

SALMON, LEWIS & WELDON, P.L.C.

Attorneys at Law

Riney B. Salmon II, P.C.
John B. Weldon, Jr.
Lisa M. McKnight
James R. Huntwork
Ronnie P. Hawks
Alexandra M. Arboleda
Jason P. Alberts

2850 E. Camelback Road, Suite 200
Phoenix, Arizona 85016
Telephone 602-801-9060
Facsimile 602-801-9070

M. Byron Lewis
Stephen E. Crofton
Mark A. McGinnis
Karen S. Gaylord
Kristin D. Magin
Rebecca C. Goldberg

Of Counsel

Richard N. Morrison

Writer's Direct Line
602.801.9075

Writer's Internet Address
ksg@shwplc.com

August 22, 2005

Via First Class Mail and Facsimile

Jeffrey L. Emde
Arizona Department of Environmental Quality
1110 West Washington Street
Mail Code 5415B-3
Phoenix, Arizona 85007

RE: Comments on Sierrita Mine Aquifer Protection Permit P-101679

Dear Mr. Emde:

This firm represents Community Water Company of Green Valley ("Community Water"). This letter contains Community Water's comments on the draft Aquifer Protection Permit ("Draft Permit") for Phelps Dodge Sierrita, Inc. ("PDSI") Mine located just to the west of Green Valley. Community Water appreciates this opportunity to comment on the Draft Permit.

As a non-profit water company, Community Water's primary purpose and goal is to reliably provide safe, clear, good-tasting drinking water to its customers. Community Water is proud of its track record in meeting its missions since it began operating in 1977.

Unfortunately, in recent years it had become increasingly difficult to locate and deliver high-quality water. Contaminants leaching from the tailings impoundment and other facilities at PDSI's Sierrita Mine have created a plume of sulfate, total dissolved solids ("TDS"), and other contaminants in the aquifer upon which Community Water and its customers depend. That plume has now migrated into Community Water's service area, requiring Community Water to shut down two of its production wells and significantly reducing the area in which Community Water might construct new wells that are free of sulfate and other contaminants.

Community Water understands the complexity of the permitting process for a major open pit mine under the Aquifer Protection Permit ("APP") program and the multitude of issues facing the Arizona Department of Environmental Quality ("ADEQ"). Community Water applauds the efforts of ADEQ and its staff in attempting to fashion permit conditions that are fair but protective of public health and the area's limited groundwater resources. But Community Water is concerned that the Draft Permit does not contain the level of detail and the stringent conditions necessary to protect those parts of the aquifer that have not yet been impacted by the plume from Sierrita Mine. The Draft Permit fails to adequately define contingency plans in case of future violations, releases, or the almost certain spread of the plume.

Although the Draft Permit is a welcomed start on an APP for PDSI's Sierrita Mine, Community Water requests that ADEQ carefully consider the following suggestions for revised or additional terms and conditions as a means of making the final APP more effective and more protective of scarce groundwater resources in this area.¹

1. Background

Community Water is a member-owned, non-profit water utility located in Southern Arizona about twenty miles south of Tucson. Community Water's rates are regulated by the Arizona Corporation Commission. Community Water currently serves an average of 2.1 million gallons of water per day to approximately 17,000 people. It has been estimated that the population of Community Water's service area will more than double in the next fifteen years.

Community Water's service area, which is located within the Tucson Active Management Area, is approximately eight square miles and is approximately bounded by Anamax Road to the north, the Santa Cruz River to the east, PDSI's Sierrita Mine to the west, and Mission Twin Buttes Road to the south. Community Water is totally dependent upon groundwater from the Santa Cruz aquifer to serve its customers. Although Community Water has an allotment of 1,337 acre-feet of water from the Central Arizona Project ("CAP") and a commitment to secure another 1,521 acre-feet, no means exists for delivering CAP water to Community Water's system.

Community Water's current supply system is composed of four groundwater wells, four storage reservoirs, one booster station, and a potable water distribution system comprised of an extensive network of almost 580,000 feet of three to sixteen inch pipes; motorized valves; pressure valves; hydrants; service connections; and related facilities. Three of Community Water's storage reservoirs hold one million gallons each, while the fourth holds two million gallons. Because it is a distribution, rather than transmission, water system, Community Water cannot blend water from various wells or reservoirs before delivery to improve water quality.

Of Community Water's four production wells, only CWC-6 and CWC-9 are still in use. These wells are located on the east side of Community Water's service area and have not yet been impacted by the sulfate plume from PDSI's Sierrita Mine. Community Water stopped using its other two production wells, CWC-7 and CWC-8, in June 2005 due to concerns with the levels of sulfate and TDS in these wells. CWC-8 was a relatively new well constructed in the belief that by adequately screening the well, contamination from the Sierrita Mine plume could be avoided. Nevertheless, Community Water began receiving complaints some time ago from its members concerning the taste and turbidity of water from CWC-7 and CWC-8. Members also voiced concerns about the health effects of high sulfate levels in these wells. Monitoring confirmed that both wells had been contaminated by sulfate, such that they could no longer be depended upon as a usable source of drinking water.

¹ Although Community Water's comments were intended to be as thorough as possible, it has been impossible in a forty-five day comment period to fully consider and comment upon all of the issues raised by the voluminous application materials that have been filed in regard to the Sierrita Mine APP over the last twenty years. Community Water, therefore, requests that it be permitted to file supplemental comments as more information becomes available or new issues arise.

It is undisputed that high sulfate levels in CWC-7 and CWC-8 are caused by the leaching of sulfate and other substances from the Sierrita Mine tailings impoundment. Community Water and PDSI have been working together for some time to address the contaminant plume. Negotiations and discussions between Community Water and PDSI have been friendly, cooperative, and productive. In June 2005, an agreement took effect under which PDSI is permitting Community Water to use three of the wells in PDSI's Esperanza well field as a temporary replacement for CWC-7 and CWC-8. Thanks to this agreement, Community Water's customers are receiving better quality water that is lower in sulfates and TDS.

Community Water continues to negotiate with PDSI for a permanent water supply to replace the wells it has lost due to the sulfate plume. Representatives and employees of both companies have been working cooperatively for months to find a permanent replacement source of water and we have made significant progress. Formal negotiation and strategy sessions, as well as numerous smaller meetings and conferences between representatives of the two entities, have been ongoing for several months and have been productive. PDSI has committed to providing Community Water with two wells to replace CWC-7 and CWC-8. Although some issues remain and a final agreement is not yet in place, both companies are dedicated to resolving the outstanding issues. It is hoped that a final agreement can be reached in the near future. In the meantime, Community Water has begun construction of a new production well in the southeast corner of its service area, an area that appears to be currently unaffected by the sulfate plume. Community Water and PDSI are also working together to bring an existing PDSI well in the northern portion of Community Water's service area online. Engineers, consultants, and contractors have been at work for months developing designs and plans for new wells, pumps, storage reservoirs, water treatment, and pipeline systems for these two wells.

