

Ronnie P. Hawks  
AZ Bar No. 019122  
rph@jhc-law.com  
Russell R. Yurk  
AZ Bar No. 019377  
rry@jhc-law.com  
JENNINGS, HAUG & CUNNINGHAM, L.L.P.  
2800 N. Central Avenue, Suite 1800  
Phoenix, AZ 85004-1049  
Telephone: 602-234-7800  
Facsimile: 602-277-5595  
*Attorneys for SWVP-GTIS MR, LLC*

Christopher Kramer  
AZ Bar No. 013289  
CKramer@gustlaw.com  
Barbara U. Rodriguez-Pashkowski,  
AZ Bar No. 006958  
bpashkowski@gustlaw.com  
GUST ROSENFELD P.L.C.  
One E. Washington, Suite 1600  
Phoenix, AZ 85004  
Telephone: 602-257-7422  
Facsimile: 602-254-4878  
*Attorneys for the Town of Florence, Arizona*

**Before the Environmental Appeals Board  
United States Environmental Protection Agency  
Washington, D.C.**

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In the Matter Of Florence Copper, Inc.  
Florence Copper Project  
Underground Injection Control  
Program  
Permit No. R9UIC-AZ3-FY11-1

UIC Appeal No. \_\_\_\_\_

**Petition for Review of  
Underground Injection Control  
Permit Issued by USEPA Region 9  
for the Florence Copper Project**

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## I. Introduction

The Underground Injection Control (UIC) permit that USEPA Region 9 has issued to Florence Copper Inc. (FCI) authorizes a small Production Test Facility (PTF) intended to determine whether in-situ leach copper recovery is feasible and environmentally defensible at a site located in the center of the Town of Florence, Arizona. To Petitioners' knowledge, no similar project has ever been approved for an in-situ leach copper project, much less one in the middle of a growing town that expects to number its residents in the hundreds of thousands in the next few decades.

Petitioners' appeal of Region 9's permit is limited to the decision to leave in place a 20-year old aquifer exemption issued for a now-abandoned commercial copper in-situ leach copper recovery project that involved a much larger area than is encompassed by the PTF. That exemption covers a lateral area of over 400 acres, while the PTF well field consists of just 2.2 acres and purportedly will impact, at most, just a few acres outside the well field. Furthermore, that 20-year old exemption includes an aquifer that contains no producible minerals but that is a current and future drinking water source for the Town of Florence and its growing population. The decision to leave this exemption in place cannot be justified in light of the significant changes in the surrounding area since the exemption was approved. Region 9 found those changes sufficient to justify revocation of the 20-year old UIC permit for commercial operations and submittal of a new application for a new UIC permit covering only the 2.2-acre PTF well field. Region 9 has not explained why conditions supporting revocation of the UIC permit don't equally support reevaluation of the aquifer exemption. Indeed, in its UIC application, FCI explicitly acknowledged that an appropriate exemption area would be scaled down to the area of the actual project.

In other respects, we find that Region 9 has been responsive to Petitioner's prior comments to at least some degree. While we did not appreciate the deprecatory tone in Region 9's response to comments (i.e. references to public input as "assertions" that are "misleading"), the fact that useful permit changes have been made is noteworthy. We particularly applaud the requirement for

tracer tests prior to project start-up, the expanded monitoring requirements, and the clear limitation of EPA's approval as only applying to the PTF—and only then when substantial preconditions are met.

With this appeal, Petitioners are requesting that the Board remand the UIC permit back to Region 9 with direction to require a new application for an aquifer exemption that is focused on the impacts of the PTF, just as the UIC Permit focused exclusively on the PTF. With the proper analysis on remand, we believe that Region 9 has no choice but to approve an aquifer exemption that (1) is laterally limited to the PTF well field and a small buffer zone beyond that ends at the compliance monitoring wells already provided for in the UIC permit; and (2) is vertically limited to the Oxide Bedrock Zone, the only geologic unit for which an exemption can be justified. With these changes, Petitioners acknowledge that the remaining flaws in the UIC permit do not preclude its issuance.

## II. Standing and Jurisdiction

The Town of Florence and SWVP both filed written comments with Region 9 during the public comment period on the draft UIC permit for this project.<sup>1</sup> In their comments, each Petitioner joined in the comments of the other. The issues raised in this Petition were raised with Region 9 in Petitioners' written comments or are directly related to Region 9's response to public comments (and therefore were not reasonably ascertainable during the comment period).<sup>2</sup> Where applicable, Petitioners have cited in this document to specific pages of their written comments in which the legal and factual arguments supporting this Petition were originally raised.<sup>3</sup>

As certified in Section VIII below, this Petition is being served on the Clerk of the Environmental Appeals Board within 30 days after December 21, 2016, the date on which Petitioners were served with notice of the issuance of the UIC final

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<sup>1</sup> Attachment 13: Town of Florence, Comments to Region 9 re Draft UIC Permit (April 10, 2015); Attachment 14: SWVP, Comments to Region 9 re Draft UIC Permit (April 10, 2015).

<sup>2</sup> 40 C.F.R. §§ 124.19(a)(2) and (a)(4).

<sup>3</sup> *Id.* § 124.19(a)(4)(ii).



permit.<sup>4</sup> Therefore, Petitioners have met the criteria for filing this Petition and the Board has jurisdiction to hear this appeal.

### III. Standard of Review

The Board should grant review of the Final UIC Permit if it appears from this petition that Region 9's decision is based on a "finding of fact or conclusion of law which is clearly erroneous," or involves an "exercise of discretion or an important policy consideration [that] the Board should review in its discretion."<sup>5</sup> A finding is clearly erroneous if it is illogical, implausible, or lacks support in inferences that may be drawn from facts in the record.<sup>6</sup> The Board has held that to warrant review, a petitioner's allegations must be specific, substantiated by probative evidence, and demonstrate that the Region made a clear error of fact or law or abused its discretion.<sup>7</sup>

The Board's power of review "should be only sparingly exercised" and "most permit conditions should be finally decided at the determined at the [permit issuer's] level."<sup>8</sup> Petitioners cannot meet their burden by relying on previous objections or comments, but must demonstrate why Region 9's response to our objections is clearly erroneous or otherwise warrants review.<sup>9</sup> The Board's review is not limited to specific permit terms, but can review Region 9's decision in its entirety, including alleged substantive or procedural defects.<sup>10</sup>

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<sup>4</sup> Attachment 17: Email from Nancy Rumrill, Region 9 (December 21, 2016).

<sup>5</sup> 40 C.F.R. § 124.19(a); 45 Fed. Reg. 33,290, 33,412 (May 19, 1980); *In re Sunoco Partners Marketing & Terminals, LP*, UIC Appeal No. 05-01, slip. op. at 8 (EAB June 2, 2006).

<sup>6</sup> *Ibrahim v. U.S. Dep't of Homeland Security*, 835 F.3d 1048, 1058 (9th Cir. 2016).

<sup>7</sup> *In re Avon Custom Mixing Services, Inc.*, 10 E.A.D. 700, 708 (EAB 2002); *In re New England Planting Co.*, 9 E.A.D. 726, 737 (EAB 2001); *See also City of Pittsfield, Mass v. EPA*, 614 F.3d 7, 11 (1st Cir. 2010).

<sup>8</sup> 45 Fed. Reg. at 33,412; *In re Sunoco Partners Marketing & Terminals*, UIC Appeal No. 05-01, slip. op. at 8.

<sup>9</sup> 40 C.F.R. § 124.19(a); *In re LCP Chems.-NY*, 4 E.A.D. 661, 664 (EAB 1993).

<sup>10</sup> 40 C.F.R. § 124.19(a); USEPA, *Revisions to Procedural Rules to Clarify Practices and Procedures Applicable in Permit Appeals Pending Before the Environmental Appeals Board*, 78 Fed. Reg. 5281,

Based on the arguments outlined below, Petitioners have met their burden of showing that review is warranted and that rescission or remand of the Final UIC Permit is justified.

#### IV. Procedural and Factual Background

##### A. The Original UIC Permit and Aquifer Exemption

In 1996, Magma Copper Company (Magma) filed an application for a Type III Underground Injection Control permit and aquifer exemption with Region 9.<sup>11</sup> A UIC permit and aquifer exemption were issued in 1997 to BHP Copper, who had by that time acquired the project site from Magma.<sup>12</sup> The permit allowed BHP Copper to conduct underground injection of an acidic solution for copper extraction at the project site.<sup>13</sup>

Because BHP Copper and other mining entities owned most of the area for miles downgradient of the project site, there was little public interest in the 1997 Aquifer Exemption or UIC permit decision. A public hearing on March 6, 1997 was attended by just 37 people, 14 of whom are known to have been associated with BHP, ASARCO, or regulatory agencies.<sup>14</sup> Only 9 people submitted written

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5284 (January 25, 2013), and cases cited; USEPA, *Environmental Appeals Board Practice Manual*, at 43 n.44, 54, n.56 (August 2013).

<sup>11</sup> Attachment 24: Magma Copper Co., *Underground Injection Control Permit Application and Request for Minor Aquifer Exemption* (January 1996). Petitioners have not attached this five-volume application in its entirety, but have provided relevant excerpts as attachments, which are cited below. Similarly, Petitioners have provided relevant excerpts of other voluminous documents as attachments, rather than submit the entire document. The complete documents are part of the administrative record and Petitioners incorporate the complete documents by reference. Petitioners will be happy to provide the complete documents to the Board upon request.

