet and a capacity of around 2 acre-feet. The structures are "designed to reduce total suspended solid loads in any stormwater discharges from the site" according to the MSGP-2010 Stormwater Pollution Prevention Plan (dated January 2015). While large flows will overtop the sediment control structures, the small but more frequent

runoff events will either evaporate, infiltrate or leak through the dam, and fine sediment and debris will accumulate behind them until the berms are removed by larger events and fail. There is a sediment control structure downstream of the tanks in the McCleary watershed that will serve to impound (for a time) smaller flows even if the stock tanks are removed. Likewise there is a sediment control/MSGP outfall structure proposed upstream of Barrel Canyon East Dam.

6. Transmission losses and channel storage in stream reaches downstream of some stock tanks have not been evaluated. Transmission losses and channel storage are likely to be sufficient in some areas that the incremental release of tiny amount of stock tank water may have no material effect on surface flows downstream. Any incremental benefit may be lost to evapotranspiration rather than replace runoff lost from filling WUS. While transpiration and transmission loss would be beneficial from an on-site biological standpoint, it diminishes the potential offset that could be realized outside the project boundaries, which is the point of the mitigation.

7. There are a number of stock tanks outside the mine footprint which are not part of the mitigation strategy. Why they have not been selected is not obvious. The rationale for selecting these four stock tanks has not been described by the applicant.

8. Table 139 of the FEIS indicates that McCleary tank will be lost under the Barrel Alternative. Table 136 indicates that "East Dam Header Tank" in T18S R16E Section 29ac would be directly impacted by the Barrel and original Proposed alternatives. If the stock tanks are destroyed anyway, then there is no mitigation value for the removal of the berms associated with the tanks.

Water Quality Risks of the New Mitigation Strategy Need to be Evaluated

The new volumetric mitigation strategy is insufficient to address the impacts, but even if it were deemed sufficient and appropriate by the Corps, it raises new water quality risks.

Rosemont is proposing to eliminate four dirt tanks within the project footprint to allow stormflow to be conveyed downstream. In two of the watersheds (McCleary Stock Tank and Gunsight Tank) there has been historical mining activities (see map below; red areas are historic mining sites as determined from cultural resource surveys and yellow dots are historical drill holes). The impact of disturbing soils associated with these features and conveying unknown—and unanalyzed—contaminants downstream has not been analyzed as part of the Biological Opinion or FEIS.

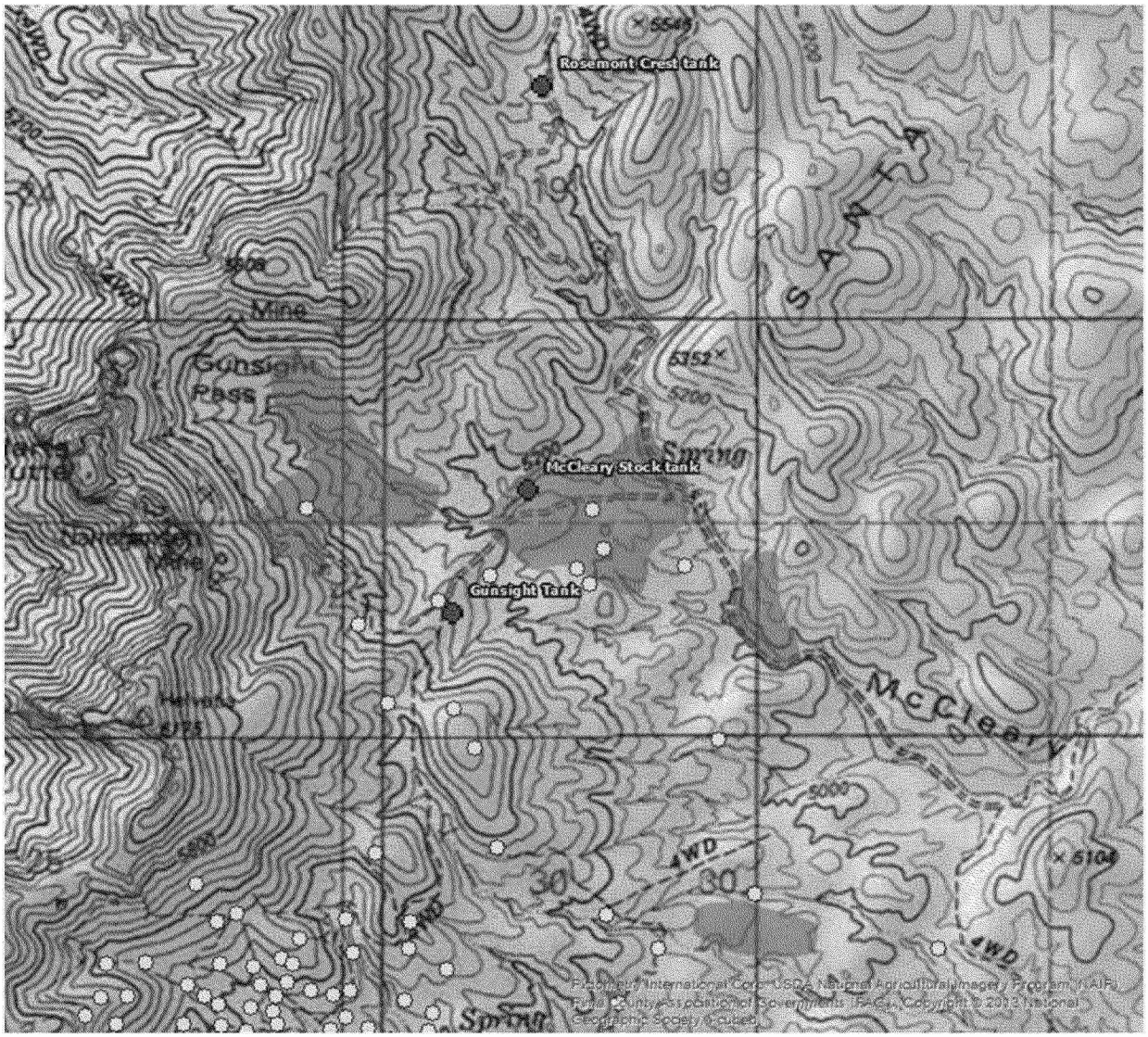

Figure 1. In red, areas of former mine-related activities based on cultural resource surveys. Drill holes in yellow. Location of stock tank removals shown in green and are approximate.

When the original certification was issued, there was little understanding of the actual water quality of stormwater and baseflows emanating from the Rosemont project area. Since then, Rosemont has provided additional data showing that Barrel Canyon and its tributaries have many repeated sampling events with metal concentrations exceeding state standards, including dissolved copper and total lead in stormwater runoff (Attachment 4, pages 5-14).

Copper is of particular concern because this metal constituent is shown to be in solution and therefore more available for biochemical reactions.

Upstream land surface disturbances may cause or contribute to surface water quality exceedances. Hawkes (1976; The downstream dilution of stream sediment anomalies. Journal of Geochemical Exploration 6: 345-358) documents the sources of copper anomalies in sediments tributary to Cienega Creek. The anomalous values are identified as having sources in Barrel Canyon, and "old copper prospects" in McCleary Canyon. These areas have been affected by many previous mine-related activities. As shown in the above figure, two of the proposed stock tanks for modification is in an area where cultural resource surveys indicate historic mine-related activities.