2. The Sierrita Mine APP Must Protect Community Water's Ability to Deliver Potable Water to the Growing Population of the Green Valley Area, a Reasonably Foreseeable Future Use of the Santa Cruz Aquifer.

First and foremost, Community Water wishes to thank ADEQ for its inclusion of narrative water quality standards in the Draft Permit. For an ongoing operation such as Sierrita Mine, the narrative standards ensure that the final APP will properly focus on the requirements, standards, and conditions that will best protect beneficial uses of the aquifer, such as drinking water uses within Community Water's service area. It is essential that these narrative standards are retained and strengthened in the final APP to ensure that downgradient water users are adequately protected from the impacts of operations at Sierrita Mine.

In drafting an APP for Sierrita Mine to include narrative standards, ADEQ must consider whether the points of compliance identified in the permit will protect "all current and reasonably foreseeable future uses of the aquifer" with respect to non-hazardous substances, such as sulfate.² Given the growth that the Green Valley area is experiencing, it is reasonably foreseeable that Community Water will need to drill additional wells in its service area in the coming years to keep up with ever-increasing demand. The APP should establish standards and conditions that

² A.R.S. § 49-244(3).

will protect not just current uses of the aquifer at existing wells, but future uses and future points of groundwater withdrawal.

With all four of its existing wells pumping groundwater, Community Water could meet current demands but had little excess to accommodate future growth. With two of its wells taken off line due to elevated sulfate concentrations, Community Water cannot meet even current water demands with its two remaining wells. The use of PDSI's Esperanza well field is only a stop-gap solution until a permanent water supply can be located and integrated into Community Water's supply system. If the APP fails to establish standards and conditions that will effectively limit the growth and spread of the Sierrita Mine plume, the ability to locate a permanent supply of uncontaminated water will become increasingly difficult.

Even absent the Sierrita Mine plume, Community Water would have needed to locate new sources to supply the increasing population of Green Valley. On average, Community Water has experienced population growth rates of better than two percent since 1996, with growth of over seven percent in 2004. It is predicted that future growth rates will easily outpace historical growth rates. While Community Water was serving about 17,000 people about one year ago, the service area population may surpass 21,000 by the end of 2005. Within fifteen years, Community Water will be serving water to almost double the number of its current customers.

Exploding population growth will obviously increase demands on the Santa Cruz aquifer. Between 1996 and 2004, water deliveries increased at an average rate of 2.7 percent, with demand growing in some years at nearly a five percent rate. Average day demand (ADD) for daily groundwater pumping was 1,585 gallons per minute (gpm) from 2001 to 2004. The maximum day demand (MDD) totaled 2,774 gpm and peak hour demand (PHD) reached 5,549 gpm. Based on future growth projections, the ADD will increase to 2,692 gpm by 2010 and 3,546 gpm in 2020. By 2020, MDD is likely to reach 6,206 gpm and PHD is projected to reach 12,412 gpm. Clearly, population increases will have a significant impact on Community Water's groundwater needs.

Unfortunately, because of the contaminant plume migrating eastward from the Sierrita Mine facilities, less and less of the Santa Cruz aquifer within Community Water's service area is available as a source of clean potable water. Already, locations for new wells are limited to the small area between the plume and the Santa Cruz River. Much of the aquifer has been lost as a potential point of withdrawal due to the plume, and more of the aquifer is being lost each year. Unless ADEQ includes restrictions, standards, and conditions in the APP that will effectively and immediately slow or stop migration of the plume, Community Water will be faced with rapidly increasing demands in an aquifer where clean water is becoming harder and harder to find.

This condition is exacerbated by the type of system that Community Water operates, which is a distribution system with few transmission mains. The service area is divided into zones and the system must be carefully designed to maintain water supplies and water pressure in each zone. New wells must be designed to tie into existing reservoirs, booster stations, and supply lines such that the entire system remains balanced. Such considerations further limit

Community Water's ability to locate production wells in the small part of the aquifer under its service area that remains uncontaminated.

With the strain of an increasing population to serve and the practical limitations created by a contaminant plume that has significantly reduced the area in which new and replacement wells may be located, Community Water needs ADEQ to do everything in its power to ensure that Community Water's sole source of clean potable water is not further contaminated with sulfates and other contaminants from the Sierrita Mine. While Community Water appreciates the steps taken in the Draft Permit to protect this vital resource, the Draft Permit does not do enough to preserve the aquifer in light of the dire situation facing Community Water and other water suppliers in the area.

3. Sulfate and TDS Alert Levels and Use Protection Levels Must be Set Low Enough to Protect Community Water's Remaining Production Wells and Future Well Sites in the Remaining Uncontaminated Portion of Community Water's Service Area.

The APP requires PDSI to prevent further harm to the Santa Cruz aquifer with respect to sulfate contamination. The Draft Permit sets that the Use Protection Limit ("UPL") for sulfate at 400 mg/L at ESP-4, the one well in the Esperanza well field that Community Water is not using. It also states that the UPL may be modified upwards to a level of 450-525 mg/L. The Draft Permit does not discuss how or why ADEQ decided upon this UPL or why ADEQ set an Alert Level ("AL") of 650 mg/L at Point of Compliance ("POC") Well CWC-8. Absent such information, it is impossible to comment on whether ADEQ's decision is reasonable and supported by evidence in the record. Based on the relevant information available to Community Water, however, it appears that the interim AL and UPL in the Draft Permit are too high. Community Water requests, instead, that the UPL for Community Water's wells be set at no more than 200 mg/L for sulfate and that an appropriate AL be set to protect that UPL.³ Community Water also requests that this standard be implemented as the UPL for all of Community Water's existing and future production wells.

A. *The Use Protection Limit for Sulfate Should be Set at 250 mg/L or Lower to Protect Public Health and the Aesthetic Qualities of Drinking Water.*

The Environmental Protection Agency ("EPA") set the Secondary Maximum Contaminant Level (SMCL) for sulfate in drinking water, based upon the contaminant's negative aesthetic effects, at 250 mg/L in 1979.⁴ Although an SMCL is an unenforceable standard, it is significant because it highlights that sulfate directly contributes to a repugnant taste, odor, and appearance of the water. Community Water received numerous complaints from its members concerning bad taste and odor of the water when the water that Community Water delivered contained between 200-250 mg/L of sulfate. Community Water's members would certainly sense these adverse aesthetic effects of sulfate in its drinking water if concentrations were permitted to reach 400 mg/L, as allowed in the Draft Permit.

³ This will require ADEQ to set the UPL at a well other than ESP-4, since sulfate levels in that well already exceed 200 mg/L.

⁴ See 44 Fed. Reg. 42195 (July 19, 1979).