<sup>12</sup> Attachment 1: Region 9, *Underground Injection Control Program Area Permit No. AZ396000001* (May 1, 1997) (hereinafter referred to as the "1997 UIC Permit"); Attachment 2: Region 9, *Underground Injection Control Aquifer Exemption for EPA Permit #AZ396000001* (May 1, 1997) (hereinafter referred to as the "1997 Aquifer Exemption").

<sup>13</sup> Attachment 1: 1997 UIC Permit, at 5.

<sup>14</sup> Attachment 3: Region 9 Public Hearing Materials (March 6, 1997).

or oral comments, 4 of whom worked for BHP Copper or agencies associated with the project.<sup>15</sup> The final UIC permit and 1997 Aquifer Exemption were issued less than 2 months after the public hearing.

BHP Copper's activities under the permit were limited to an approximately 90-day pilot test involving a single five-spot injection well field.<sup>16</sup> BHP Copper subsequently sold the property and the UIC permit was transferred to the new owner, Merrill Mining, L.L.C., in December 2001.<sup>17</sup> No further pilot testing or mining activities have been conducted at this site since 1998.

In 2001, Merrill decided to forego mining at the site in favor of residential and commercial development. Working with the Town of Florence, the property was annexed into the Town and was zoned for residential and commercial use. The Merrill Ranch Master Plan was approved by the Town Council in December 2003 and thereafter became part of the Town's General Plan. The General Plan was approved in the May 2010 vote by 71% of the Town's residents and development has proceeded in compliance with these plans. Today, the Anthem at Merrill Ranch residential community stands within 1.5 miles downgradient of FCI's proposed project. As of December 31, 2016, Pulte Homes has sold 2,484 homes out of total planned development of 8,040 homes. Pulte has invested approximately \$685 million in this development to date, and anticipates a total investment of approximately \$1.6 billion. Similar significant additional residential developments are planned for the area surrounding FCI's project north of the Gila River.<sup>18</sup>

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<sup>15</sup> Attachment 4: Region 9 Response to Comments (April 1997).

<sup>16</sup> Attachment 5: BHP Copper letter to ADEQ (April 6, 1998); Attachment 6: Florence Copper Inc., Underground Injection Control Permit Application, Attachment A, Exhibit A-1, at 12 (August 7, 2014) (hereinafter referred to as the "FCI Application").

<sup>17</sup> Attachment 20: Agreement between Florence Copper Inc. and Merrill Mining, L.L.C. (July 25, 2001); Attachment 21: BHP Copper Letter to Region 9 (July 26, 2001).

<sup>18</sup> Attachment 14: SWVP Comments, Appendix H and Figures H-1, H-2 and H-3; Attachment 40: Affidavit of Phil Turner (January 19, 2017); Attachment 38: Affidavit of Justin Merritt (January 18, 2017).

## B. The Subject UIC Permit

In 2009, Merrill declared bankruptcy. Late that year, U-1 Resources, a holding company and predecessor to FCI, acquired 1,200 acres of the former BHP Copper property that included the copper ore body, in a foreclosure proceeding. The property included 160 acres owned by the State of Arizona and leased to FCI by the State Land Department. U-1 also acquired the lease for this parcel. U-1 eventually became Curis Resources, which was acquired by Taseko Mines Ltd. in 2014. Curis Resources changed its name to FCI and Taseko is the parent company of FCI.<sup>19</sup>

FCI sought a transfer of the UIC permit in 2010.<sup>20</sup> Region 9 found that a transfer would be inappropriate, concluding that revocation and reissuance of the UIC permit was necessary because:

In addition to the information submitted by Curis, EPA has also considered the recent residential development (i.e., Anthem at Merrill Ranch) in the near vicinity of the area currently permitted for mining activity and the construction of several nearby drinking water production wells since the permit was issued in 1997. Due to the substantial lapse in time since the existing permit was issued, the absence of any permitted activity at the site over the last ten years, and the new information regarding residential development in the area, EPA has decided that revoking and reissuing the permit is appropriate.<sup>21</sup>

Region 9 required that FCI submit a new UIC permit application. Despite acknowledging the significant changes in the area that merited revocation of the 1997 UIC permit, Region 9 did not rescind, revoke, or reopen the 1997 Aquifer

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<sup>19</sup> Attachment 38: Affidavit of Justin Merritt (January 18, 2017).

<sup>20</sup> Attachment 10: Notification Regarding Transfer of UIC Permit (February 25, 2010); Attachment 11: FCI Letter to Region 9 (May 21, 2010).

<sup>21</sup> Attachment 7: Region 9, *Letter re Response to Request for Modification and Transfer of UIC Permit* (August 5, 2010).

Exemption. Moreover, Region 9 has consistently failed to explain why this reasoning doesn't apply equally to the aquifer exemption. Region 9 has never addressed the merits of a reduced aquifer exemption area, it has only defended its right not to reconsider or reduce the existing exemption.

FCI submitted a new UIC application for Region 9's consideration in March 2011. The application was for full-scale commercial operations of an in-situ leach copper mining facility encompassing approximately 212 acres on FCI's private land and the State Land lease parcel.<sup>22</sup> Meanwhile, FCI sought zoning changes from the Town of Florence that would allow mining on its privately-held lands. Its first request was withdrawn when it became clear that it would not be approved. In 2011, FCI submitted two separate applications for zoning amendments that would allow mining. Several public hearings were held, with the Florence Town Council ultimately rejecting the request in a unanimous vote.<sup>23</sup>

With its zoning changes rejected and proposed mining being illegal on its privately-held property, FCI asked Region 9 to focus solely on its proposed pilot test of in-situ leach operations, which would be conducted on the State Land lease parcel that was not subject to local zoning laws.<sup>24</sup> It submitted a revised application in December 2013<sup>25</sup> and another revised application the following year that were focused on the proposed Pilot Test Facility (PTF).<sup>26</sup>

Region 9 issued a draft UIC permit for the PTF in December 2014.<sup>27</sup> A

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<sup>22</sup> Attachment 8: FCI, *Underground Injection Control Permit Application*, Attachment B, at 2 (March 25, 2011) (excerpt only of full application).

<sup>23</sup> Attachment 14: SWVP Comments, Appendix H, at H-9 and H-10; Attachment 22: Town of Florence Resolution No. 1324-11 (December 19, 2011).

<sup>24</sup> Attachment 9: FCI, *Letter to Region 9 re Application for Modification and Transfer of UIC Permit* (May 24, 2012).

<sup>25</sup> Attachment 23: FCI UIC Application (December 2013).

<sup>26</sup> Attachment 6: FCI UIC Application (August 7, 2014). Petitioners understand that the August 7, 2014 revised UIC application provided as Attachment 6 to this petition is the one relied on by Region 9 for the decision at issue here.

<sup>27</sup> Attachment 12: Region 9, Public Notice, Statement of Basis, and Draft UIC Permit No. R9UIC-

public hearing was held and Petitioners submitted written comments to Region 9 during the public comment period.<sup>28</sup> Region 9 issued the final UIC permit on December 20, 2016,<sup>29</sup> along with its response to public comments.<sup>30</sup>

### C. The Petitioners

The Town of Florence is a political subdivision of the State of Arizona located sixty miles southeast of Phoenix. Dating back to 2002, the Town of Florence began the process of annexing approximately 8,000 acres, including FCI's site. The Town passed Ordinance No. 354-03 in 2003, formally extending the Town's corporate limits to include the property where FCI's proposed mining operations would occur. The land was annexed, zoned, and planned for residential and commercial development at the request of FCI's predecessor in interest after it abandoned plans to attempt in situ leach extraction of copper at the site. Thus, FCI's direct predecessor is responsible for zoning and planning changes that made development of this area possible and make the continued reliance on the 1997 Aquifer Exemption untenable. The Town's residents and leaders have since repeatedly rejected mining within the Town's limits because mining is incompatible with the Town's plans for residential and commercial development in this area. FCI's proposed project sits in the geographic center of the Town's municipal boundaries.<sup>31</sup>

SWVP is a Delaware company doing business in Arizona. SWVP is a real estate development company that owns land in and around the Town of Florence, near FCI's property. SWVP purchased this property in two separate transactions in December 2009 and March 2010 and currently owns 4,376 acres in this area. This land is zoned "Planned Use Development" for the Merrill Ranch

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AZ3-FY11-1 (December 2014).

<sup>28</sup> Attachment 13: Town of Florence, Comments to Region 9 re Draft UIC Permit (April 10, 2015); Attachment 14: SWVP, Comments to Region 9 re Draft UIC Permit (April 10, 2015).

<sup>29</sup> Attachment 15: Region 9, Underground Injection Control Program Area Permit No. R9UIC-AZ3-FY11-1 (December 20, 2016) ("Final UIC Permit").

<sup>30</sup> Attachment 16: Region 9, Response to Comments (December 20, 2016).

<sup>31</sup> Attachment 14: SWVP Comments, Appendix H, Figure H-1.