The Corps must investigate the possibility that past mine-related activities have contributed to pollutants now detectable in stormwater, prior to issuing a permit for dredge-and-fill activities in McCleary Canyon that could further endanger downstream water quality.

McCleary has Intermittent Flow

McCleary Canyon has periodic intermittent flow from a shallow water table and what are described by WestLand Resources (2013; *2012 Ranid Survey of the Rosemont Holdings and Vicinity, Sonoita Creek Ranch, and Fullerton Ranch.* Project No. 1049.36 0350A 0350A. Prepared for Rosemont Copper Company) as "perennial pools" at the base of a dam.

The Section 404(b)(1) Alternatives Analysis recognized that McCleary Canyon has intermittent flow on page 4, where they cite "occasional spring flow within short reaches of McCleary Canyon and other drainages" and "the highest quality (read "higher vegetation density") riparian habitat was found in a relatively short, moister reach in upper McCleary Canyon..."

Intermittent flow in McCleary includes two discharging springs and streamflow upstream and downstream of a diversion dam near latitude 32.3344 degrees north and 110.972 degrees west (Figure 2). Errol Montgomery and Associates measured flow at the McCleary dam during every month for two consecutive years, establishing the perennial nature of the discharges below the dam. In 2010, a pipe was installed at the dam to feed cattle troughs. (See Rosemont-67 East Side Information Summary of Groundwater Level Measurements for Wells, Piezometers and Drill Holes and Monitoring Date for Seeps and Springs.) Water quality samples were obtained by Montgomery and Associates during May and June, as well as other months of the year, again demonstrating the presence of perennial or near-perennial water in this stream.

Figure 2. This aerial photograph, dated April 2016, shows intermittent stream flow downstream of McCleary diversion dam. Additional spring and in-stream flow uses occur upstream.

Accordingly, aquatic warm-water uses occur in the stream. These include macroinvertebrates such as water boatmen and backswimmers documented by WestLand Resources (2013a) on June 7, 2013.

The Clean Water Act Requires Protection of Existing Water Uses in McCleary Canyon

The Rosemont area has been under continuous livestock use since the passage of the Clean Water Act. This is documented in the 1977 Draft Environmental Impact Statement, and the intention to continue livestock use is described in the 2013 FEIS. Intermittent flow conditions in McCleary Canyon is an asset to the livestock operation and motivated previous owners of the Rosemont Ranch to acquire surface water rights to the spring-fed intermittent streams that exist on the Rosemont properties. For example, water right 33-93278 is a permit to use in-stream flow for livestock in McCleary Canyon. According to the applicant

3. Point of diversion and 4. Places of use:

Water will not be diverted out of the natural channel. The use will occur streamside along the natural course of McCleary Canyon beginning at a point within the Southwest quarter (SW¼) of the Southwest quarter (SW¼) and ending at a point within the Southeast quarter (SE¼) of the Southwest quarter (SW¼), both within Section 19, Township 18 South, Range 16 East, Gila and Salt River Base and Meridian, Pima County, Arizona.

Under the State of Arizona's tributary rule, designated uses of the intermittent reaches do not currently acknowledge the livestock use and aquatic and wildlife (warm water). Despite that fact, under the Clean Water Act, the Corps and ADEQ each have an obligation to protect existing uses of the stream, whether or not those uses have been designated, and this would include livestock use and warm-water aquatic life for an intermittent stream segment such as exists along McCleary Canyon and Barrel Canyon.

To our knowledge, the FEIS did not evaluate the water quality impacts of releasing sediment from the proposed stock tank mitigation to downstream waters, nor has any data been provided to the Forest Service to evaluate. This information would be needed relative to the Corp's duty to protect existing uses including livestock and warm-water aquatic wildlife in McCleary and Barrel Canyon and points downstream. Hudbay (2015) presented stormwater quality data to the Forest Service highlighting where a dissolved or total metal concentration was higher than a water quality standard established for the watershed, even without consideration of the more stringent standards that should have included the livestock and aquatic warm-water uses of the stream. No analysis exists relative to the livestock and aquatic warm-water uses, which are generally more stringent.

Hudbay (2015) data show that under current conditions, which include numerous mining features and land disturbance upstream, base flows of springs are of good quality. Elevated levels of dissolved copper, and total lead and copper have been consistently observed in stormwater at monitoring site PSW-4. Upstream spring flow met the livestock standards (Tetra Tech memorandum dated May 5, 2009). Would release of stored sediment increase ambient metal concentrations? Further study is warranted before the state can draw a conclusion that existing uses will not be impaired by the dredge-and-fill activities upstream, which include the stock tank removals. The stock tanks in the upper McCleary watershed are located below old mining claims which were historically worked (Figure 1).

3) Specific Comments about the Sonoita Creek Mitigation

Overall, we continue to object to mitigation that occurs in a watershed outside of the watershed that will be directly impacted by the proposed mine. More specific comments are as follows:

- **The Sonoita Creek Project Will Have Significant Effects to the Environment That Have Not Been Analyzed Under the National Environmental Policy Act.**

These proposed mitigation activities are a keystone element of the overall Rosemont Project itself, which is especially true considering the importance of the mitigation plan for the issuance of the 404 permit, which has been held up over this precise issue of appropriate and adequate mitigation to offset the impacts of the Project. Considering the significance of the Sonoita Creek activity, it is clearly subject to the provisions and requirements of the National Environmental Policy Act (NEPA).

NEPA requires that an assessment of impacts be completed for any federal action that may significantly affect the human environment. (42 USC 4332(C).) There is no question that these mitigation activities will have significant direct, indirect and cumulative impacts on the environment; in fact, the applicant admits as much with this request to modify its 401 certification, acknowledging the activities require 401 certification and, by extension, a 404 permit. However, the impacts of the activities proposed for the Sonoita Creek Ranch mitigation site have never been considered under NEPA.

Hudbay admits that there was no meaningful consideration of this activity in the Rosemont Project FEIS or ROD. These NEPA documents only "included a generalized description of Sonoita Creek Ranch restoration activities." (Letter to Trevor Baggiore, ADEQ, "Rosemont Copper Project, Clean Water Act Section 401 Water Quality Certification," from Katherine Arnold, Hudbay; September 14, 2017.) Hudbay also admits that this proposed activity is a significant departure from the initial conceptual design of these activities: "While the conceptual design attempted to bolster the existing system with newly constructed channels, the final design represents a complete restoration of Sonoita Creek and its floodplain." (*Id.*)

The mitigation activities proposed for the Sonoita Creek Ranch mitigation site must go through the required NEPA analysis in order to assess the direct and indirect impacts of the activity, as well as its likely cumulative impacts. Importantly, the cumulative impacts must be considered within the context of the full Rosemont Copper Project as well as all past, present, and reasonably foreseeable future actions within the project area, which must now be expanded to include Sonoita Creek. (40 CFR 1508.7.)

- **Sonoita Creek Project May Not Be Feasible Without Utility Approval**

The feasibility of the Sonoita Creek mitigation project depends—at least in part—on an agreement to relocate a Kinder-Morgan gas pipeline. There is no agreement that relocation

will proceed. Details regarding costs and performance standards have yet to be determined among Kinder Morgan, Rosemont and the U. S. Army Corps of Engineers. Given that there is no information provided about other utility easements which may burden the Sonoita Creek project area, the Corps has been given no assurance that other utility constraints may also compromise the feasibility of this project. Similarly, situated ILF projects are required to produce this kind of information.