Health effects resulting from high sulfate concentrations have been documented in numerous studies. The known health effects from exposure to high levels of sulfate include a laxative effect, to which infants, new residents, and transient populations (such as business travelers, visitors and vacationers) are particularly susceptible.⁵ Furthermore, adverse health effects of sulfate can be exacerbated if magnesium or total dissolved solids also are present.⁶ Both contaminants are present in the plume created by the Sierrita Mine facilities. Community Water is concerned about the adverse health effects that elevated sulfate concentration levels would have on these at-risk members, particularly since its service area is comprised of a high population of older residents, many of whom have preexisting medical conditions that could exacerbate the effects of sulfate.

PDSI's own actions attest to the fact that a standard of 250 mg/L or less is appropriate to protect public health and the aesthetic qualities of drinking water. Since 1991, PDSI began delivering bottled water to residents in the Bisbee area who were receiving water with sulfate levels of 500 mg/L or more due to a sulfate plume migrating from PDSI's Copper Queen mine. But PDSI also offers bottled water to any household in the area upon request if the residents are using or receiving groundwater with sulfate levels of 250 mg/L or more.⁷ If PDSI believes it appropriate to provide bottled water to residents impacted by sulfate levels of 250 mg/L in the Bisbee area, it has no basis for objecting to a similar standard in Green Valley.

B. The Use Protection Limit for Sulfate Should be Set at 200 mg/L to Prevent Costly Interference With Arsenic Treatment.

Although medical studies and complaints by Community Water's customers would warrant a UPL of no more than 250 mg/L of sulfate, another relevant consideration requires that the UPL be set at no more than 200 mg/L. The federal drinking water standard for arsenic will be lowered in January 2006 to 10 parts per billion, requiring Community Water and other water providers in the Green Valley area to purchase and install expensive arsenic treatment systems. Arsenic levels for groundwater within Community Water's service area are relatively low. But naturally-occurring arsenic levels in the Santa Cruz aquifer can exceed the new federal arsenic standards. Community Water is taking a proactive approach, at a cost of approximately one million dollars per well, to meet these new arsenic standards. Arsenic treatment is in place or under construction at two of Community Water's wells and treatment for two additional wells is in the design phase. Other public water systems in Green Valley are undertaking similar arsenic treatment. Unfortunately, testing has shown that both sulfate and TDS in the Sierrita Mine plume may interfere with arsenic treatment systems.

The existence of the Sierrita Mine plume already has impacted the design of Community Water's production wells, which in turn has impacted Community Water's arsenic treatment

⁵ See 68 Fed. Reg. 42898, 42905 (July 18, 2003).

⁶ Id.

⁷ See Letter from E. Michael Schern, Phelps Dodge Mining Company, to Ms. Abigail A. Myers, ADEQ Water Permits Unit, at 4-5 (September 3, 1991) (describing mitigation plan). It is Community Water's understanding that PDSI's deliveries of bottled water continue today.

options. Sulfate tends to “float” in the upper portion of the aquifer. To reduce sulfate levels, therefore, Community Water has screened the upper portions of its newer wells so that it draws more of its water from lower portions of the aquifer. Unfortunately, however, arsenic tends to be found in higher concentrations lower in the aquifer, where it seeps from volcanic and other geologic formations. Therefore, Community Water’s attempts to avoid the sulfate plume have required it to withdraw water from portions of the aquifer with higher arsenic concentrations, thereby increasing arsenic treatment costs.

Furthermore, it is much more costly to repair and maintain arsenic treatment systems when the water supply has sulfate levels above 200 mg/L. ADEQ has recognized that the thresholds at which the interferences from sulfate and TDS begin to take effect occur at 200 mg/L for sulfate and 750 mg/L for TDS.⁸ Sulfate levels in the Sierrita Mine plume far exceed 200 mg/L and will undoubtedly affect the ability of these water systems to effectively treat for arsenic and comply with federal drinking water standards. Community Water should not have to bear higher treatment costs when a reasonable UPL can be established that will better protect production wells and reduce arsenic treatment costs. Therefore, the UPL for sulfate in the Sierrita Mine APP should be set at 200 mg/L or below not only to protect public health and the aesthetic qualities of drinking water consumed by the public, but also to prevent sulfate and TDS interference with expensive arsenic treatment systems.

C. Alert Levels Should be Lowered to Reflect a Use Protection Limit of 200 mg/L or Less.

A revision of the UPL will require a corresponding revision in the ALs in POC wells. APP standards require an AL to be set at the nearest POC well to ensure that the sulfate plume remains below the UPL at the corresponding point-of-use well. ADEQ should reconsider the ALs proposed in the APP and lower them to a level appropriate to reflect the UPL of 200 mg/L for sulfate at all Community Water production wells and any other drinking water wells potentially impacted by the Sierrita Mine plume.

ADEQ’s own policy supports a lower AL for sulfate. ADEQ’s Substantive Policy Statement, *Using Narrative Aquifer Water Quality Standards to Develop Permit Conditions for Aquifer Protection Permits*, sets forth factors to consider in establishing ALs.⁹ Those factors include the following:

1. Present or reasonably foreseeable uses of water in the aquifer;
2. Knowledge of human health-based guidance levels or some other risk-based or use-based level for the pollutant;
3. Concentration of the pollutant in the discharge and ambient groundwater;
4. Volume of the discharge;
5. Hydrogeologic conditions; and

⁸ Arizona Department of Environmental Quality, *Arsenic Master Plan*, at 3-3 (February 2003).

⁹ See James F. DuBois, *Substantive Policy Statement Using Narrative Aquifer Water Quality Standards to Develop Permit Conditions for Aquifer Protection Permits* (October 3, 2003).

6. Potential fate of the pollutant in the aquifer.¹⁰

A thorough consideration of each of these factors indicates that the AL for sulfate should be lowered.

First, Community Water serves drinking water to customers within its service area that will be affected by rising sulfate concentration levels. It is projected that Community Water's population will dramatically increase over the next fifteen years. By 2020, it is estimated that Community Water will almost double the amount of people that it serves with drinking water. This use of groundwater for drinking and other potable uses is a reasonably foreseeable use that must be protected in the APP for Sierrita Mine.¹¹

Second, as described previously, high sulfate levels in drinking water have known aesthetic and health impacts that warrant a lower AL. While these standards are not legally enforceable, they do comprise risk factors that ADEQ must consider in setting ALs for POC wells.

Third, there is an enormous discrepancy between the concentration of sulfate in ambient groundwater and the levels of sulfate detected in discharges from Sierrita Mine. Sulfate is found to naturally occur in the Santa Cruz aquifer at levels of well below 100 mg/L. However, sulfate has been detected at concentrations in the thousands of mg/L at various facilities and monitoring wells associated with Sierrita Mine. This grave disparity necessitates further review and a lower AL to protect drinking water sources in Green Valley.

Next, Sierrita Mine discharges large amounts of contaminants into the aquifer. At the recent public meeting on August 17, 2005, PDSI indicated that it plans to continue operations at Sierrita Mine for at least 30 years. Therefore, the volume of sulfate that is placed into the aquifer is unlikely to shrink and sulfate in the aquifer is unlikely to dissipate in the foreseeable future, warranting increased protections in the final APP.