Master Planned Community, zoning that provides for a mixture of residential and commercial uses.<sup>32</sup> SWVP proposes to develop a master-planned community composed of mixed residential and commercial development.<sup>33</sup>

#### D. Hydrogeology

Hydrogeologic strata in the Florence area can generally be divided into the Upper Basin Fill Unit (UBFU), Middle Fine Grained Unit (MFGU), Lower Basin Fill Unit (LBFU), and bedrock comprised of an Oxide Bedrock Zone and Sulfide Bedrock Zone.<sup>34</sup> The aquifer is saturated into the UBFU, but drinking water wells are not screened in the UBFU due to nitrates, Total Dissolved Solids, and other contaminants. Local drinking water wells are screened in the LBFU, which supplies high-quality groundwater water suitable for drinking water.<sup>35</sup> The LBFU extends over and downgradient of the Oxide Bedrock Zone targeted by FCI and is hydrologically connected to the Oxide Bedrock Zone, with no hydrogeologic barriers between the two. In fact, just downgradient of the PTF well field, the Oxide Bedrock Zone drops off and the LBFU becomes much deeper, forming an ideal location for future drinking water production wells.<sup>36</sup>

The LBFU is the only feasible source of drinking water for the growing Town of Florence. No other safe and economic sources of water are currently available. The aquifer also is the primary source of drinking water for future residents in this rapidly-growing city.<sup>37</sup> Contamination of this aquifer would be

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<sup>32</sup> Attachment 38: Affidavit of Justin Merritt (January 18, 2017).

<sup>33</sup> *Id.*, Figures H-1 and H-7.

<sup>34</sup> Attachment 6: FCI Application, Attach. A-Area of Review, Fig. A-1; *id.* Exhibit A-1, Hydrologic Study Part A, Groundwater Flow Model, at 12.

<sup>35</sup> Attachment 13: Town of Florence Comments, attached Letter from Southwest Ground-water Consultants, Inc. re Summary of Previous Work Completed for the Town of Florence, at 1-2 (April 10, 2015).

<sup>36</sup> Attachment 37: Affidavit of Dr. Lee Wilson, Exhibit D (January 18, 2017); Attachment 6: FCI Application, Attach. D-Maps & Cross Sections of USDWs, Fig. D-1, D-2, and D-3; Attachment 14: SWVP Comments, Attachment F, at F-17, Figure F-4.

<sup>37</sup> Attachment 13: Town of Florence Comments, attached Letter from Southwest Ground-water Consultants, Inc. re Summary of Previous Work Completed for the Town of Florence, at 1-2

devastating to the Town and its residents.

## **V. Issues Presented for Review**

1. Was Region 9 clearly erroneous in its decision to rely on the 20-year old, 400-acre 1997 aquifer exemption issued to BHP Copper for commercial operations in support of a new UIC permit application solely for a 2.2-acre PTF?
  - a. Was Region 9 clearly erroneous in its decision not to protect the entirety of the LBFU surrounding the pilot test site and downgradient under the SDWA as a current and future source of drinking water?
  - b. Was Region 9 clearly erroneous in its conclusion that the LBFU should be exempted from SDWA protections because it is purportedly mineral producing?
  - c. Was Region 9 clearly erroneous in its conclusion that a 400-acre aquifer exemption is appropriate for a 2.2-acre PTF?
2. As a matter of public policy and in light of the goals of the SDWA, is Region 9's decision to leave the 1997 Aquifer Exemption in place justified, given the importance of the LBFU to this desert area as a drinking water source?

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(April 10, 2015).



## VI. Argument

### A. The Aquifer Exemption Standards

Applicable statutes and regulations prohibit any injection into an aquifer that “allows the movement of fluid containing any contaminant into underground sources of drinking water” if the presence of that contaminant will violate primary drinking water standards or adversely affect human health.<sup>38</sup>

There is no dispute that the activities under this UIC permit have the potential to impact the LBFU, which supplies a public water system today and contains a sufficient quantity of ground water to supply a public water system in the future. The LBFU contains fewer than 10,000 mg/l dissolved solids and is, therefore, is an Underground Source of Drinking Water (USDW) that is protected by the water quality standards and other requirements of the Safe Drinking Water Act (SDWA).<sup>39</sup> Indeed water in the LBFU is potable and fully useable for public water supply purposes. SDWA protections include a prohibition on “underground injection which endangers drinking water sources.”<sup>40</sup> To issue a Class III UIC permit to inject acid in-situ leach solutions into the aquifer, Region 9 must also issue a defensible exemption from SDWA protections for the aquifer or a portion of the aquifer impacted by the project.<sup>41</sup>

To exempt an aquifer or portion of an aquifer from SDWA protections, Region 9 must determine that:

- the aquifer does not currently serve as a source of drinking water; and
- the aquifer cannot now or will not in the future serve as a source of drinking water because the aquifer:
  - is mineral producing;
  - is situated too deep to make recovery economically or technologically practical;

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<sup>38</sup> 42 U.S.C. § 300h(d)(2); 40 C.F.R. §§ 144.1(g), 144.12(a).

<sup>39</sup> 40 C.F.R. § 146.3.

<sup>40</sup> 42 U.S.C. § 300h(b)(1).

<sup>41</sup> 40 C.F.R. § 146.4.

- is too contaminated to be used for human consumption;
- is located over an area subject to subsidence of collapse; or
- contains totals dissolved solids at proscribed levels and is not reasonably expected to supply a public water system.<sup>42</sup>

**B. The UIC Permit relies upon the 1997 Aquifer Exemption as the basis for allowing FCI's acid mining solution to contaminate the LBFU.**

The Final UIC Permit authorizes FCI to construct and operate 4 in-situ injection wells, 9 recovery wells, 7 observation wells, and 4 multi-level sampling wells within the PTF well field.<sup>43</sup> Acid mining solutions will be injected into the aquifer through the four injection wells and copper-bearing lixiviant will be extracted through the recovery wells. The well field is approximately 300 feet in diameter and covers approximately 2.2 acres.<sup>44</sup>

FCI is prohibited from injecting acid mining solutions into the top 40 feet of the Oxide Bedrock Zone.<sup>45</sup> Purportedly, this 40-foot buffer between the Oxide Bedrock Zone and LBFU will help prevent vertical migration of mining solutions into the LBFU.<sup>46</sup> Nevertheless, the Final UIC Permit allows injected mining solutions to migrate vertically into the LBFU. The permit establishes compliance points at 8 monitoring wells located beyond the PTF well field's observation wells.<sup>47</sup> It is reasonably foreseeable that solutions injected into the Oxide Bedrock could move vertically into the LBFU before being detected by FCI's observation wells (which are not UIC compliance points) or the UIC compliance monitoring

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<sup>42</sup> *Id.*

<sup>43</sup> Attachment 15: Final UIC Permit, at 9, Section C(1).

<sup>44</sup> *Id.* at 10; Attachment 6: FCI Application, Attachment Q, Exhibit Q-1, at 2.

<sup>45</sup> Attachment 15: Final UIC Permit, at 14, Section C(7).

<sup>46</sup> Attachment 6: Curis Resources (Arizona) Inc., *Application to Amend UIC Permit No. AZ396000001*, Attachment S, Exhibit S-2, *NI-403 Technical Report Pre-Feasibility Study*, at 185 (March 28, 2013).

<sup>47</sup> Attachment 15: Final UIC Permit, at 23, Section F; Attachment 18: Final UIC Permit, Appendix A, Figure P-1 (2014).

wells. This was confirmed by FCI's own groundwater model.<sup>48</sup> Nothing in the Final UIC Permit prohibits such migration.

Region 9 allows this migration into the LBFU only because of the 1997 Aquifer Exemption, which exempted the bottom 200 feet of the LBFU (or the base of the MFGU, whichever is lower) from SDWA requirements.<sup>49</sup> Magma Copper's original UIC application for this site included an application for an aquifer exemption because both approvals were necessary for the Type III injection wells required for this type of mining. The 1997 UIC Permit and 1997 Aquifer Exemption were issued in tandem because the exemption was necessary for the activities allowed in the permit. Similarly, the subject UIC permit for the PTF should have been accompanied by a new aquifer exemption. FCI has not applied for a UIC permit to allow commercial mining across this site, it only applied to operate a 2.2-acre test facility. Region 9's and FCI's reliance on a 20-year old aquifer exemption is unreasonable and technically indefensible because that exemption has nothing to do with FCI's project.

**C. The LBFU is a current and future drinking water source that should be excluded from the aquifer exemption for this project.<sup>50</sup>**

The LBFU downgradient of and underlying FCI's property is a USDW that cannot be exempted because it currently serves as a source of drinking water and will serve as a drinking water source in the future.<sup>51</sup> Region 9 exempted a portion of the LBFU from SDWA standards in 1997 because the LBFU at the project site and for miles downgradient was not then a source of drinking water and there were no suggestions at the time that it would become a future source. Conditions in the last 20 years have changed dramatically, such that LBFU is now a source of drinking water for a growing city. The area at and around FCI's project is planned for production drinking water wells in the future. Indeed, FCI itself has

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<sup>48</sup> See generally Attachment 6: FCI Application, Attachment A, at 9-11.

<sup>49</sup> Attachment 1: 1997 Aquifer Exemption, at 1, ¶ 2.