- **No Stewardship Partner to Ensure Site Protection**

Rosemont has not identified a stewardship partner to hold and enforce a conservation easement, and therefore site protection is not assured. The Arizona Game and Fish Commission have not agreed to hold the easement, despite Rosemont's previous efforts to come to an agreement with the Arizona Game and Fish Department. The Nature Conservancy has not agreed to hold the easement. The Corps and U. S. Fish and Wildlife will not hold the easement. Without a conservation partner, feasibility of this mitigation strategy is in question.

- **Hudbay Recognizes the Restoration Project on 'Sonoita Creek occupies a place on the landscape more similar to Cienega Creek than Barrel Canyon (HMMP, 7.1.2.1 p.41).'**

As such it does not mitigate the same ecosystem function as the impacted WOTUS in Barrel Canyon and Wasp Canyon. The series of functions identified in HMMP 7.1.1.1, (such as surface water storage) are criteria better suited to Sonoita Creek and the San Pedro than the impacted WUS at Barrel Canyon and Wasp Canyon. In essence, by setting up the function criteria to match the mitigation site rather than the impacted site, Hudbay is avoiding the question of how to mitigate impacted ecosystem functions at the mine site.

- **The Walnut Gulch Watershed is Not an Appropriate Reference for Sonoita Creek Channel Design**

Rosemont relies on work done at the Walnut Gulch (Cochise County) as a reference site for the Sonoita Creek work. The Walnut Gulch watershed is very different from Sonoita Creek. Sonoita Creek is a valley-floor drainage, whereas Walnut Gulch is not. Walnut Gulch is a non-phreatic stream network isolated from groundwater (Goodrich, D. C., D. G. Williams, C.L. Unkrich, J. F. Hogan, R.L. Scott, K. R. Hultine, D. R. Pool, A. L. Coes, and S. Miller [2004]. Comparison of methods to estimate ephemeral channel recharge, Walnut Gulch, San Pedro River Basin, Arizona, in *Groundwater Recharge in a Desert Environment:* The Southwestern United States, *Water Science and Appl. Ser.*, vol. 9, edited by J. F. Hogan, F.M. Phillips, and B. R. Scanlon, pp 77-99, AGU, Washington, D. C.).

Sonoita Creek has a shallow water table and likely has significant riparian transpiration from groundwater. Walnut Gulch is not connected to higher elevation mountain blocks, whereas Sonoita Creek is highly connected to adjacent mountains.

The focus on Walnut Gulch as a model for a reference reach makes little reference to observed historical information, such as the 1936 Soil Conservation Service aerial photographs, which may shed light on pre-development channel alignments of Sonoita Creek or nearby watersheds.

- **Neither the Sonoita Creek Mitigation Nor the San Pedro In Lieu Fee Site Address Headwaters Impacts**

Most of the impacts of the Rosemont mine are to headwaters streams, but most of the mine impacts are to first-, second- and third-order streams, when analyzed according to the Strahler stream ordering system applied to the National Hydrographic Dataset. Even allowing for the fact that it is outside the watershed, the Sonoita Creek mitigation occurs along fourth- and fifth-order streams. The San Pedro site is a seventh-order stream under the Strahler system. It has a much larger watershed than the impacted site, has perennial flow, and shallower slope.

- **Reconsultation may be required for the Sonoita Creek Ranch Project**

Language from the Biological Opinion regarding the Sonoita Creek Ranch reads as follows:

> *"In the event that the property is approved for potential waters of the U.S. mitigation, it is not anticipated that the wildlife conservation benefits described below will be affected. If modification of any conservation measure is ultimately determined to be required, Rosemont will propose a modification for review and comment by the Corps and USFS to modify the conservation measures in a manner that would not change the evaluation for each species and which would result in the same benefits for each species but would not conflict with Section 404 mitigation requirements."*

"No yellow-billed cuckoo surveys have been conducted on Sonoita Creek Ranch but some xeroriparian habitat appears to be suitable and cuckoos are regularly documented during the breeding season immediately south in similar habitat on Sonoita Creek and in the adjacent Patagonia Mountain drainages". However, "For the purpose of section 7 consultation, the action area also includes lands proposed for acquisition (or already acquired) and areas in which conservation measures will be implemented. The action area includes 4,827 acres in which land acquisition-based conservation measures will be implemented, including: Sonoita Creek Ranch".

Despite this caveat, impacts to Yellow-billed cuckoos was not considered in the biological opinion. The Sonoita Creek project would impact 322 acres of land and cause temporal loss of habitat for many years, even if it were entirely successful.

In conclusion, there remain significant and substantive reasons why the 404 permit should not be issued for the Rosemont Copper Mine. Over the years, Pima County and the Regional

Flood Control District have provided useful and pertinent information to improve the outcomes for the various federal and state procedures that are required for mining, and to reduce the impacts to surrounding communities should the mine be approved. Pima County has been around since 1864, prior to the Mining Act, and we remain committed to working with you and others to improve the outcomes.

Sincerely,

C.H. Huckelberry
County Administrator

CHH/mp

Attachment

c: Kerwin Dewberry, Forest Supervisor, U. S. Forest Service
Elizabeth Goldmann, U. S. Environmental Protection Agency
Deanna Cummings, U. S. Army Corps of Engineers
Steve Spangle, U. S. Fish and Wildlife Service

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County Administrator

November 17, 2017

Ms. Rosi Sherrill
Surface Water Section Project Manager
Arizona Department of Environmental Quality
1110 W. Washington Street, MC5415A-1
Phoenix, AZ 85007

Re: **2017 Addendum to Water Quality Permit, Rosemont Copper Project ACOE Application No. SPL – 2008-00816-MB**

Dear Ms. Sherrill:

This letter responds to the call for public comment regarding the proposed Addendum to the State's 401 Certification (Certification) to the U. S. Army Corps of Engineers (Corps) Section 404 for the Rosemont Copper Mine. The State proposes to amend the Certification to include mitigation for the mine's impacts to Waters of the U.S. The mitigation proposed includes the Sonoita Creek mitigation project, the San Pedro In Lieu Fee (ILF) program, and the removal of certain stock tanks on the Rosemont Project site. We object to this Certification on a variety of grounds, some of which we have previously stated, and others which are new.

This letter is divided into three segments: (A) general comments about the mitigation proposal, (B) specific comments on the Rosemont stock tank proposal, and (C) comments on Sonoita Creek and San Pedro ILF mitigation sites.

A. General Comments

Reliance on this Amendment on the SWMP Does Not Legitimize the SWMP and Results in Unenforceable Conditions

The Certification conditions based on the Surface Water Mitigation Plan (SWMP) are unenforceable because they were not properly adopted. Any reliance on them for justifying other mitigation schemes is flawed.