The fifth factor is especially significant, since twenty years of study and monitoring make clear that hydrogeologic conditions have caused the plume from Sierrita Mine to migrate eastward at a steady rate. Although PDSI and ADEQ appear to believe that the plume's eastern boundary is well defined and stable, Community Water has seen no dispositive evidence that this is the case. Any additional migration into Community Water's service area could be devastating. ALs must be set low enough to give early warning of future migration and provide time to resolve the problem or find alternative supplies of water before Community Water's production wells are impacted.

Finally, sulfate does not naturally degrade in the aquifer. Given that technological solutions to treat sulfate contamination are limited and expensive, dispersion of the plume likely

¹⁰ *Id.* at 2.

¹¹ *Id.* ("if there is a nearby community that is growing in a manner that will likely require use of the aquifer in the [discharge impact area], then a current or reasonably foreseeable future use of the aquifer is presumed.").

is the only way that sulfate levels will decrease. But dispersion is likely impossible while Sierrita Mine continues to operate and generate contaminants that will be released into the aquifer. Because PDSI plans to continue operating Sierrita Mine for at least thirty years and dispersion may take centuries, Community Water cannot count on natural dispersion to reduce sulfate levels in the aquifer.

Each of these factors relevant to AL levels argues for lower AL levels in the final APP for Sierrita Mine. The potential health and aesthetic impacts of sulfate, along with the impacts of sulfate and TDS on arsenic treatment, also require reconsideration of the AL levels for the final APP. Although it impossible to specify appropriate ALs at the various POC wells at this time, ADEQ should set the ALs at a level that will keep sulfate in Community Water's production wells below 200 mg/L.

4. POC Wells Should Be Established to Protect All of Community Water's Production Wells.

The Draft Permit does not establish POC Wells for either of Community Water's still-usable production wells, CWC-6 and CWC-9. Nor does the Draft Permit require the establishment of POC Wells for any future production wells that are added to Community Water's system. Monitoring at one POC Well to protect ESP-4 and the Esperanza well field, while reasonable as to those wells, does not serve to protect Community Water's wells. Given that the plume from Sierrita Mine has already caused Community Water to shut down two production wells that appeared to be beyond the plume's reach just a few years ago, it does not seem unreasonable to require additional POC Wells to protect Community Water's remaining and future wells.

CWC-6 is about one half mile to the east of CWC-8 and just a short distance from the Esperanza well field. Sulfate levels in CWC-8 were under 200 mg/L just ten years ago, but now exceed 500 mg/L. Although CWC-8 is designated as a POC Well to protect ESP-4, it is not clear to Community Water that this sole monitoring point is sufficient to protect CWC-6. Not enough is known of aquifer conditions in this area to assume that the plume must travel past CWC-8 to reach CWC-6. Furthermore, results at CWC-8 may be impacted by the fact that CWC-8 is not being used now and likely will not be used in the future.¹² ADEQ should establish additional POC wells to the west and south to provide better protection for CWC-6.

CWC-9 is less than a mile east of CWC-7. CWC-7 had sulfate levels of less than 200 mg/L as recently as 1998, but now has sulfate levels of approximately 500 mg/L. ADEQ has established no POC Wells in the Draft Permit to monitor sulfate levels in this area. As with conditions near CWC-6, not enough is known of conditions near CWC-9 to accurately judge whether CWC-9 is in danger of becoming contaminated. It is prudent and reasonable to establish POC wells in the APP to monitor conditions in this area and protect CWC-9.

¹² Testing has shown that, if a well remains unused for long periods of time, arsenic results for that well may not be reliable. Typically, extended pumping is necessary before arsenic readings stabilize and can be relied upon as accurate indicators of local aquifer conditions.

Both CWC-6 and CWC-9 lie just to the northeast of the northern portion of the Sierrita Mine tailings impoundment where the plume's migration has been largely unimpeded by PDSI's interceptor well field.¹³ Although PDSI and ADEQ apparently believe that the plume will not travel further eastward toward CWC-6 and CWC-9, Community Water has seen no dispositive evidence supporting that position. ADEQ must weigh the relatively modest cost of establishing suitable ALs at additional POC Wells now to protect Community Water's two remaining wells versus the enormous cost to Community Water of losing those production wells and being forced to locate other sources of clean water.

Community Water understands that the Draft Permit requires further study by PDSI over the next year and submission of a report to define permanent POC Well locations, ALs, and UPLs.¹⁴ But Community Water cannot wait for further study and proposals. In 1994, sulfate levels in CW-8 were less than 100 mg/L. It took only two years for sulfate levels in CW-8 to exceed 200 mg/L and just two more years for CW-8 to reach 500 mg/L. In the year or two it takes to conduct additional monitoring, prepare a report, and decide on appropriate ALs and POC Well locations, sulfate could easily reach CW-6 and be well on its way to CW-9.

PDSI and its predecessors have studied the plume and the Santa Cruz aquifer for nearly twenty years now. Community Water cannot afford to await the results of further study by PDSI, followed by further analysis by ADEQ and an agency decision at some undetermined later date, only to find that the plume has already affected or soon will affect CWC-6 or CWC-9. Monitoring to protect CWC-9 should be required immediately, in addition to the hydrogeologic study and report required in the Draft Permit, so that Community Water will have adequate warning if it is about to lose another production well to the Sierrita Mine plume in the interim.

Community Water also is currently constructing CWC-10 in the southeast portion of its service area. It is expected that this well will be operational in late 2005 or early 2006. Although CWC-10 appears to be located upgradient of the plume, Community Water has no assurance that the plume will not migrate toward CWC-10 in the future. Therefore, Community Water proposes that POCs and ALs be set for CWC-10 now, rather than waiting for PDSI to complete additional modeling.

Finally, given the projected growth of the Green Valley area, Community Water will need additional wells in the future. The final APP should require PDSI to implement protective monitoring and ALs for all future Community Water wells. Without such protections in the APP, Community Water and its customers will be forced to pay for any monitoring or other protective actions necessary at future well sites.

¹³ See Section 6, *infra*.

¹⁴ See Draft Permit, § 3.0.

5. The Interceptor Well Field Has Failed to Prevent the Migration of Impacted Groundwater from the Sierrita Mine Tailings Impoundment.

To the east of the Sierrita Mine tailings impoundment is a line of 24 interceptor wells whose purpose is “to capture impacted groundwater from beneath the tailing impoundment and to prevent its migration off-site.”¹⁵ These interceptor wells have never adequately fulfilled their purpose as a Discharge Control Technology (“DCT”). The APP should not rely upon the interceptor wells as a DCT without significant changes in the operation and design of the interceptor well field.