<sup>50</sup> Petitioners raised this issue in their comments on the draft permit. See Attachment 14: SWVP Comments, Appendix F.

<sup>51</sup> 40 C.F.R. § 146.4.

touted the project site as being capable of supporting residential and commercial development, with their attendant drinking water needs, when mining is completed. Under these conditions, the LBFU cannot be exempted under applicable regulatory criteria.

**1. The 1997 Aquifer Exemption is based on circumstances that no longer exist.**

When Magma Copper submitted its application for the 1997 Aquifer Exemption in January 1996, the site was not within an incorporated municipality and the closest residential development hydrologically downgradient (to the north, northwest, and west) of the project site was approximately 10 miles away. Magma controlled almost 10,000 acres, much of it downgradient of the project site.<sup>52</sup> Within Magma's proposed exemption boundary, there were only 2 private landowners (Magma and ASARCO, Inc., another mining company) and no wells of any type. The State Land Department owned land leased by Magma within the exemption boundary, but there were no wells on that land. An irrigation district operated 2 irrigation wells within the exemption boundary, but those wells were to be moved before operations began.<sup>53</sup> The nearest property not owned by Magma, ASARCO, or the State Land Department was nearly three miles downgradient.<sup>54</sup> Thus Magma could state with confidence that the downgradient area adjoining the project site would not be used as a future drinking water source.<sup>55</sup> And a large exemption area made some degree of sense

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<sup>52</sup> Attachment 24, Magma Copper Company, *Underground Injection Control Permit Application, Form 4 and Request for Minor Aquifer Exemption*, Vol. 1, at 2-2 (January 1996) ("Use of irrigation wells that could potentially interfere with leaching operations will either be closed or relocated to other areas of Magma's 10,000-acre property.") (emphasis added).

<sup>53</sup> *Id.* at 2-5.

<sup>54</sup> Attachment 25, Magma Copper Co., Sheet 1.1-1(I), Florence Project Area Map (depicting Magma's then-current landownership).

<sup>55</sup> Attachment 24, Magma Copper Company, *Underground Injection Control Permit Application, Form 4 and Request for Minor Aquifer Exemption*, Vol. 1, at 2-2 (January 1996) ("Magma controls the uses of the water within the proposed boundary. The project site and the few homes associated with Magma's drilling and farming operations use imported bottled water and not well water for drinking due to excessive nitrate levels in the water. The area will not be used for drinking water in the future as Magma owns or controls the land.").

given the then-large scale of the project.

Region 9 relied on these conditions in approving the 1997 Aquifer Exemption. It had no concern about then-current or future drinking water sources because there were no drinking water wells that would be impacted by mining in 1997. Nor could drinking water wells be constructed downgradient during the life of the proposed mine because Magma owned everything for miles downgradient, a fact clearly relied upon by Region 9:

There are no drinking water wells, public or private, downgradient from the mine site. Future downgradient wells are also controlled as BHP Copper owns about 2-3 miles of land to the north and west (downgradient) of the site. . . . Due to the location of the proposed site and the location of the existing wells, even with no controls, impacts to existing drinking water wells would be highly unlikely.”<sup>56</sup>

Today, Region 9’s only response to these significant changes was that that the 1997 Aquifer Exemption met regulatory criteria and these changes do not justify review of the exemption. Region 9 then indicated it conducted an informal review of the exemption “out of an abundance of caution” and found nothing to justify revocation or modification of the exemption.<sup>57</sup> Nowhere does Region 9 ever explain why, even if there is no mandate to revise the exemption, doing so would not be good policy and practice. As discussed in more detail below, Region 9’s position is untenable.

## **2. The Regional LBFU is today a drinking water source.**

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<sup>56</sup> Attachment 26, Region 9, *Memorandum re Request to issue a UIC permit and aquifer exemption to BHP Copper* (April 30, 1997) (“There are no drinking water wells, public or private, downgradient from the project site. Future downgradient wells are also controlled as BHP Copper owns about 2-3 miles of land to the north and west (downgradient) of the site. . . . Due to the location of the proposed site and the location of the existing wells, even with no controls, impacts to existing drinking water wells would be highly unlikely.”).

<sup>57</sup> Attachment 16: Region 9 Response to Comments, at 14-15.

Magma's 10,000 acres were sold off in various parcels years ago. FCI's property is now inside the municipal limits of the Town of Florence, which has annexed most of Magma's former landholdings. FCI owns and leases less than 1,350 acres around its proposed project site, and that land is now zoned for residential and commercial uses, prohibiting mining. Privately-owned land targeted for residential and commercial development is less than one-quarter mile downgradient and a major residential development has already been built about a mile downgradient.

The only practical source of drinking water for all of this existing and planned development is groundwater from the LBFU. Regionally, drinking water wells have already been constructed in the LBFU and within Magma's former landholdings to service homes and business constructed in the last 10 to 15 years. The Town of Florence projects drinking water demand of 33,310 acre-feet per year by 2025.<sup>58</sup> This water will be withdrawn from the Town's four existing wells and 29 new wells proposed for the area. The 29 proposed wells will withdraw water from the LBFU, with several planned for locations immediately adjacent to the project site.<sup>59</sup> The owners of the Merrill Ranch development also plan to construct numerous drinking water wells just to the west and downgradient of FCI's project site.<sup>60</sup>

Region 9's response to the reasonably foreseeable development of new drinking water wells in the area surrounding the project site to reiterate the irrelevant fact that local zoning ordinances don't replace USEPA's responsibilities under the SDWA and that surrounding drinking water sources will be protected "regardless of surface land use and ownership."<sup>61</sup> Neither response explains why Region 9 believes that massive new pumping from new projection wells will have no impact on, or be impacted by, the project's ability to

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<sup>58</sup> Attachment 13: Town of Florence Comments, attached Letter from Southwest Ground-water Consultants, Inc. re Summary of Previous Work Completed for the Town of Florence, at 1 (April 10, 2015).

<sup>59</sup> *Id.* at 2-3, and Figure 2.

<sup>60</sup> Attachment 14: SWVP Comments, Attachment H, Figure H-4.

<sup>61</sup> Attachment 16: Region 9 Response to Comments, at 20.

maintain hydraulic control, contain contaminants, and restore aquifer conditions at closure.

Region 9 also argued that it was justified in exempting such a large area of the aquifer because groundwater in the project's Area of Review "would take at least 127 to 211 years to travel the distance to the nearest potential (inactive) drinking water well" located approximately 1.2 miles downgradient of the PTF well field.<sup>62</sup> This calculation fails to account for the substantial acceleration in the rate of groundwater flow that will occur as drinking wells near the project are developed in the foreseeable future. Nor does it consider the reduced travel times to newly-constructed wells that are reasonably foreseeable in the area surrounding this project.<sup>63</sup>

EPA also argued that its calculation of travel times is conservative because it ignores the tortuosity of pore spaces.<sup>64</sup> In fact, as any competent groundwater hydrologist knows, due to effects of dispersion the velocity distribution in a real-world aquifer includes a substantial component of flow that moves *faster* than the nominal averaged value. In a fractured aquifer such as the Oxide Bedrock Zone, relatively rapid transport rates are a certainty due to short-circuits in the flow system—as demonstrated by observations in the BHP pilot project.<sup>65</sup>

The deep section of LBFU sediments immediately west of FCI's ore body is a prime location for future water supply wells.<sup>66</sup> As Florence and the surrounding areas grow, existing well fields are projected to dry up and demand will outstrip existing well volumes, mandating new pumping in and around FCI's project.<sup>67</sup> These undisputed facts demonstrate that the regional LBFU is a

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<sup>62</sup> Attachment 16: Region 9 Response to Comments, at 15.

<sup>63</sup> Attachment 37: Affidavit of Dr. Lee Wilson (January 18, 2017).

<sup>64</sup> Attachment 16: Region 9 Response to Comments, at 15.

<sup>65</sup> Attachment 37: Affidavit of Dr. Lee Wilson (January 18, 2017).

<sup>66</sup> See Attachment 14: SWVP Comments, Attachment F, at F-17, Figure F-4 and Attachment H, Figure H-4.

<sup>67</sup> Attachment 13: Town of Florence Comments, attached Letter from Southwest Ground-water Consultants, Inc. re Summary of Previous Work Completed for the Town of Florence, at 3 (April

current drinking water source and the LBFU directly around the project site is a future drinking water source that cannot be exempted from SDWA protections.

**3. FCI's plans indicate that the aquifer directly beneath this site can be used for drinking water in the future.<sup>68</sup>**

Even the LBFU immediately below FCI's project site does not satisfy the aquifer exemption requirements. To be exempted, this portion of LBFU cannot currently serve as a source of drinking water and it must not in the future serve as a source of drinking water.<sup>69</sup> But FCI's property will, according to FCI itself, be used for residential and commercial uses once mining is complete. Both Region 9 and FCI have claimed that groundwater quality beneath the PTF well field can and will be restored to MCLs. This necessarily means it also could be used as a source of drinking water in the future.

FCI has given multiple presentations to the public and its shareholders in which it touts post-mining reuse of the property. For example, in 2010 FCI asserted that after mining the site would be returned to "pre-development or better conditions" and that "the land can be used to support agriculture, residential or community amenities."<sup>70</sup> A video produced by FCI and still available on the Internet similarly asserts that the site will be available for use as "ballparks, gardens, hiking trails and any other community assets."<sup>71</sup> If this land

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10, 2015).