The Arizona Department of Environmental Quality (ADEQ) based a portion of its existing Certification for the mine on the SWMP, which was not subject to public review and comment. This document was submitted to ADEQ by Rosemont Copper Company in December 2014, long after the close of the public comment period, and approximately a month prior to ADEQ's decision to issue the Certification for the Rosemont mine. Despite the failure to comply with Arizona law concerning public review and comment, ADEQ included conditions in the Certificate based on the SWMP. Because the SWMP-inspired Certification conditions resulted from a violation of Arizona law, they are unenforceable.
The SWMP-based Certification requires Rosemont to develop a surface water model to quantify potential changes from baseline conditions through development of the project. Rosemont is to determine mitigation measures to maintain and protect downstream water quality and flow. If the plan is unenforceable, then there is no way to ensure that aquatic resources will remain unaffected.

Rosemont, in its final (9/12/17) Habitat Mitigation and Monitoring Plan (HMMP), tries to bootstrap the SWMP into legitimacy by asserting it "supports the determination by ADEQ that the project will have no adverse effect on the currently designated downstream Outstanding Arizona Waters (OAW) in Davidson Canyon and Cienega Creek" (HMMP, p. 60). In that same paragraph, Rosemont seems to suggest that mitigation and the improperly adopted Certificate conditions are already approved because the elimination of the stock tanks was mentioned in the SWMP.

Relying on the SWMP to justify the stock tank mitigation in the HMMP cannot cure ADEQ's failure to include the plan in the original record offered for public comment. Further, it distracts the public because ADEQ is in possession of subsequent versions of the SWMP which are not being released for public review.

The stock tank mitigation in the proposed Addendum is built on a house of cards. It is not approvable.

<u>The Addendum is premature</u>

Rosemont is asking ADEQ to modify its current Certification for the Rosemont Copper Project to include mitigation activities at the Sonoita Creek Ranch mitigation site. These mitigation activities include additional discharge of dredged and fill material and the associated direct impact to an additional 8.9 acres of Waters of the U.S. (WUS). These specific activities—and the associated impacts on WUS—undoubtedly requires a Clean Water Act Section 404 permit before they can proceed, and thus requires Certification from ADEQ.

Rosemont may certainly apply for the Certification at any time. However, Rosemont has yet to modify the Rosemont Copper Project 404 permit application to the Corps to include this activity, despite the fact that this modification will increase the acreage impacted by discharge of dredge and fill material associated with the Rosemont Copper Project by approximately 20 percent.

Any certification prior to the Corps acceptance of a modified 404 permit application and the habitat mitigation value of the proposed activities is premature. Because the Rosemont and the Corps have not completed their work, ADEQ does not have all of the information required to make this determination regarding the impacts of these proposed mitigation activities.

ADEQ lacks relevant information required for a Certification determination

ADEQ requires issuance of a Certification when a 404 permit (or other federal authorization of discharge to WUS) is required, thus the Certification is directly tied to the project's 404 permit. ADEQ's review of a Certification application is "solely to determine whether the effect of the [project's] discharge will comply with water quality standards for navigable waters." (A.R.S. 49-202(C); *see also* 40 CFR §121.2(a)(3).) State law requires that the ADEQ base its Certification decision on either "information found in the 404 application or other information furnished by the applicant sufficient to permit the certifying agency to make the statement described in paragraph (a)(3) of this section." (40 CFR §121.2(a)(2).) Despite these requirements, there is nothing in the existing record that provides the necessary information on which ADEQ must base its decision. While the 404 permit application includes brief mention of the requirement to provide a Habitat Mitigation and Monitoring Plan prior to issuance of the 404 permit, it includes no information regarding these specific mitigation activities, and fails to even include mention of Sonoita Creek as an affected area. (U.S. Army Corps of Engineers, Public Notice – Application for Permit, Application no. SPL-2008-00816-MB, December 6, 2011, at 12.)

Rosemont acknowledges the lack of relevant information in the 404 permit application, pointing out that while "the record examined by ADEQ included the [Final Environmental Impact Statement] and the Draft [Record of Decision], which included a discussion of the mitigation planned for our project," it goes on to admit that the FEIS and ROD only "included a generalized description of Sonoita Creek Ranch restoration activities." (Letter to Trevor Baggiore, ADEQ, "Rosemont Copper Project, Clean Water Act Section 401 Water Quality Certification," from Katherine Arnold, Hudbay; September 14, 2017.)

In fact, descriptions of the mitigation activities planned for the Sonoita Creek Ranch mitigation site in the existing record at most include only the "conceptual design" of these activities, and Rosemont makes clear that this proposed activity is a significant departure from that conceptual design: "While the conceptual design attempted to bolster the existing system with newly constructed channels, the final design represents a complete restoration of Sonoita Creek and its floodplain." (*Id.*, emphasis added.)

This activity must be included in 404 application and must go through public notice and comment

In the request to modify its Certification, the mitigation activity at issue involves discharge of dredge and fill materials into WUS and is exactly the kind of activity that must receive a

404 permit to proceed. (See 33 CFR §323.3(a).) In addition, because it is reasonably related to the Rosemont Project, it must be included in the same permit application as the Rosemont Project. (33 CFR §325.1(d)(2).)

However, this activity is not yet included in the Rosemont Project 404 permit application, despite the fact that it significantly alters the description of the Project included in in the existing application, particularly the amount of discharge of dredged and fill material that will be involved, which is obviously the key point for the issuance of a 404 permit and Certification. In fact, Rosemont admits this project and the associated discharge of dredge and fill into WUS is significant enough to require mitigation of its own: "While 8.9 acres will be filled, waters of the U.S. will be created in the restored floodplain, for an overall net gain in waters of the US, sufficient to mitigate this activity and the Project." (Letter to U.S. Army Corps of Engineers, "Rosemont Copper Project, Clean Water Act Section 404 Permit," from Katherine Arnold, Hudbay; September 22, 2017.)

Again, nothing prevents Rosemont from submitting its application to amend the Certification. However, considering the significance of this amendment as it relates to 404 permitting, it is premature to amend the Certification to include this activity until the Rosemont Copper project's 404 application has been modified, and the modified application is reviewed under all relevant Clean Water Act provisions, including the public notice and comment requirements of 404 permitting.

Public notice and comment is required for 404 permit applications so that the public can weigh in on whether the activity involving discharge of dredge and fill is in the public interest. The law requires that "the notice must...include sufficient information to give a clear understanding of the nature and magnitude of the activity to generate meaningful comment." (33 CFR §325.3(a).) While the Corps did issue a public notice for the original 404 application, it obviously did not include enough information to provide the public with "a clear understanding of the nature and magnitude of the activity," considering the notice was issued six years before Rosemont revealed this proposal to significantly increase the direct impacts to WUS.

B. Specific Comments on the Rosemont Stock Tanks Mitigation

This portion of the new mitigation proposal relies on removing berms associated with four stock tanks located on the Rosemont property. We welcome mitigation opportunities that would be located in the Rosemont headwaters, but this particular mitigation will do nothing to address the long-term volumetric reductions of flow due to the mine, and raise new concerns about water quality impacts.

Impacts of the mine on volumetric reductions have been underestimated

Below, we provide a summary of our previous correspondence to ADEQ dated March 21, 2014, April 4, 2014, July 16, 2014, and correspondence to U. S. EPA dated December 17, 2015.

- **The actual reduction of runoff is likely to be 30 to 40% during early years of mining, not 17%.**

- Because ADEQ relied on lower post-closure reductions as a basis, any certification reliant on this not maintain the aquatic and riparian resources at pre-project levels.