The interceptor wells create an effective hydraulic barrier to groundwater flow from the tailings impoundment toward Green Valley only if pumping from the wells lowers the water table enough to create a line-sink along the total length of the well field.¹⁶ Groundwater levels along the well field line must be reduced to the point that a reversal of the hydraulic gradient occurs along the full span between each interceptor well. Anything less will permit groundwater to flow between two interceptor wells and toward Green Valley.¹⁷

In a 1991 hydrogeologic report submitted in support of the Sierrita Mine APP, consultants for the mine acknowledged that the interceptor well field was not working as planned. The southern portion of the well field between IW-8 and IW-3 had created an effective line-sink that was preventing contaminated groundwater from flowing east toward Green Valley. But the central and northern portion of the well field had not created an effective barrier and was permitting groundwater impacted by mine operations to pass through to the east.¹⁸

The reasons for the interceptor wells’ failure to contain the plume emanating from the tailing impoundment were many. First, groundwater from the interceptor wells was being used as a source of supply for the mine. As a result, pumping from the interceptor wells fluctuated widely in response to water demands at the mine. Those fluctuations in pumping rates, which are detailed in the 1991 report, were a major factor in the well field's failure to create a hydraulic line-sink.¹⁹

The northern portion of the well field also was located at the end of the transmission pipeline that feeds water back to the mine. As a result, the northern interceptor wells were susceptible to shut-downs due to problems upstream on the transmission line, such as line breaks, booster pump problems, or general well field maintenance. The interceptor field also was susceptible to mechanical and electrical problems that limited its effectiveness.²⁰ Due to these

¹⁵ MWH Americas, Inc., *Supplement to the Aquifer Protection Permit Application BADCT Demonstration Addendum*, Vol. 1, § 5.1.6, at 15 (March 2005) (hereinafter “MWH Report”).

¹⁶ Errol L. Montgomery & Associates, Inc., *Supplemental Hydrogeologic Report in Support of Aquifer Protection Permit Application, Sierrita Operation*, at 37 (July 9, 1991) (hereinafter “1991 Montgomery Report”).

¹⁷ *Id.* at 38.

¹⁸ *Id.* at 38-41.

¹⁹ *Id.*

²⁰ *Id.*

problems, the 1991 report concluded that “groundwater with increased total dissolved solids and sulfate concentrations is passing beneath the east dam of the Sierrita tailings impoundment from the vicinity of interceptor well IW-3 north to monitor well MH-1.”²¹ In other words, almost the entire length of the interceptor well field, with the exception of the southeast corner of the tailings impoundment, was not working as intended to prevent impacted groundwater from migrating toward Green Valley.

These same problems remain today. PDSI has indicated in the past that the interceptor wells do not operate constantly. For various reasons, individual wells may be shut down for weeks or even months at a time. Even when the pumps are operating, they do not operate at full capacity, but instead operate in response to the needs of the mine. Indeed, the 1991 Montgomery Report could not determine the potential ability of the interceptor well field to control the contaminant plume because the maximum sustainable pumping rates for the interceptor wells had never been tested or determined.²²

Although additional interceptor wells have been installed since the 1991 Montgomery Report, Community Water has found no indication that the effectiveness of the interceptor well field has been significantly improved. PDSI’s most recent description of the interceptor wells cites the 1991 Montgomery Report as evidence that the interceptor wells have created a drawdown zone on the southeast corner of the tailings impoundment, but does not address the failure of the interceptor well field to slow the migration of impacted groundwater along the remainder of the tailings impoundment.²³ It also is clear that PDSI continues to use water pumped from these interceptor wells in mine operations.²⁴ As a result, the wells are being operated based upon the water needs of the mine, not upon the requirements necessary to create a drawdown zone along the entire face of the tailings impoundment.

Given the ineffectiveness of the interceptor well field, the Draft Permit is simply incorrect when it states that the interceptor wells capture impacted water from the tailings impoundments and sediment basins. The interceptor well field does not work as intended. The 8,000 gallon per minute pumping capacity of the interceptor well field described in the Draft Permit is a mirage, as actual pumping likely averages several thousand gallons per minute less than that. Such limited pumping cannot and does not create an effective groundwater barrier between Sierrita Mine’s tailings impoundment and other facilities and Community Water’s wells. The Draft Permit fails to recognize the shortcomings in the only DCT intended to contain contaminant migration from the Sierrita Mine tailings impoundment. Best Available Design and Control Technology (“BADCT”) for the Sierrita tailings impoundment requires the interceptor well field to be upgraded and operated to effectively contain contaminants along the entire length of the tailings impoundment. ADEQ should revisit this issue and include detailed guidelines and requirements for the operation of the interceptor well field. ADEQ also should provide for post-

²¹ *Id.* at 40. See also Errol L. Montgomery & Associates, Inc., *Data Compilation and Preliminary Assessment of Existing Groundwater Monitoring System, Sierrita Facility*, at 3 (May 10, 1988) (indicating that interceptor well IW-7 had been inoperative for the last five years).

²² 1991 Montgomery Report, at 39.

²³ MWH Report, Vol. 1, § 5.1.6, at 15.

²⁴ MWH Report, Vol. 1, § 5.1.6, at 15.

closure operation of the interceptor wells, as contaminants will continue to leach from the tailings impoundment and other mine facilities long after the mine has closed.

6. The Contingency Plan Requirements Must be More Detailed and More Stringent.

The APP requires PDSI to follow established contingency and emergency plans in the event that an AL is exceeded or there is a violation of an aquifer quality limit (AQL), discharge limit (DL), or any other unauthorized discharge. State regulations provide additional guidance on contingency plan requirements.²⁵ Broadly speaking, Community Water supports the parameters set by ADEQ in the Draft Permit, but requests that more specific requirements and obligations be written into the final APP.

The contingency plan sections governing violations of the AL for sulfate in POC Well CW-8 is of utmost concern to Community Water. Once verification of the AL violation is confirmed, PDSI is given the option of taking one or more contingency actions to remedy the violation.²⁶ However, there are no set time frames within which PDSI must take this contingency action. Community Water has similar concerns regarding the lack of concrete deadlines for conducting corrective action with respect to a violation of an AQL in groundwater monitoring wells.²⁷

For example, one of the remedies that PDSI may take if POC CW-8 exceeds the AL is to install or provide a permanent replacement well or alternative source of water for Community Water.²⁸ Community Water strongly supports this solution as an element of the APP's contingency plan. But the final APP should contain a specific requirement to begin implementing contingency actions within sixty days of a violation or exceedance and specific guidelines for completion of the contingency action as quickly and efficiently as possible.

Other options for PDSI's contingency actions also fail to provide definite guidelines and deadlines for action. The second option allows installation of an interceptor well system to prevent the further spread of the contaminated groundwater.²⁹ Yet, the contingency plan does not detail a time frame within which the interceptor well system must be completed. Nor does the plan require monitoring to determine if an interceptor well system is containing the flow of contamination. Given the inadequacies of the existing interceptor well field, Community Water believes that additional details and conditions should be included regarding this option.

The third option that PDSI may choose to perform is to install a water treatment system. But as with the other options, the Draft Permit does not include time frames or guidelines for treating groundwater with high concentrations of sulfate.³⁰ Furthermore, treatment for sulfate is

²⁵ See A.A.C. R 18-9-A204.