<sup>68</sup> This argument was made in SWVP's comments. Attachment

<sup>69</sup> 40 C.F.R. § 146.4. The regulation also allows an exemption if: (1) the aquifer is not currently a source of drinking water and TDS content is more than 3000 mg/l and less than 10,000 mg/l; and (2) the aquifer is not reasonably expected to supply drinking water in the future. There is no dispute that this second standard does not apply to the high-quality water in this aquifer.

<sup>70</sup> Attachment 32: Florence Copper Project, *Community Presentation*, at 7 and 21 (Fall/Winter 2010); see also Attachment 33: Florence Copper Project, *A Discussion with the Town of Florence*, at 2 and 15 (August 2, 2010) ("Post operations the land will be used to support agriculture, residential and/or community amenities").

<sup>71</sup> *Curis Resources Ltd. – Changing the Way Copper is Made*, at 2:50+, available at <https://www.youtube.com/watch?v=a1JtMg6l8Yo&feature=youtu.be> (last visited January 14, 2017).



will be absorbed into the master-planned community after closure, then the water beneath this land will be available for public and private uses. Taking FCI at its word, the aquifer beneath FCI's property could serve as a source of drinking water in the future. Therefore, the exemption criteria of 40 C.F.R. § 146.4 cannot be met and no exemption can be given.

Petitioners could not find a response to these undisputed facts in Region 9's response to public comments. This may be because, as discussed in more detail immediately below, Region 9's entire approach to this issue has been to focus on existing wells, rather than the aquifer and future foreseeable uses, and to stress its right to retain the exemption rather than on the common-sense value of changing it. Such a focus is improper under the criteria applicable to aquifer exemptions.

**4. The exemption appears to be improperly based upon protecting existing wells, instead of protecting the drinking water aquifer.**

The SDWA states that "Underground injection endangers drinking water sources if such injection may result in the presence in underground water which supplies or can reasonably be expected to supply any public water system of any contaminant, and if the presence of such contaminant may result in such system's not complying with any national primary drinking water regulation or may otherwise adversely affect the health of persons."<sup>72</sup> The statute clearly focuses on the impact of underground injection on groundwater in the aquifer, not individual supply wells. This makes perfect sense, because supply wells have a limited lifespan, portions of an aquifer can be pumped dry, and community demand varies temporally and geographically over time.

Courts have interpreted the SDWA broadly to protect aquifers, not just existing wells.<sup>73</sup> To further the intent of the statute, courts have noted that the

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<sup>72</sup> 42 U.S.C. § 300h(d)(2).

<sup>73</sup> *Western Nebraska Res. Council v. EPA*, 793 F.2d 194, 195 (8th Cir. 1986); *Phillips Petroleum Co. v. U.S. Environmental Protection Agency*, 803 F.2d 545, 560 (10th Cir. 1986).

Act's protections extend not only to current underground sources of drinking water, but also potential future sources and USDWs that are adjacent to an exempted aquifer.<sup>74</sup> SDWA standards cannot be relaxed to accommodate mineral production because "the clear and overriding concern" of Congress was to assure the safety of current and future sources of drinking water.<sup>75</sup>

Similarly, the UIC regulations focus on whether "an aquifer or a portion thereof" meets the exemption standards.<sup>76</sup> Nowhere in the SDWA or UIC regulations is the exemption defined by the location of drinking water wells. The definition of a USDW in 40 C.F.R. § 146.3 "does not mandate that the formation currently be used as a producing water source (*i.e.*, it does not have to have drinking water wells completed into it)."<sup>77</sup>

This distinction seems to have been lost in drafting the permit. Region 9 erroneously focused on drinking water well locations rather than the USDW. Most of its response on this issue addresses existing drinking water wells, relying on a 2014 memorandum to support the unremarkable proposition that "current" drinking water sources include water currently being withdrawn and water that will be withdrawn in the future by existing wells.<sup>78</sup> But that memorandum also notes that work is ongoing to better define the criteria relating to future sources of drinking water and states that "EPA Regions will need to document all reasons and factors they considered in a Statement of Basis of decision memo when making the final aquifer exemption decision."<sup>79</sup> Region 9 has not done this with regard to analysis of the entire LBFU as a future drinking water source. Its analysis of the LBFU as a future source was limited to recitation of its untenable

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<sup>74</sup> *Phillips Petroleum Co.*, 803 F.2d at 560; *Western Nebraska Res. Council*, 793 F.2d at 196.

<sup>75</sup> *Phillips Petroleum Co.*, 803 F.2d at 560.

<sup>76</sup> *See, e.g.*, 40 C.F.R. § 146.4.

<sup>77</sup> USEPA, *Introduction to the Underground Injection Control Program*, at 10 (January 2003); *see also* USEPA, *Introduction to UIC Permitting*, at 1-53 (April 2002).

<sup>78</sup> Attachment 16: Region 9 Response to Comments, at 15 (citing Peter Grevatt, Director, EPA Office of Ground Water and Drinking Water, Memorandum (July 24, 2014)).

<sup>79</sup> Attachment 27: Peter Grevatt, Director, EPA Office of Ground Water and Drinking Water, Memorandum, at 3 (July 24, 2014).

position that the LBFU is mineral producing.<sup>80</sup>

As discussed previously, Region 9's focus is to justify its reliance on the 1997 Aquifer Exemption through the purported fact that existing drinking water wells are located further from the PTF project than water is likely to travel during the life of the PTF wells. Such reasoning has no support in the UIC statutes and regulations. The location of existing drinking water wells is irrelevant to determining whether underground injection will impact a underground source of drinking water. Region 9's focus turns the UIC program on its head to favor mineral production over groundwater protection. Such an outcome is clearly erroneous because it lacks legal support, devalues the importance of this aquifer, and is illogical given the conditions existing in this area today.

## 5. Conclusion

Region 9 has revoked the previous UIC permit issued to BHP Copper in 1997 and issued a new permit to FCI for the PTF only. Region 9 stated that revocation and reissuance were necessitated by changed conditions in the area surrounding the project. But, at FCI's request, Region 9 has let stand the 20-year-old aquifer exemption that supported the now-revoked 1997 UIC permit (the "1997 Aquifer Exemption"). That aquifer exemption was based upon vastly different conditions in the surrounding area and was issued for commercial operations across more than 200 acres. No basis exists for continuing the 1997 Aquifer Exemption with respect to this 2.2-acre pilot test.

Region 9 should have revoked the 1997 Aquifer Exemption. It should have reevaluated the exemption in light of current conditions and limited the exemption to an area required for the PTF, which is the only facility allowed by the UIC Permit. Region 9's failure to do so, and the insistence on leaving the 1997 Aquifer Exemption in place, violates the law and EPA policy and is clearly erroneous.

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<sup>80</sup> Attachment 16: Region 9 Response to Comments, at 15.

**D. The LBFU is not mineral producing and is separate from the copper-bearing Oxide Bedrock Zone targeted by FCI.<sup>81</sup>**

An aquifer can be exempted if it cannot currently or in the future serve as a drinking water source because it is mineral producing.<sup>82</sup> Region 9 purportedly “documented” that the LBFU is not a potential future drinking water source because of commercially producible minerals.<sup>83</sup> But the LBFU contains no producible minerals, only good-quality groundwater relied upon by the Town of Florence and its residents. Region 9 justifies inclusion of the LBFU only through the tortured logic that the copper-bearing Oxide Bedrock Zone and the LBFU are hydrologically connected, such that both formations are part of the aquifer that it exempted.<sup>84</sup> That hydrologic connection should be considered a strong reason to protect the LBFU, since mining contaminants can easily flow from the Oxide Bedrock Zone into what is now and will be a drinking water source. Using it to support an exemption that eliminates SDWA protections places mining interests over drinking water needs, with no justification for doing so.

Region 9 also seems to find it relevant that plans to use the LBFU for future drinking water use were developed after the 1997 Aquifer Exemption was in place.<sup>85</sup> Paradoxically, Region 9 makes this point in support of its decision to leave the exemption in place, rather than as a reason to reevaluate its 1997 decision. Apparently, Region 9 believes that its aquifer exemption decision trumps local land use decisions forever. Such a position does not comport with the SDWA’s emphasis on the protection of drinking water sources or federal deference to state and local water law and water planning. As a matter of policy, Region 9’s position should be rejected.

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<sup>81</sup> Petitioners raised this issue in their comments on the draft permit. *See* Attachment 14: SWVP Comments, at 10-11 and Appendix F, at F-2.

<sup>82</sup> 40 C.F.R. § 146.4(b).

<sup>83</sup> Attachment 16: Region 9 Response to Comments, at 16.

<sup>84</sup> *Id.*, at 17.