- Barrel Canyon provides a disproportionately higher amount of surface water to the Davidson Canyon watershed than was modeled by Rosemont's consultants.
- Stormwater and sediment transport analysis was based on erroneous review of FEIS.

- ADEQ accepted an erroneous analysis of hydrological impacts that underestimates impacts.

- Not addressed were issue related to:
    - Additional dissolved solids from the mining operation
    - Effects on downstream recharge rates from increased fines
    - Climate change
    - Increased temperature and lower dissolved oxygen.

- ADEQ's assumption that "lower Davidson canyon is not hydraulically connected to the regional aquifer that would be impacted by pit dewatering" is flawed based on isotopic data.

- ADEQ improperly relied on Tetra Tech's erroneous conclusions regarding lack of regional aquifer connection; we presented topographic, groundwater, and streamflow data to the contrary.

- ADEQ improperly relied on FEIS conclusions regarding seepage and seepage monitoring.

Staff continue question the evaluation that the mine site to flows at Davidson Canyon is only 4.3% (section 2.1.4.2). Using Hudbay's own model (Zeller, M. E. 2011. Predicted Regulatory (100-Yr) Hydrology and Average-Annual Runoff Downstream of the Rosemont Copper Project. Tucson, Arizona: Tetra Tech. July 11), staff determined the impact is 26%. While Hudbay has observed the lower volumes of flow out of Barrel Canyon at the USGS Gage on Highway 83, than their model predicted, it does not follow that contribution to Davidson Canyon is only 4.3% of this observed flow.

Reducing the impacts of changes to runoff comes before mitigation

Volumetric reductions occur directly from dredging and discharge of fill into various WUS, and indirectly from dewatering activities. Of the direct impacts, Pima County recognized the need to retain contact water to detain pollutants, but there is no requirement to impound runoff against the waste pile. Bypasses to route this impounded water downstream could minimize the impacts of the dredge and fill activities.

The stock tank mitigation strategy is not shown to be effective

Even if the volumetric impacts of the Rosemont mine had not been underestimated, the removal of four stock tanks will not significantly re-dress the diminution of runoff caused by various dredge and fill, impoundment and diversion activities. There are various reasons why:

1. Two of the four stock tanks in the Rosemont mitigation strategy are usually dry. Staff reviewed available aerial images (n = 9-17 imagery dates) to determine how frequently the stock tanks held any water. Rosemont Crest Tank was dry 53% of the time, and never more than 1/3 full. Barrel Canyon East Dam Tank was dry 56% of the time. This tank was created between 1996 and 2003. McCleary stock Tank was dry 31% of the time, and never full. Gunsight Tank was dry only 17% of the time, but when it was wet, it only partially filled.

2. Staff reviewed the TetraTech memorandum dated July 14, 2017 on which the mitigation strategy was based. TetraTech did not verify the actual field capacity of any of the stock tanks, and observed sediment in all of the tanks. How much volume the tanks could actually supply has not been evaluated. In addition, runoff from Barrel Canyon East Dam's watershed will be compromised by the mine footprint, which reduces the watershed area contributing runoff.

3. The estimated additional yield by removing stock ponds (section 2.2.3) is inaccurate because:

   a. The assumption that the ponds fully capture all water upstream is flawed for the following reasons:
      i. Ponds are typically designed with spillways which are overtopped, so the assertion that all water upstream of stock ponds is captured by them is false.
      ii. Ponds are notoriously leaky, so water seeps under the embankment and may flow out downstream as subsurface return flow.
   b. The 2012 Tetra Tech regression equation used to estimate these yields, was developed with datasets from watersheds with a larger area, and therefore cannot be extrapolated to watersheds contributing to stock ponds.

4. In order to conclude there is value in the stock-tank removal, it would be necessary to evaluate the future conditions without the removal of the stock tank berms and compare the with- and without-project futures. This analysis has not been performed. Future conditions

would include new diversions intended to route runoff into upper McCleary and away from the plant site, a major road crossings, and removal of vegetation. These alterations may have unintended consequences such as additional sediment. Indeed, the Final Environmental Impact Statement (FEIS) does predict additional sediment as a consequence of the overall mine impact. Even if the stock tanks effectively rob the stream of runoff today, when taking into account the alterations of the upper McCleary hydrology and sediment transport, would the magnitude of their effect on watershed hydrology still matter under the future conditions that would be imposed by the applicant?

5. The effect of the sediment control/MSGP outfalls on the mitigation strategy has not been evaluated. According to the FEIS, the sediment control structures are around six feet high, with berms of 100 to 200 feet and a capacity of around 2 acre-feet. The structures are "designed to reduce total suspended solid loads in any stormwater discharges from the site" according to the MSGP-2010 Stormwater Pollution Prevention Plan (dated January 2015). While large flows will overtop the sediment control structures, the small but more frequent runoff events will either evaporate, infiltrate or leak through the dam, and fine sediment and debris will accumulate behind them until the berms are removed by larger events and fail. There is a sediment control structure downstream of the tanks in the McCleary watershed that will serve to impound (for a time) smaller flows even if the stock tanks are removed. Likewise there is a sediment control/MSGP outfall structure proposed upstream of Barrel Canyon East Dam.

6. Transmission losses and channel storage in stream reaches downstream of some stock tanks have not been evaluated. Transmission losses and channel storage are likely to be sufficient in some areas that the incremental release of tiny amount of stock tank water may have no material effect on surface flows downstream. Any incremental benefit may be lost to evapotranspiration rather than replace runoff lost from filling WUS. While transpiration and transmission loss would be beneficial from an on-site biological standpoint, it diminishes the potential offset that could be realized outside the project boundaries, which is the point of the mitigation.

7. There are a number of stock tanks outside the mine footprint which are not part of the mitigation strategy. Why they have not been selected is not obvious. The rationale for selecting these four stock tanks has not been described by the applicant.

8. Table 139 of the FEIS indicates that McCleary tank will be lost under the Barrel Alternative. Table 136 indicates that "East Dam Header Tank" in T18S R16E Section 29ac would be directly impacted by the Barrel and original proposed alternatives. If the stock tanks are destroyed anyway, then there is no mitigation value for the removal of the berms associated with the tanks.

Water quality risks of the new mitigation strategy need to be evaluated

The new volumetric mitigation strategy is insufficient to address the impacts, but even if it were deemed sufficient and appropriate by the Corps, it raises new water quality risks.

Rosemont is proposing to eliminate four dirt tanks within the project footprint to allow stormflow to be conveyed downstream. In two of the watersheds (McCleary Stock Tank and Gunsight Tank) there has been historical mining activities (see map below; red areas are historic mining sites as determined from cultural resource surveys and yellow dots are historical drill holes). The impact of disturbing soils associated with these features and conveying unknown—and unanalyzed—contaminants downstream has not been analyzed as part of the Biological Opinion or FEIS.