²⁶ *Id.* § 2.6.2.3.4(3).

²⁷ *Id.* § 2.6.4.

²⁸ *Id.* § 2.6.2.3.4(3)(A).

²⁹ *Id.* § 2.6.2.3.4(3)(B).

³⁰ *Id.* § 2.6.2.3.4(3)(C).

an expensive proposition with current technology, such that this option likely is not feasible in the foreseeable future. Again, it does not appear that ADEQ has considered practical realities in listing this option in the contingency plan.

The final option allows PDSI to suggest other methods to reduce sulfate concentrations.³¹ Again, there are no time frames listed in which PDSI must propose its recommended course of action to ADEQ or for ADEQ to approve a contingency action. The final APP must include requirements and deadlines for corrective actions such that, in the event the AL for a POC Well is exceeded, a proper course of action is quickly determined and immediately acted upon.

Community Water also requests that ADEQ clarify the time frame requirements within which PDSI must notify the Water Quality Compliance Section, Enforcement Unit (“WQCS/EU”) of a violation of any AL, permit condition, or discharge limitation.³² Section 2.7.3 of the Draft Permit requires PDSI to notify WQCS/EU within 5 days “of becoming aware” of any such violation, and must submit a written report to the agency within 30 days.³³ But the Draft Permit’s contingency plan requirements for exceeding alert levels allow PDSI to conduct verification sampling to confirm whether an AL has, in fact, been violated.³⁴ For pollutants with numeric aquifer water quality standards, PDSI has 5 days to conduct verification sampling³⁵ and has 15 days to conduct verification sampling for pollutants without numeric aquifer water quality standards.³⁶ It is not clear from the Draft Permit if notice must be given to ADEQ before verification sampling is conducted or if notice is required only if verification sampling confirms a violation. Therefore, Community Water requests that ADEQ require PDSI to notify WQCS/EU immediately upon a violation of any AL and that notification may not be delayed for weeks while PDSI awaits verification that an AL has actually been exceeded.

Moreover, Community Water requests that ADEQ define and shorten the time allowed for taking the contingency action once the AL for POC Well CW-8 is violated. Under the Draft Permit, PDSI is granted fifteen days to conduct verification sampling.³⁷ Then it must wait for the sampling results. Once a violation is detected and confirmed, PDSI has thirty days to submit its selected contingency action.³⁸ But the Draft Permit contains no provision for the amount of time that the Water Permits Section/Mining Unit (“WPS/MU”) has to approve the recommended corrective action plan. Additionally, if WPS/MU does not approve the plan, there are no guidelines or schedule as to the amount of time that PDSI has to supply additional information or suggest a new course of action. Without more stringent deadlines for both PDSI and ADEQ, it could be months from the initial date of an AL violation before a corrective action is approved, much less implemented.

³¹ *Id.* § 2.6.2.3.4(3)(D).

³² *Id.* § 2.7.3.

³³ *See id.* § 2.7.3(1) - (2).

³⁴ *Id.* § 2.6.2.3.

³⁵ *Id.* § 2.6.2.3.2(1).

³⁶ *Id.* § 2.6.2.3.4(1).

³⁷ *Id.* § 2.6.2.3.4(1).

³⁸ *Id.* § 2.6.2.3.4(4).

Community Water also requests clarification of the notification requirements for any violations of the permit conditions, ALs, or DLs. If the AL set for sulfate is exceeded or an AQL is violated, PDSI is required to immediately notify all downstream and downgradient users of the aquifer who may be directly affected.³⁹ The contingency plan does not specify when or how this notification must occur. For example, it is not clear whether PDSI must notify all downgradient users immediately upon discovery of a violation, or following confirmation of that violation once verification sampling has been conducted. Community Water supports the former requirement. Further, Community Water requests that ADEQ include specific provisions describing how PDSI must conduct this notice. Community Water suggests that PDSI be responsible for notification to all affected water users by mailing individual notices to each user and by publication in a newspaper of general circulation in Green Valley.

In addition to PDSI providing notice of AL violations, Community Water also requests that PDSI submit copies of any sampling, contingency plan submissions, or reports to Community Water, the Green Valley Community Coordinating Council, and all other water service providers in the area. Community Water also suggests that ADEQ require PDSI to submit a copy of any sampling, contingency plan submissions, or other reports to a designated repository in Green Valley, such as the public library, to ensure that the public has easy access to this information.

Finally, the compliance schedule proposed in the draft APP requires PDSI to submit its Contingency and Emergency Response Plan within 90 days of the effective date of the permit.⁴⁰ Although it seems self-evident that the contingency plan is an amendment to the APP that is subject to public comment, this is not made clear in the Draft Permit. Therefore, Community Water requests that it be allowed to comment on the contingency plan when it is submitted. Furthermore, Community Water is concerned with the timing of the contingency plan's submission to ADEQ. The contingency plan will be due long before PDSI has submitted its report to WPS-EU characterizing the extent of the sulfate plume in the aquifer and substantiating the AL for sulfate and before PDSI has to submit similar reports for ALs for AQL in POC wells.⁴¹ It may be necessary to develop an adequate contingency plan before PDSI and ADEQ fully understand the plume's scope and migration patterns but PDSI should be required to revisit the contingency plan after these subsequent reports are submitted so that it can be tailored to fit the findings in the reports and decisions that subsequently flow there from.

³⁹ *Id.* § 2.6.2.3.4.(5); § 2.6.4(4).

⁴⁰ *See* APP § 3.0

⁴¹ *Id.*

7. Additional Monitoring Wells Are Needed Along the Face of the Existing Plume.

Most of PDSI's existing monitoring wells are located along the face of the tailings impoundment on PDSI property. Only a few are located east of PDSI property along the outer edges of the plume. Furthermore, only a few monitoring wells are located in the northern portion of area impacted by the plume, even though the migration of contaminants eastward is greatest in this area. Although the Draft Permit requires construction of two new monitoring wells in an undetermined location, these two wells are insufficient to monitor the migration of the plume and protect the remaining uncontaminated portions of the aquifer within Community Water's service area.

PDSI and ADEQ appear to agree that the plume's eastward migration has been halted by a northern flow of groundwater that parallels the Santa Cruz River. Given the scarcity of monitoring well data from the eastern edge of the contaminant plume, however, that conclusion is subject to question. Much of Community Water's service area has been contaminated by this plume. The remainder should not be left unprotected on the assumption that the plume has turned north and will travel no further east. Monitoring wells, which could double as POC wells, should be installed along the entire eastern face of the contaminant plume so that the plume's migration can be followed and mapped in detail. Only by monitoring the plume's movement will ADEQ be assured that the residents of Green Valley and other water users will be protected from the impacts of PDSI's activities at Sierrita Mine.

8. Additional BADCT Elements Should be Required to Better Protect the Aquifer from Additional Contaminants.

Although the Draft Permit contains numerous BADCT requirements for the various facilities at Sierrita Mine, a few facilities stand out as needing additional improvements to fully meet the BADCT requirements and better protect the aquifer.