<sup>85</sup> *Id.*

**1. Region 9 has not justified treating any portion of the LBFU as a “mineral producing” part of the same “aquifer” as the Oxide Bedrock Zone.**

The LBFU does not contain commercially-producible copper and neither FCI nor Region 9 have even attempted to demonstrate otherwise. But to justify including up to 200 feet vertically of the LBFU within the aquifer exemption, Region 9 asserts that this portion of the LBFU and the Oxide Bedrock Zone are part of the same “aquifer” because they are hydrologically connected. Why the hydrologic connection mysteriously stops as 200 feet is never explained. Region 9 then argues that because the Oxide Bedrock Zone contains copper, it determined in 1997 that the criteria in 40 C.F.R. § 146.4(b)(1) were met.<sup>86</sup>

Region 9 has asserted that BHP demonstrated that the entire exempted area, including the LBFU, contains “commercially producible quantities of mineralized copper.”<sup>87</sup> Nothing in the record supports this conclusion. In its original 1996 permit application, Magma Copper requested that the aquifer exemption encompass only the “orebody” — the Oxide Bedrock Zone between the bedrock Sulfide Zone and the LBFU.<sup>88</sup> In response to a Region 9 request to depict the vertical extent of the exempted area just months later, BHP Copper proposed exempting everything within 200 feet above the Oxide Bedrock Zone, although nothing in the record explains BHP’s justification for doing so.<sup>89</sup> Certainly, Region 9 has pointed to nothing in the record, and Petitioners have found nothing, indicating that BHP demonstrated that the LBFU contained producible copper. In the Statement of Basis for BHP’s draft UIC permit, Region 9 accepted BHP’s proposal, even though it expressly stated that the UBFU, MFGU and LBFU “do not contain commercially-producible quantities of copper.”<sup>90</sup> Nothing

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<sup>86</sup> Attachment 16: Region 9 Response to Comments, at 17.

<sup>87</sup> Attachment 12: Region 9, Statement of Basis, at 14 (December 2014).

<sup>88</sup> Attachment 24: Magma Copper Company, *Underground Injection Control Permit Application, Form 4 and Request for Minor Aquifer Exemption*, Vol. 1, at 2-2 and Fig. 2.1-1 (January 1996).

<sup>89</sup> Attachment 28: Brown and Caldwell Letter to Region 9 and ADEQ providing revised responses to agency comments on behalf of BHP Copper, Table 3, Part II, Comment 2 (Sept. 28, 1996).

<sup>90</sup> Attachment 29: Region 9, *Statement of Basis for a Draft Permit and Proposed Aquifer Exemption*, at

in the record explains Region 9's basis for exempting a portion of the LBFU despite this admission.

There can be no dispute that the LBFU is not mineral producing. FCI itself has made no showing that the LBFU is mineral producing. In its UIC application, FCI stated that it was not aware of any change in "aquifer conditions or planned operations" that would require the 1997 Aquifer Exemption to be rescinded or modified (ignoring changes in local land use that merited rescission). FCI cited to its economic assessment of the project for a delineation of the in-situ copper recovery zone.<sup>91</sup> That document stated that the "source of copper for this process is an oxidized copper mineralized body that is covered by 370 to 410 feet of alluvial sediments."<sup>92</sup> The LBFU is part of that alluvial sediment layer—not the oxidized copper mineralized body.<sup>93</sup>

Nor has FCI treated the LBFU and Oxide Bedrock Zone as a single aquifer unit. FCI's groundwater models all treated the LBFU as separate from the Oxide Bedrock Zone.<sup>94</sup> In its hydrogeologic study in support of its UIC application, FCI described the hydrogeology underlying the PTF site as being divided into "three distinct water bearing hydrostratigraphic units referred to as the UBFU, LBFU, and the Bedrock Oxide Unit."<sup>95</sup> And FCI has acknowledged the need for a 40-foot "exclusion zone" in the uppermost part of the Bedrock Oxide Unit to buffer impacts to the LBFU.

Moreover, Arizona agencies who are intimately familiar with this State's

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7 (February 1997).

<sup>91</sup> Attachment 6: FCI, *Application to Amend UIC Permit No. AZ396000001*, Attachment S, at 2 (August 7, 2014).

<sup>92</sup> *Id.*, Attachment S, Exhibit S-2, *NI-403 Technical Report Pre-Feasibility Study*, at 184 (March 28, 2013).

<sup>93</sup> *Id.* at 90-91 and Table 7-1; Attachment 37: Affidavit of Dr. Lee Wilson (January 18, 2017).

<sup>94</sup> Attachment 6: FCI, *Application to Amend UIC Permit No. AZ396000001*, Attachment A, at 4 (August 7, 2014).

<sup>95</sup> *Id.*, Attachment A, Exhibit A-1, *Hydrologic Study Part A, Groundwater Flow Model*, at 12 (March 1, 2012).

hydrogeology treat the LBFU as separate from the copper-bearing bedrock below. The Arizona Department of Water Resources considers the Oxide Bedrock Zone to be hydrologic bedrock, as opposed to the overlying alluvium that is formed in part by the LBFU.<sup>96</sup> And the Arizona Department of Environmental Quality clearly considers the LBFU as a distinct aquifer—and a vital source of drinking water—because the Aquifer Protection Permit issued by ADEQ prohibits FCI from allowing any contaminants into the LBFU, even within the PTF well field.<sup>97</sup>

Although Region 9 claims that it decided in 1997 that 200 vertical feet of the LBFU could be exempted because it was part of a mineral producing aquifer, Region 9 cited to nothing in the administrative record for the 1997 Aquifer Exemption decision to support this statement, and Petitioners have found nothing in the administrative record to support it. In the past, Region 9 has acknowledged, with respect to this same site, that parts of the aquifer outside of the ore body itself cannot be exempted.<sup>98</sup> FCI certainly has not argued that the LBFU should be treated as mineral-producing, as it relied exclusively on the existing record created by Magma and BHP Copper and on a technical study that did nothing to support this argument. And Region 9 has never explained why the lower 200 feet of the LBFU are somehow distinguishable from the remainder of the LBFU such that they should be included in the exempted area.<sup>99</sup> The LBFU is a distinct aquifer unit that contains no commercially producible copper and does not meet the criteria for an aquifer exemption. Region 9 has acknowledged this prerequisite in the past with respect to this site and has provided no reason

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<sup>96</sup> *Id.*, Attachment A, Exhibit A-1, *Hydrologic Study Part A, Groundwater Flow Model*, at 12 (March 1, 2012); *see also id.* at 9-11 (ADWR groundwater models distinguished between LBFU and underlying bedrock).

<sup>97</sup> Attachment 30: Temporary Aquifer Protection Permit No. P-106360, Significant Amendment, at 5, § 2.3.1 (August 3, 2016) (“In-situ solutions shall be injected and contained within the oxide unit.”).

<sup>98</sup> Attachment 31: Region 9 Letter to BHP Florence Project re Technical Review of the BHP In-Situ Copper Mining Project, at 6 (June 27, 1996) (stating that the horizontal area beyond the ore body cannot be exempted because “to exempt an aquifer there must be minerals which are commercially producible.”).

<sup>99</sup> Attachment 37: Affidavit of Dr. Lee Wilson (January 18, 2017).

to ignore this requirement now with respect to the LBFU.



**2. Mining is illegal within most of the existing aquifer exemption.<sup>100</sup>**

Beyond the technical issues surrounding exemption of a portion of the LBFU, most of the project site cannot be considered mineral producing because mining is illegal. FCI's private property was annexed by the Town of Florence years before FCI acquired it. That same property also was zoned for commercial and residential uses, prohibiting mining, before FCI acquired it. If mining on this property is illegal, then it defies logic to claim that any portion of the aquifer under that land can be considered mineral producing.

Although Region 9 claims that it has reviewed whether the aquifer still meets the exemption criteria of 40 C.F.R. § 146.4, its response to comments failed to address this issue. Region 9's response consisted of the facile statement that "local ordinances and zoning restrictions do not replace EPA's responsibility to implement the UIC program."<sup>101</sup> That's indisputable, but it misses the point. If mining is illegal on FCI's privately-held land, then the only part of the project site that could possibly qualify for an aquifer exemption premised on commercially producible minerals is limited to the 160 acres of the State Land parcel that are exempt from local zoning restrictions. This alone merits reconsideration of the 1997 Aquifer Exemption.

**3. The LBFU cannot be exempted under any other regulatory criteria.<sup>102</sup>**

Although other criteria exist for exempting aquifers from the SDWA, none of them apply here and Region 9 has not relied upon them to justify the 1997 Aquifer Exemption. The LBFU is not situated at a depth or location that makes

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<sup>100</sup> Petitioners raised this issue in their comments on the draft permit. *See* Attachment 14: SWVP Comments, at 8 and F-2.

<sup>101</sup> Attachment 16: Region 9 Response to Comments, at 20.

<sup>102</sup> Petitioners raised this issue in their comments on the draft permit. *See* Attachment 14: SWVP Comments, Appendix F, at F-2 and F-3. Region 9 did not address or dispute these criteria in its response to comments.

drinking water production impractical.<sup>103</sup> Drinking water production wells are today withdrawing from the LBFU and more wells in this aquifer layer are planned for the future. It is both practical and necessary to withdraw from the LBFU for the Town's growing water needs. There is no dispute, and Region 9 has not asserted, that it is impractical to construct and operate drinking water wells that withdraw from the LBFU. Nor is the LBFU contaminated.<sup>104</sup> Groundwater quality is excellent in the LBFU. Degradation of this water source from FCI's proposed mining activities should not be allowed. Finally, the LBFU is not located over a mining area subject to subsidence or collapse.<sup>105</sup> FCI has expressly stated that subsidence is not an issue at this site.<sup>106</sup>

The LBFU meets none of these regulatory criteria for an exemption. Region 9's attempt to justify exemption of the LBFU as a mineral-producing aquifer does not bear scrutiny and its decision to leave the exemption in place is clearly erroneous. No portion of the LBFU within the AOR, FCI's PTF well field, or elsewhere should be exempted from the protections of the SDWA.