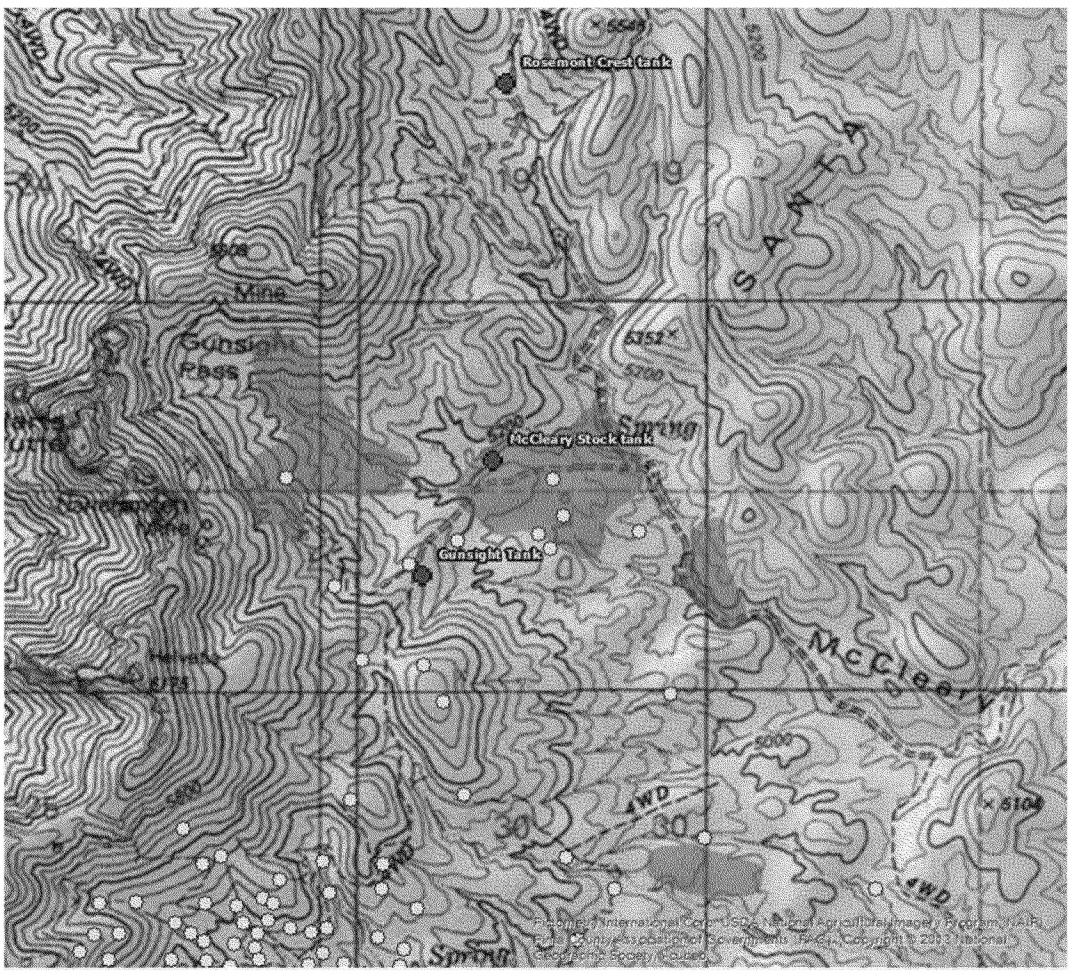

Figure 1. In red, areas of former mine-related activities based on cultural resource surveys. Drill holes in yellow. Location of stock tank removals shown in green and are approximate.

When the original certification was issued, there was little understanding of the actual water quality of stormwater and baseflows emanating from the Rosemont project area. Since then, Rosemont has provided additional data showing that Barrel Canyon and its tributaries have many repeated sampling events with metal concentrations exceeding state standards, including dissolved copper and total lead in stormwater runoff (Attachment 4, pages 5-14). Copper is of particular concern because this metal constituent is shown to be in solution and therefore more available for biochemical reactions.

Upstream land surface disturbances may cause or contribute to surface water quality exceedances. A paper from the Journal of Geochemical Exploration (Hawkes 1976) documents the sources of copper anomalies in sediments tributary to Cienega Creek. The anomalous values are identified as having sources in Barrel Canyon, and "old copper prospects" in McCleary Canyon. These areas have been affected by many previous mine-related activities. As shown in the above figure, two of the proposed stock tanks for modification is in an area where cultural resource surveys indicate historic mine-related activities.

ADEQ must investigate the possibility that past mine-related activities have contributed to pollution in groundwater or surface water emanating from McCleary Canyon and are now detectable in stormwater, prior to issuing a certification to renew mining.

McCleary and Barrel Canyons have Intermittent Flow

McCleary Canyon has periodic intermittent flow from a shallow water table and what are described by WestLand Resources (2013; *2012* Ranid Survey of the Rosemont Holdings and Vicinity, Sonoita Creek Ranch, and Fullerton Ranch. Project No. 1049.36 0350A 0350A. Prepared for Rosemont Copper Company) as "perennial pools" at the base of a dam. The distinctions between ephemeral and intermittent or perennial waters are important to the stock tank decision because stream flow types affect the state's water quality protections. U. S. Geological Survey offers the following definitions for streamflow in relation to time (Langbein's Manual of Hydrology, after Meinzer, 1923, p. 5658, with state definitions in parentheses):

> ***Perennial.*** *One which flows continuously. (A.A.C. R18-11-101 (30) states "Perennial water" means a surface water that flows continuously throughout the year.)*
>
> ***Intermittent or seasonal.*** *One which flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas. (A.A.C. R18-11-101 (25) states "Intermittent water" means a stream or reach that flows continuously only at certain times of the year, as when it receives water* ***from a spring*** *or from another surface source, such as melting snow.)*

> ***Ephemeral.*** *One that flows only in direct response to precipitation, and whose channel is at all times above the water table. (A.A.C. R18-11-101 (18) states "Ephemeral water" means a surface water that has a channel that is at all times above the water table and flows only in direct response to precipitation.)*

The Section 404(b)(1) Alternatives Analysis recognized that McCleary Canyon has intermittent flow on page 4, where they cite "occasional spring flow within short reaches of McCleary Canyon and other drainages" and "the highest quality (read "higher vegetation density") riparian habitat was found in a relatively short, moister reach in upper McCleary Canyon..."

Intermittent flow in McCleary includes two discharging springs and streamflow upstream and downstream of a diversion dam near latitude 32.3344 degrees north and 110.972 degrees west (Figure 2). Errol Montgomery and Associates measured flow at the McCleary dam during every month for two consecutive years, establishing the perennial nature of the discharges below the dam. In 2010, a pipe was installed at the dam to feed cattle troughs. (See Rosemont-67 East Side Information Summary of Groundwater Level Measurements for Wells, Piezometers and Drill Holes and Monitoring Date for Seeps and Springs.) Water quality samples were obtained by Montgomery and Associates during May and June, as well as other months of the year, again demonstrating the presence of perennial or near-perennial water in this stream.

Figure 2. This aerial photograph, dated April 2016, shows intermittent stream flow downstream of McCleary diversion dam. Additional spring and in-stream flow uses occur upstream.

Accordingly, aquatic warm-water uses occur in the stream. These include macroinvertebrates such as water boatmen and backswimmers documented by WestLand Resources (2013a) on June 7, 2013.

Barrel Canyon also has intermittent reaches downstream of the mine. Despite recent drought, the U. S. Geological Survey (USGS) data collection at USGS gage #09484580, located at a culvert under Highway 83, upstream of "Barrel Spring" shows evidence of intermittent flows (Figure 3). The gage is located at a point within the previously documented PAG-mapped intermittent flow reach. USGS staff periodically visit the stream gage to perform maintenance, and rate the accuracy of flow measurements. During their visits, they document actual stream flow conditions using direct measurement of flow and visual observations.
The gage record for the 2017 monsoon season shows two periods with base flows for a number of consecutive days in July and August, shown in the graph below. Red asterisks indicate the date of field observations at the gage by USGS personnel. Storm flows are shown by the sharp rises with a "tail", and the base flows by the relatively stable low flows in between the peaks.