A. *The Sierrita Tailing Impoundment Sediment Ponds (D-01 A-K) Should be Lined.*

Eleven sediment ponds are located along the eastern perimeter of the Sierrita tailing impoundment, between the tailings and communities to the east. The sediment ponds capture surface water runoff from the face of the tailings dam.⁴² These sediment ponds were not originally included in the list of APP Facilities for the Sierrita Mine and Community Water applauds ADEQ's decision to include the ponds as a permitted facility.

Nonetheless, the sediment ponds represent a potential source of groundwater contamination that is not adequately addressed in the Draft Permit. PDSI did not collect and analyze samples of the water in these sediment ponds as part of the permit process and Community Water has found no other chemical analysis of this water. But the sediment ponds contain tailings material and contaminants discharged from the tailings impoundment during storms and other events that have a "moderate to high potential" for acid rock drainage in the

⁴² MWH Report, Vol. 1, § 5.1.1, at 14.

long term and that exceed secondary drinking water standards for iron, sulfate, and total dissolved solids.⁴³

Because the sediment ponds are not lined and, because water sits in these ponds for long periods of time, they present a mechanism for the discharge of contaminants from the tailings impoundment into the regional aquifer. The application materials contain no information on how long contaminated water remains in these ponds, how much water on average is held in the ponds, or how many days per year the ponds contain fluids, so it is impossible to estimate the potential for damage to the aquifer from the impoundment ponds. But it is clear that the water leaves the ponds only through evaporation or infiltration, so at least some of this contaminated water is finding its way into the aquifer.⁴⁴ Community Water cannot be assured that any water entering the aquifer from the ponds would be captured by the interceptor wells, given the demonstrated inadequacies of the interceptor well field.⁴⁵

These eleven sediment ponds should be lined to prevent infiltration of contaminated water to the aquifer.⁴⁶ Lining would be economically feasible and practicable since it would be relatively simple to install and likely would not require any interruptions in mine operations. Community Water, therefore, requests that the final APP contain a schedule for lining the sediment ponds as quickly as possible.

B. *Bailey Lake (D-03) Requires Additional Monitoring.*

Bailey Lake is an unlined reservoir created by an earthen dam. Designed to contain overflow and subsurface flow from Headwall No. 1, as well as excess fluids from the Moly Decant Tanks, Bailey Lake primarily impounds subsurface flows, presumably from the area of Headwall No. 1.⁴⁷ Bailey Lake also appears to receive fluids from Raffinate Pond No. 3, which have extremely high sulfate levels (236,000 mg/L).⁴⁸

The DCTs particular to Bailey Lake are twofold. First, the lake is underlain by bedrock of low permeability, which promotes lateral movement of the leach solution captured by the Lake, presumably in an eastward direction.⁴⁹ Discharge to groundwater from Bailey Lake moves through and under the earthen dam.⁵⁰ Therefore, the second DCT is a seepage interceptor trench,

⁴³ MWH Report, Vol. 1, § 5.1.4, at 15.

⁴⁴ MWH Report, Vol. 1, § 5.1.7, at 15.

⁴⁵ Id.

⁴⁶ A.R.S. § 49-243(B)(1) (where practicable, BADCT should be employed that will permit no discharge of pollutants).

⁴⁷ APP Permit, § 2.1.6, at 3; Montgomery Watson Mining Group, *Supplement to Aquifer Protection Permit Application, BADCT Demonstration*, Vol. 1, § 6.3.5, at 54 (August 1999) (hereinafter "Montgomery Watson Report").

⁴⁸ Montgomery Watson Report, Vol. 1, §§ 5.1.1 and 5.1.3, at 14-15.

⁴⁹ MWH Report, Vol. 1, § 5.2.2, at 16 and § 5.2.5, at 17.

⁵⁰ Montgomery Watson Report, Vol. 1, § 6.3.5, at 54.

excavated into in-situ bedrock downgradient of Bailey Lake, that is equipped with a sump to pump out any seepage flowing into the trench.⁵¹

Fluids captured by Bailey Lake are acidic, high in metals, and high in sulfate (23,000 mg/L), such that seepage from Bailey Lake could further degrade the aquifer upon which Green Valley and surrounding communities depend. Although construction of an interceptor trench as the preferred alternative to lining Bailey Lake may have been reasonable, nothing in PDSI's application materials or the Draft Permit itself indicate that the trench is working as designed. No data is provided regarding pumping rates from the interceptor trench sump or water quality immediately downgradient of the trench. The proposal for an interceptor trench indicated that the system would have to be pumped "aggressively" in order to capture seepage through the alluvium from Bailey Lake.⁵² No data is presented in subsequent materials to indicate whether such "aggressive" pumping has been conducted.

Although the Draft Permit requires a report on neutralization potential and attenuation capacity in support of BADCT for this facility, such a report is insufficient to adequately determine if seepage from Bailey Lake is being adequately contained. Monitoring should be required to determine impacts to determine downgradient impacts, and pumping rates and schedules should be established. If necessary, additional monitoring wells should be installed as an aid to implementing these requirements.

C. *Decant Ponds and Pad Areas (D-20) Should be Relined.*

Two concrete- and gunnite-lined decant ponds are used to hold overflow from the copper-moly thickeners and settle out solids. Reclaimed fluids are sent to the reclaim pond on the tailings impoundment.⁵³ Although samples of the fluid in these ponds apparently have not been analyzed for contaminants, fluid from the copper-moly thickeners undoubtedly is high in sulfate and other contaminants.

A 1999 Supplement to the APP application indicated that the sidewall liner material in the decant ponds was visibly cracked, such that an accurate estimate of aquifer loading from the ponds was impossible. The report proposed lining the ponds with an epoxy coating as a cost effective and technically feasible solution that would provide an impermeable base and possibly exempt the ponds from the APP process.⁵⁴ This work apparently was never performed, as the draft permit requires inspection of the ponds for cracks and seepage.⁵⁵ Given that seepage from these ponds from cracks in the walls could contribute significant contaminants to the aquifer, the ponds should be resurfaced to eliminate cracks and make them as impermeable as practically possible.

⁵¹ MWH Report, Vol. 1, § 5.2.2, at 16 and § 5.2.5, at 17.

⁵² Montgomery Watson Report, Vol. 1, § 6.3.6, at 55.

⁵³ *Id.*, Vol. 1, § 6.12.1, at 75.

⁵⁴ Montgomery Watson Report, Vol. 1, §§ 6.12.5 and 6.12.6, at 75.

⁵⁵ Draft Permit, Table 4.2.1., at 55.