**E. Region 9 has not justified an aquifer exemption that is nearly 200 times larger than FCI's project.<sup>107</sup>**

The 1997 Aquifer Exemption was an area-wide exemption for planned commercial operations. Petitioners calculate that the exemption encompasses approximately 400 acres, with the outer boundaries of the exempted area extending more than one-half mile from the PTF well field in many places.<sup>108</sup> This is because the 1997 Aquifer Exemption encompassed the entire ore body for which in-situ mining was practical, with commercial operations planned for 15 to

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<sup>103</sup> 40 C.F.R. § 146.4(b)(2).

<sup>104</sup> 40 C.F.R. §§ 146.4(b)(3), (c).

<sup>105</sup> 40 C.F.R. § 146.4(b)(4).

<sup>106</sup> Attachment 6: FCI UIC Application, Attachment A, Exhibit A-3, at 13-14.

<sup>107</sup> Petitioners raised this issue in their comments on the draft permit. *See* Attachment 14: SWVP Comments, Appendix F, at F-1 and F-2.

<sup>108</sup> Attachment 19: FCI UIC Application, Attachment S, Figure S-1 (May 2014); Attachment 39: Affidavit of Kevin D. Hebert, R.G. (January 19, 2017).

20 years. No similar proposal is currently before Region 9 and the scale of the PTF in no way compares to BHP Copper's commercial mining plans in 1997.

**1. FCI's application for a 2.2-acre PTF well field has nothing to do with the commercial operations upon which the 1997 Aquifer Exemption was premised.**

FCI's application, and the Final UIC Permit, are limited to authorization of a 2.2-acre PTF well field that will operate for 14 months.<sup>109</sup> Both FCI and Region 9 have asserted that impacts from this project will not extend beyond the observation wells, which form a ring approximately 300 feet around the injection and recovery wells.<sup>110</sup> Neither FCI nor Region 9 have even attempted to justify the need for a 400-acre aquifer exemption area for such a small project.<sup>111</sup>

FCI's application does nothing to explain how a 2.2-acre project requires a 400-acre exemption.<sup>112</sup> Nor does it reference or include any documentation from the Magma-BHP Copper aquifer exemption application to justify the exemption with regard to the small scale of the PTF. The *only* document relied upon in FCI's application to justify the exemption is its Technical Report Pre-Feasibility Study.<sup>113</sup> But that document also addresses full commercial operations, not the PTF. Therefore, no documented basis exists for a proposed aquifer exemption that is specific to the project approved in the Final UIC Permit.

For its part, Region 9 appears to acknowledge the different purpose and scope of the 1997 UIC Permit and Aquifer Exemption, stating that it "defined the aquifer exemption boundaries in 1997, in consideration of the particular characteristics of the permitted project, the mining site, and the specific purpose of in-situ copper recovery."<sup>114</sup> Yet despite the quite different characteristics of

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<sup>109</sup> Attachment 12: Region 9 Statement of Basis, at 2 and 6 (December 2014).

<sup>110</sup> Petitioners question the analysis and hypotheses supporting this assertion.

<sup>111</sup> Attachment 37: Affidavit of Dr. Lee Wilson (January 18, 2017).

<sup>112</sup> Attachment 6: FCI UIC Application, Attachment S.

<sup>113</sup> Attachment 6: FCI UIC Application, Attachment S, Exhibit S-2.

<sup>114</sup> Attachment 16: Region 9 Response to Comments, at 16.

FCI's PTF facility, the much smaller site, and the completely different purpose, Region 9 saw no basis to reexamine the aquifer exemption.

**2. FCI itself requested a much smaller aquifer exemption scaled to the small size of the PTF.**

As discussed previously, after submitting a UIC application for full commercial operations, FCI decided to focus instead on a permit only for the PTF.<sup>115</sup> In its December 2013 UIC application, FCI proposed an aquifer exemption area based on the *criteria* as the 1997 Aquifer Exemption, but which included a much smaller *area* equivalent to the AOR used in its UIC permit application.<sup>116</sup> FCI described the horizontal extent of its requested aquifer exemption as coinciding with the "horizontal extent of the 500-foot circumscribing AOR around the PTF well field area."<sup>117</sup>

In March 2014, Region 9 instructed FCI to revise its discussion of the aquifer exemption in its application and revise the accompanying figures to mirror the 1997 Aquifer Exemption.<sup>118</sup> Region 9 provided no explanation for its request, aside from the fact that the 1997 Aquifer Exemption was still in place. Importantly, by this time Petitioners had made multiple requests, through informal comments in letters to Region 9, for the aquifer exemption to be reduced to just what FCI had proposed.<sup>119</sup> But despite known public opposition to continued use of the 1997 Aquifer Exempt, USEPA guidance supporting a much smaller exemption, and the applicant's own attempt to reduce the aquifer exemption to something more reasonably proportional to the size and potential impacts of the PTF, Region 9 unilaterally refused to consider adjusting the exemption.

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<sup>115</sup> See Section IV(B), *infra*, at 6.

<sup>116</sup> Attachment 23: FCI Revised UIC Application, Attachment S, Figures S-1 and S-2 (December 2013).

<sup>117</sup> *Id.* at 2.

<sup>118</sup> Attachment 34: Region 9 Request for Information to FCI, at 8-9 (March 13, 2014).

<sup>119</sup> Attachment 41: SWVP Letter to Region 9, at 7-12 (September 13, 2012).

**3. Region 9 has acknowledged the small scope of the PTF, but has ignored the disconnect between that small project and the expansive 1997 Aquifer Exemption.**

Region 9 has acknowledged that the lateral area impacted by the PTF wells is much smaller than the 1997 Aquifer Exemption:

The targeted copper oxide zone and area of review (AOR) for the proposed PTF is a relatively small lateral area well within the boundaries of the existing aquifer exemption. For the PTF, the AOR is a circumscribed area of 500 feet from the PTF well field and the existing aquifer exemption boundary is an additional 500 feet and more beyond the PTF's AOR.<sup>120</sup>

But Region 9 ignores the relative size of the PTF to the 1997 Aquifer Exemption in attempting to justify continued reliance on the exemption.

In response to Petitioners' argument that the small size of the AOR and PTF facility overall undercut any justification for such a large aquifer exemption, Region 9 asserted that it followed applicable regulations and guidance when it approved the exemption in 1997.<sup>121</sup> That may be the case, although there is little or nothing in the record to explain why Region 9 approved the 1997 Aquifer Exemption. But the basis for the 1997 decision also is totally irrelevant. The salient point is that a 400-acre aquifer exemption is neither reasonably necessary nor justified for FCI's small, short-term project. Pointing to a 20-year old decision does nothing to explain how that decision remains relevant and justified in light of current conditions.

Nor has Region 9 explained why such an expansive aquifer exemption is required from a project whose impacts will purportedly be confined to the PTF

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<sup>120</sup> Attachment 12: Statement of Basis, at 13. This statement is also misleading in indicating that the aquifer exemption boundary is "500 feet and more" beyond the AOR. The aquifer exemption boundary is nowhere closer than approximately 650 feet to the AOR, and in most areas it is much farther away.

<sup>121</sup> Attachment 16: Region 9 Response to Comments, at 16.

well field. In its response to public comments, Region 9 repeatedly described these limited impacts:

- “ISCR fluids will not migrate beyond the PTF well field as long as hydraulic control is maintained.”<sup>122</sup>
- “Any possible excursions into the LBFU will be contained to the PTF well field area until they are reversed during aquifer rinsing and restoration operations.”<sup>123</sup>
- “The supplemental monitoring wells would not be expected to detect an excursion in the planned two-year duration of ISCR and rinsing operations. . . .”<sup>124</sup>
- “If quarterly Level 1 sampling reveals an exceedance, the maximum distance a contaminant could travel beyond the monitoring well is 10 feet, based on the approximate 40 foot per year groundwater flow velocity. USDWs are adequately protected because the AOR boundary is hundreds of feet beyond the monitoring well ring.”<sup>125</sup>

Region 9 also downplayed Petitioners’ references to recent USEPA rulemaking activities related to uranium in-situ leach sites, which operate on similar principles as FCI’s proposed facility and also require UIC permits.<sup>126</sup> Petitioners pointed to one of Region 9’s own presentations and proposed USEPA regulations for the unremarkable proposition that an aquifer exemption should be as small as possible to protect as much of a current or future drinking water source as possible. Region 9 dismissed its own presentation as “one approach” to aquifer exemptions and dismissed the rulemaking as not being appropriate analogues.<sup>127</sup> Region 9 failed to explain what fundamental differences between this project and uranium in-situ leach mining would justify reliance on the 1997 Aquifer Exemption. And it completely ignored Petitioner’s point that USEPA, in

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<sup>122</sup> *Id.* at 9.