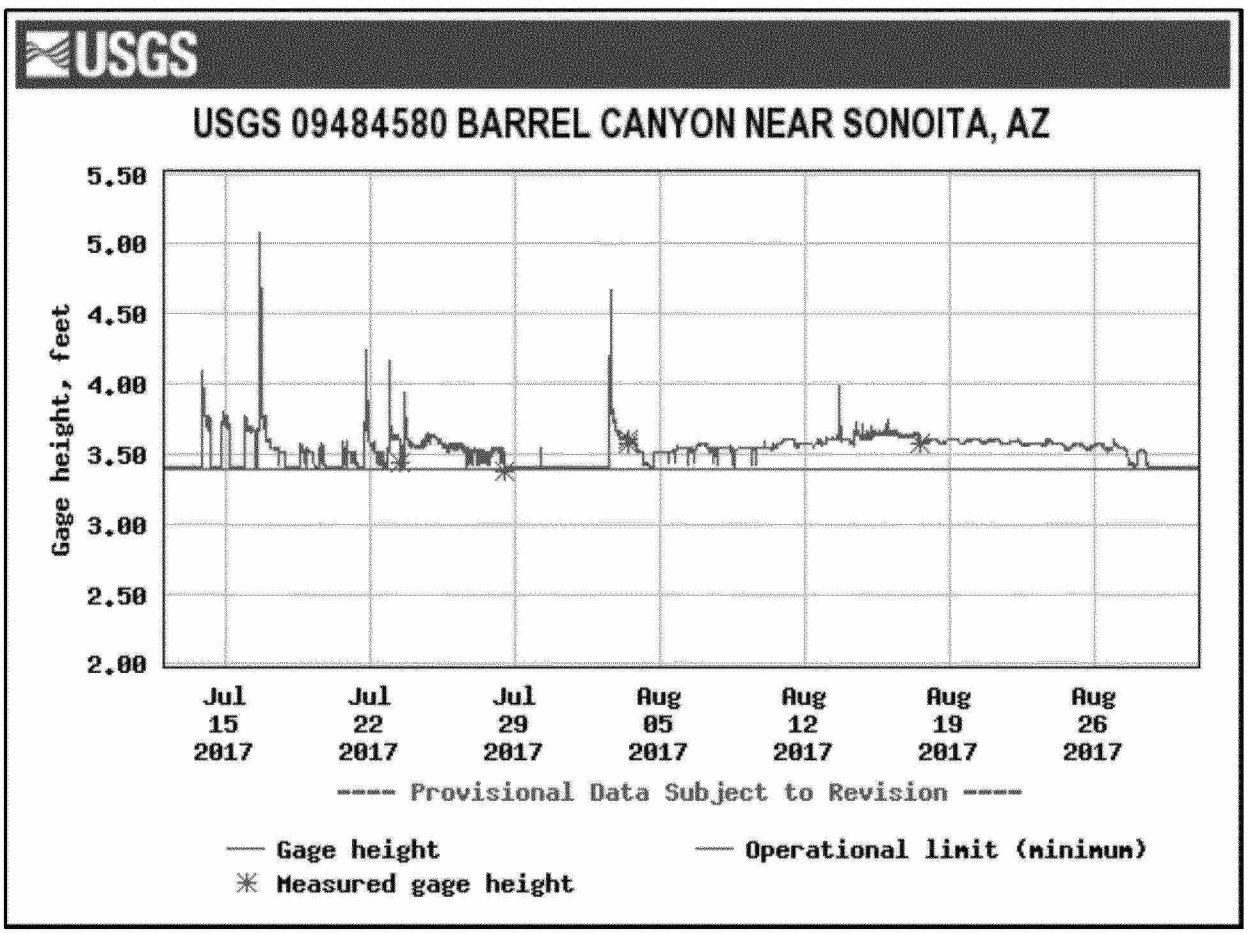

Figure 3. Peak and base flows in July and August 2017 at USGS gage 09484580. Base flows persisted long after the last measured rain at the gage (August 3, August 15).

Figure 4. Algae in water around the pressure transducer at the Barrel gage. Algae is not found in ephemeral systems, but rather is typical of intermittent and perennial streams. Also note that the base flow is clear and very small in comparison to storm flows. The most recent rainfall (0.01 inch) at this site fell on January 16, 2016. The actual photo date is 2016/01/25, based on the field data sheet, camera metadata and confirmation with USGS. USGS photograph.

A shallow water table appears to help sustain flows in this intermittent reach. Figure 5 shows bedrock exposures which help to bring groundwater to the surface. Repeated groundwater level measurements have been provided to the Forest Service by Hudbay (2015; Memorandum from Kathy Arnold to Karen Herther, "Water Quality/Water Level data for U. S. Forest Service") both upstream and downstream of the gage. Downstream of the gage, an unnamed well (D-18-16-14dac) shows measurements that fluctuated flow less than one to more than ten feet below land surface over the period 2008 to 2014. Upstream of the gage, groundwater levels in a monitoring well installed by Rosemont (located at D18-16-15dcc) fluctuated from two to three feet below land surface during 2013 and 2014. There is also a recorded spring downstream of the gage, called Barrel Spring.

Figure 5. This photograph (August 16, 2017), shows dry-weather flows continuing downstream across bedrock exposures in the bottom of Barrel Canyon, downstream of the stream gage. The gate under the culvert is opened to allow livestock to move safely under Highway 83.

The Clean Water Act Requires Protection of Existing Water Uses

The Rosemont area has been under continuous livestock use since the passage of the Clean Water Act. This is documented in the 1977 Draft Environmental Impact Statement, and the intention to continue livestock use is described in the 2013 FEIS. Intermittent flow conditions in McCleary and Barrel Canyons are an asset to the livestock operation and motivated previous owners of the Rosemont Ranch to acquire surface water rights to the spring-fed intermittent streams that exist on the Rosemont properties. For example, water right 33-93278 is a permit to use in-stream flow for livestock in McCleary Canyon, which is located..... According to the applicant

3. Point of diversion and **4.** Places of use:

Water will not be diverted out of the natural channel. The use will occur streamside along the natural course of McCleary Canyon beginning at a point within the Southwest quarter (SW¼) of the Southwest quarter (SW¼) and ending at a point within the Southeast quarter (SE¼) of the Southwest quarter (SW¼), both within Section 19, Township 18 South, Range 16 East, Gila and Salt River Base and Meridian, Pima County, Arizona.

Under the State of Arizona's tributary rule, designated uses of the intermittent reaches do not currently acknowledge the livestock use and aquatic and wildlife (warm water). Despite that fact, under the Clean Water Act, the Corps and ADEQ each have an obligation to protect existing uses of the stream, whether or not those uses have been designated, and this would include livestock use and warm-water aquatic life for an intermittent stream segment such as exists along McCleary Canyon and Barrel Canyon.