D. *Headwall No. 1 (D-02) Requires Additional Design Control Technologies.*

Headwall No. 1 is an unlined retention pond created by an earthen berm that crosses Amargosa Wash at the base of the oxide leach area. This three acre-foot pond collects Pregnant Leach Solution seeping from the oxide leach area and shallow subsurface flows, which are then gravity fed to SX Plant No. 2. Overflow moves down Amargosa Wash to Bailey Lake.⁵⁶

Fluids in Headwall No. 1 have been characterized as a “low pH solution of dilute sulfuric acid high in dissolved metals.”⁵⁷ These fluids contain excessive sulfates (15,300 mg/L).⁵⁸ Because the retention pond is unlined, contaminated fluids pass through the earthen dam and floor of the pond into downgradient groundwater.⁵⁹

In the Montgomery Watson Report, it was asserted that modifications to Headwall No. 1 were impossible because a bench had been constructed immediately above the pond, making access difficult and potentially dangerous.⁶⁰ It is not clear whether these conditions remain, but improved DCTs are necessary for Headwall No. 1. If it is impossible to line the pond, it may be possible to install an interceptor trench below the pond to capture subsurface flows that are escaping through the earthen dam.

E. *Pump Back Wells Should be Installed Below the Leach Areas (D-17 & D-18).*

The Sierrita Leach Areas contain approximately 950 acres, or 19.9 million cubic yards, of ore, to which a dilute sulfuric acid solution is applied. The copper-laden solution, which is a low pH solution of dilute sulfuric acid with high metals content and extremely high sulfate levels, is recovered at headwalls below. The Leach Areas are not lined.⁶¹

PDSI, like Cyprus before it, is considering the installation of pump back wells along the downgradient edge of the leach piles in the vicinity of Bailey Lake. The wells would collect subsurface flows and pump them back to the top of the leach pile. PDSI’s proposal calls for the installation of five wells at a cost of under \$30,000.⁶² Despite the fact that these wells have been under consideration since at least 1999,⁶³ it does not appear that they have been installed. Furthermore, the draft permit does not require installation of pump back wells.

ADEQ should require installation of these pump back wells and subsequent monitoring to determine if the wells are capturing subsurface flows of contaminated fluids from the Leach

⁵⁶ Montgomery Watson Report, Vol. 1, §§ 6.2.1 and 6.2.2, at 52.

⁵⁷ *Id.*, Vol. 1, § 6.2.3, at 52.

⁵⁸ *Id.*

⁵⁹ *Id.*, Vol. 1, § 6.2.2, at 52.

⁶⁰ Montgomery Watson Report, Vol. 1, § 6.2.5, at 53.

⁶¹ MWH Report, Vol. 1, §§ 5.3.1, 5.3.4, and 5.3.5, at 19-20.

⁶² *Id.*, Vol. 1, § 5.3.6, at 20.

⁶³ Montgomery Watson Report, Vol. 1, § 6.10.5, at 69.

Areas. Additional wells or other DCTs should be required if it is found that contaminated fluids are bypassing the wells and escaping into the aquifer.

F. *An Interceptor Trench Should be Installed Down-gradient of Headwall No. 2 (D-46).*

Headwall No. 2 is a partially-lined retention pond that captures process solutions from the Leach Areas.⁶⁴ Fluids seeping from the Leach Areas contain high levels of metals and sulfates.

Although interceptor or cutoff trenches have been installed below Headwall Nos. 3 and 5 to capture subsurface flows of process solution that pass through the partially unlined facilities, Headwall No. 2 has no such trench. PDSI has not proposed installation of such a trench, and the draft permit does not require a trench. Because it is clear that contaminated process solution can and does pass through Headwall No. 2, ADEQ should require installation of an interceptor trench, similar to that found at Headwall No. 3, to help capture these flows and prevent further degradation of the aquifer.

G. *The Moly Decant Tanks (D-39A) Should be Equipped with a Synthetic Liner and LCRS.*

Currently, the Moly Decant Tanks are used to store and decant overflow from the molybdenum processing thickeners. Excess fluids are pumped to Bailey Lake. A front-end loader removes concentrate from the tanks for further drying and transferal to the molybdenum roaster.⁶⁵

PDSI has reported that the Moly Decant Tanks, which were constructed in 1958, are stained and degraded.⁶⁶ These tanks, therefore, are a likely source of aquifer loading, such that additional BADCT is necessary. PDSI has proposed installing a synthetic liner and LCRS, but the draft permit does not mention the proposal or contain a deadline for installation.⁶⁷ ADEQ should require PDSI to install the liner and leak detection system to prevent further releases of contaminated fluids into the aquifer.

9. Conclusion

Community Water is committed to resolving its water supply issues and to maintaining its reputation for supplying good quality water to its customers. Community Water believes that PDSI is equally committed to working with Community Water to find solutions to the water supply issue. Nevertheless, the APP process provides an important backstop to any agreement that Community Water negotiates with PDSI by imposing standards, conditions, and requirements on the operation of Sierrita Mine that will help protect the Santa Cruz aquifer from further degradation.

⁶⁴ *Id.*, Vol. 1, § 6.22.1, at 94.

⁶⁵ MWH Report, Vol. 1, § 5.6.2, at 26.

⁶⁶ *Id.*, Vol. 1, § 5.6.7, at 27.

⁶⁷ *Id.*, Vol. 1, § 5.6.6, at 27.


In summary, Community Water requests that the following requirements be included in the final APP for Sierrita Mine:

- An UPL of 200 mg/L for sulfate should be established in the APP for all Community Water production wells, without waiting for further study and proposals from PDSI.
- Appropriate ALs should be set at POC Wells to adequately protect Community Water production wells and other water users in the Green Valley area.
- POC Wells should be located in the APP to protect all Community Water production wells, without waiting for further study and proposals from PDSI.
- The APP should contain detailed operation and monitoring requirements for the interceptor wells and plans for continued operation of those wells after the mine closes.
- Contingency plans should be more detailed and should include hard deadlines for implementing contingency actions.
- Additional monitoring wells should be required along the face of the contaminant plume.
- The additional BADCT elements detailed in Section 8 should be required to better protect the aquifer from additional contaminants.

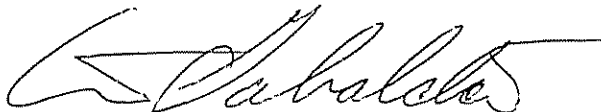
Although Community Water appreciates ADEQ's hard work on the Draft Permit, the final APP can be made much stronger by implementing the types of amendments and changes discussed in these comments. Community Water believes that its comments provide feasible and prudent suggestions for better protecting groundwater quality in the Green Valley area. Community Water appreciates the opportunity to comment on the Draft Permit and looks forward to working with ADEQ and PDSI in the future to address issues relating to this most vital of natural resources.

Very truly yours,

Salmon, Lewis and Weldon, P.L.C.

By 
Karen S. Gaylord

Community Water Company of Green Valley

By 
Arturo R. Gabaldon, General Manager

CC: Representative James Kolbe, United States Congress
Senator Tim Bee, Arizona State Senate
Ray Carroll, Pima County Supervisor
Allan MacDonald, Green Valley Community Coordinating Council, Inc.
Nancy Freeman, Save the Santa Cruz Aquifer