Furthermore, ADEQ must ensure that the water quality standards that are adopted for upstream water bodies also provide for the attainment and maintenance of the water quality standards for downstream waters, as stated in R18-11-104F: *"In designating uses of a surface water and in establishing water quality criteria to protect the designated uses, the Director shall take into consideration the applicable water quality standards for downstream surface waters and shall ensure 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."*

To our knowledge, ADEQ has not evaluated the water quality impacts of releasing sediment from the proposed stock tank mitigation to downstream waters, nor has any data been provided to them to evaluate. This information would be needed relative to the state's duty to protect existing uses including livestock and warm-water aquatic wildlife in McCleary and Barrel Canyon and points downstream. Hudbay (2015) presented water quality data to the Forest Service highlighting where a dissolved or total metal concentration was higher than a water quality standard established for the watershed, even without consideration of the more stringent standards that should have included the livestock and aquatic warm-water uses of the stream. No analysis exists relative to the livestock and aquatic warm-water uses, which are generally more stringent.

Hudbay (2015) data show that under current conditions, which include numerous mining features and land disturbance upstream, base flows of springs are of good quality. Elevated levels of dissolved copper, and total lead and copper have been consistently observed in stormwater at monitoring site PSW-4. Upstream spring flow met the livestock standards (Tetra Tech memorandum dated May 5, 2009). Would release of stored sediment increase ambient metal concentrations? Further study is warranted before the state can draw a conclusion that existing uses will not be impaired by the dredge-and-fill activities upstream, which include the stock tank removals. The stock tanks in the upper McCleary watershed are located below old mining claims which were historically worked (Figure 1).

Furthermore, in evaluating the surface water mitigation plan, the Certification and the mining MSGP, ADEQ has not evaluated McCleary or Barrel Canyon using standards appropriate to intermittent flow. Instead, ADEQ relied on Rosemont's assertion that standards for ephemeral streams would be protective of the intermittent flow.

Multi-Sector General Permits and Aquifer Protection Permits Do Not Reduce the Risks

In their April 2017 presentation to the Corps regarding the Certification considerations, ADEQ said they considered the requirements of the Multi-Sector General Permits (MSGPs) and Aquifer Protection Permits issued by ADEQ when issuing the Certification.

The fact that stormwater is regulated under an MSGP does not lower the risk that this Certification presents. The MSGP permit is required because there are activities likely to cause a surface water quality problem that needs to be managed and tracked so ADEQ can verify Rosemont's practices will minimize impacts.

The Carlota mine, located on Forest Service land in Arizona, serves as an example of a modern mine with unanticipated releases of pollutants despite an MSGP. In 2010, ADEQ found that *"the facility's structural BMPs (i.e. terraced slopes and surface pipes to prevent slope saturation) ...were ineffective to prevent discharges....The facility also failed to design and implement a combination of erosion and sediment control BMPs to keep sediment in place and to capture sediment to the extent practicable before it leaves the site."* Despite the MSGP, the facility sent pollutants downstream (Attachment 7).

Similarly, should there be spills at the Rosemont Plant, they will be conveyed into the intermittent flow reach of McCleary Canyon unless the capacity of the Sediment Control structure no. 3 is sufficient to hold the material under remediation can occur. Rosemont does not propose to monitor stormwater at the McCleary Canyon Sediment Control structure as stated in their letter of May 22, 2015 to ADEQ.

We also note that the APP does not restrict discharges that might occur from regulated facilities during storm events in excess of the 10-year, 24-hour event, and it does not have provision for regulating concentrations of sulfate, total dissolved solids or copper in the aquifer.

Pima County sought to require Rosemont to bond for post-closure costs to ensure that funds are available in the event of a mine bankruptcy. Pima County also urged the state to seek a performance bond for reclaiming the dry stack tailings facility. Instead, ADEQ exercised its discretion to accept a surety bond based on a "closure strategy" instead of a detailed closure plan. Final closure plans and costs will be determined by the state only when Rosemont notifies ADEQ of its intent to close the mine, at which time there is no guarantee of fund availability. This is another risk factor which leaves existing uses vulnerable to impairment.

C. Comments about the Sonoita Creek and San Pedro ILF Mitigation

Overall, we continue to object to mitigation that occurs in a watershed outside of the watershed that will be directly impacted by the proposed mine. More specific comments are as follows:

Sonoita Creek project may be infeasible without utility approval

The feasibility of the Sonoita Creek mitigation project depends at least in part on an agreement to relocate a Kinder-Morgan gas pipeline. There is no agreement that relocation will proceed. Details regarding costs and performance standards have yet to be determined among Kinder Morgan, Rosemont and the U. S. Army Corps of Engineers. Given that there is no information provided about other utility easements which may burden the Sonoita Creek project area, ADEQ has no assurance that other utility constraints may also compromise the feasibility of this project.

No conservation partner to ensure site protection

Rosemont has not identified a conservation partner to hold and enforce a conservation easement. This project may be infeasible without a conservation partner to ensure site protection. The Arizona Game and Fish Commission have not agreed to hold the easement, despite Rosemont's previous efforts to come to an agreement with the Arizona Game and Fish Department. The Nature Conservancy has not agreed to hold the easement. The Corps and U. S. Fish and Wildlife will not hold the easement. Without a conservation partner, feasibility of this mitigation strategy is in question.

Hudbay recognizes that the restoration project on 'Sonoita Creek occupies a place on the landscape more similar to Cienega Creek than Barrel Canyon (7.1.2.1 p.41).'

As such it does not mitigate the same ecosystem function as the impacted WUS in Barrel Canyon and Wasp Canyon. The series of functions identified in 7.1.1.1, (such as surface water storage) are criteria better suited to Sonoita Creek and the San Pedro than the impacted WOTUS at Barrel Canyon and Wasp Canyon. In essence, by setting up the function criteria to match the mitigation site rather than the impacted site, Hudbay is avoiding the question of how to mitigate impacted ecosystem functions at the mine site.

The Walnut Gulch watershed is an inappropriate reference for Sonoita Creek channel design

The Walnut Gulch watershed is very different from Sonoita Creek. Sonoita Creek is a valley-floor drainage, whereas Walnut Gulch is not. Walnut Gulch is a non-phreatic stream network isolated from groundwater (Goodrich, D. C., D. G. Williams, C.L. Unkrich, J. F. Hogan, R.L. Scott, K. R. Hultine, D. R. Pool, A. L. Coes, and S. Miller [2004]. Comparison of methods to estimate ephemeral channel recharge, Walnut Gulch, San Pedro River Basin, Arizona, in *Groundwater Recharge in a Desert Environment:* The Southwestern United States, *Water*

Science and Appl. Ser., vol. 9, edited by J. F. Hogan, F.M. Phillips, and B. R. Scanlon, pp 77-99, AGU, Washington, D. C.). Sonoita Creek has a shallow water table and likely has significant riparian transpiration from groundwater. Walnut Gulch is not connected to higher elevation mountain blocks, whereas Sonoita Creek is highly connected to adjacent mountains. The focus on Walnut Gulch as a model for a reference reach makes little reference to observed historical information, such as the 1936 air photos, which may shed light on pre-development channel alignments of Sonoita Creek or nearby watersheds.

The San Pedro In Lieu Fee site is a dramatically different site than the impacted mine site. It has a much larger watershed than the impacted site has perennial flow, shallower slope.

Sincerely,

C.H. Huckelberry
County Administrator

CHH/

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