<sup>123</sup> *Id.* at 11.

<sup>124</sup> *Id.* at 25.

<sup>125</sup> *Id.* at 32.

<sup>126</sup> *Id.* at 16-17; Attachment 14: SWVP Comments, Appendix F, at F-4 to F-6.

<sup>127</sup> Attachment 16: Region 9 Response to Comments, at 16-17 (December 20, 2016).

general, adheres to the principal that “the scope of coverage of an aquifer exemption request is typically the portion of the USDW affected by the activity,”<sup>128</sup> a principal that would mandate a significant reduction in the size of the aquifer exemption for FCI’s PTF.

Along these same lines, Region 9 attempted to distinguish uranium ISL mines generally from this project, but its attempt consisted of the following generic, unsupported argument:

Restoration results at ISR copper operations at the PTF site are not directly comparable to results at uranium ISR mines due to numerous factors, including differences in geological settings, geochemical reactions, and mobilizing solutions applied to recover copper versus uranium. Uranium ISR mines in the United States are typically in sedimentary deposits while copper deposits usually occur in igneous rocks as is the case at the PTF site.<sup>129</sup>

Petitioners do not deny that geologic conditions, different metals, and different chemical reactions are at issue in uranium in-situ leach mines. But that does nothing to distinguish the PTF facility from other in-situ leach projects regarding the appropriate relative size of an aquifer exemption. In both cases, the overriding concern should be to protect as much of current and future drinking water sources as possible. That logically requires the smallest possible aquifer exemption that will reasonably allow for the activities under the UIC permit.

Region 9 has gone to great lengths to demonstrate that it is not expressly required to change the aquifer exemption under existing regulations. But it never addresses Petitioner’s contention that, as a matter of policy, good practice, and simple logic, it should revisit the exemption.

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<sup>128</sup> USEPA, *Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings; Proposed Rule*, 80 Fed. Reg. 4156, 4168 (January 26, 2015), cited by Petitioners in Attachment 14: SWVP Comments, Appendix F, at F-5.

<sup>129</sup> Attachment 16: Region 9 Response to Comments, at 38, cited by Region 9 at 16 in response to Petitioner’s arguments.

4. **It is more likely than not that commercial operations of the scope and areal extent envisioned by BHP Copper in 1997 will never occur at this site.**

Region 9 has indicated repeatedly that issuance of this permit does not guarantee commercial operations will be allowed, and has stated clearly that commercial operations, if pursued, will require an entirely new UIC application.<sup>130</sup> Currently, mining is illegal on FCI's private property, limiting future commercial operations to the 160-acre State Land lease parcel, at most. Thus, even if FCI pursues commercial mining at this site in the future, BHP Copper's 1997 commercial plans will never be realized absent significant changes in local zoning or changes in applicable law. Simply put, the 1997 Aquifer Exemption is a relic of an abandoned proposal that is unlikely to ever be revived. PTF operations cannot justify such an expansive exemption. If commercial operations are pursued in the future, new analysis will be needed to develop an aquifer exemption that complies with regulatory criteria, properly incorporates existing conditions and future drinking water needs, and is no larger than necessary for whatever project FCI or its successors might propose.

- F. **Region 9 had authority to review and should have reviewed the 1997 Aquifer Exemption by requiring FCI to submit a new aquifer exemption application.<sup>131</sup>**

Given the significantly changed circumstances, including new and planned drinking water wells in what is now a major residential development, Region 9 should have found ample basis to rescind the 1997 Aquifer Exemption and require FCI to submit a new exemption application, and reevaluate the basis and for and extent of the exemption under applicable regulatory criteria. No reasonable basis exists to leave a 20-year old aquifer exemption in place, especially one that allows contamination in what is clearly an existing and future drinking water source, the LBFU.

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<sup>130</sup> Attachment 16: Region 9 Response to Comments, at 7 and 29.

<sup>131</sup> Petitioners raised this issue in their comments on the draft permit. *See* Attachment 14: SWVP Comments, Appendix F, at F-22 to F-24.



FCI has asserted that the aquifer exemption “is not part of the current proceeding,” while Region 9 argues that nothing requires it to rescind, reopen or review the 1997 Aquifer Exemption.<sup>132</sup> Petitioners do not dispute that there is no regulatory requirement to reopen an existing aquifer exemption if an associated UIC permit is revoked. Indeed, it would be surprising if federal regulations were so detailed as to contemplate such an unusual circumstance. Petitioners also do not argue, as Region 9 implies, that the permit and aquifer exemption represent a single agency action, such that revocation of one automatically requires revocation of the other.<sup>133</sup>

Instead, Petitioners’ common sense argument is that the 1997 Aquifer Exemption fails to meet the regulatory criteria due to significant changes in the area that impact the technical evaluation Region 9 undertook 20 years ago, and that, as a matter of policy and reason, Region 9 should have required a new exemption application and new analysis of the regulatory criteria in light of the same changed circumstances that prompted revocation of the UIC Permit. Region 9’s informal reevaluation of the existing exemption did not properly evaluate regulatory criteria, as discussed previously. Region 9 did not explain why the same changed circumstances justifying revocation of the UIC permit did not apply equally to the aquifer exemption and its informal evaluation focused almost exclusively on existing wells, rather than properly weighting reasonably foreseeable future uses, future planned drinking water wells, and protection of the entire LBFU, as opposed to protection of specific wells.

Public policy underlying the SDWA and USEPA past practice demonstrates that reevaluation of aquifer exemptions due to changed conditions is expected. The SDWA requires protection of underground sources of drinking water from any endangerment generated by underground injection.<sup>134</sup> And

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<sup>132</sup> Attachment 16: Region 9 Response to Comments, at 14 and 47.

<sup>133</sup> *Id.* at 14.

<sup>134</sup> 42 U.S.C. § 300h(b)(3)(C) (nothing “shall be construed to alter or affect the duty to assure that underground sources of drinking water will not be endangered by any underground injection.”).

certainly nothing in the UIC regulations prohibits Region 9 from reevaluating the 1997 Aquifer Exemption. In fact, USEPA clearly indicated in promulgating the UIC regulations that changes to aquifer exemptions were expected:

The Director [of a state UIC program] may exempt aquifers as part of the State program he submits to EPA for approval. Therefore, the designations, by the nature of the process, are subject to public hearing and comment as well as the review and approval of EPA. The Director is free to change the designations or add to them at a later date. Such a change, however, would constitute a major modification of the approved State program and, as a major modification, is subject to public hearing and comment, as well as EPA review and approval.<sup>135</sup>

Furthermore, USEPA has reevaluated aquifer exemptions at other sites to address new issues and concerns. At the Church Rock, New Mexico uranium in-situ leach project owned by Hydro Resources, Inc., EPA Region VI reopened its 1989 approval of an aquifer exemption for the site, seeking additional information on drinking water wells in the area.<sup>136</sup> In Goliad, Texas, EPA Region VI revised a recently-issued aquifer exemption to reduce the area covered by the exemption, in response to arguments and data presented by opponents of a proposed uranium in-situ leach project to be operated by Uranium Energy Corporation.<sup>137</sup>

Region 9's approach directly contradicts the SDWA's purpose because it favors mining over protecting drinking water supplies. Its position holds this important regional aquifer hostage to speculative mining proposals that may never be pursued. Already, an aquifer exemption has been in place for nearly 20

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<sup>135</sup> USEPA, *Final Rule for Part 146 and Amendments to Part 122*, 45 Fed. Reg. 42472, 42481 (June 24, 1980). Although EPA was speaking of changes to State-delegated programs, the same would logically apply to programs managed by EPA itself.

<sup>136</sup> Attachment 34: Letter from William K. Honker, USEPA Region VI, to New Mexico Environmental Law Center (June 27, 2012).

<sup>137</sup> Attachment 35: Letter from William K. Honker to Richard Hyde, Texas Commission on Environmental Quality (June 17, 2014).

years and no commercial mining has ever been conducted. Today, mining is illegal on FCI's private property and there is no proof that commercial mining is viable on the State Land parcel. It is untenable for Region 9 to ignore the drinking water needs of a burgeoning city in reliance on a 20-year old administrative decision that has no justification today.

### **G. Conclusion and Request for Relief**

In their written comments on the draft UIC permit, Petitioners presented numerous reasons that the 1997 Aquifer Exemption should have been revoked in favor of a new exemption application and evaluation. Among those reasons, supported in the record and arising out of applicable regulatory requirements, are the following:

- The 1997 Aquifer Exemption was based in large part on the mining company's ownership of all of the land at the project site and for miles downgradient. That area is now the site of residential and commercial development and new and future drinking water supply wells. If those changed conditions were enough to justify revocation of the UIC permit, they equally support revocation of the 1997 Aquifer Exemption.
- The LBFU should not be exempted from SDWA protection because it is currently, and will be for the foreseeable future, the primary source of drinking water for the growing Town of Florence.
- No part of the LBFU should be included in the exempted area because the LBFU is not mineral producing and does not meet any of the other criteria for exemption.
- A 2.2-acre pilot test facility cannot justify retention of a 20-year old, 400-acre aquifer exemption that was approved for a commercial in-situ leach project that was abandoned long ago.

In its response to comments, Region 9 failed to reasonably rebut Petitioners' arguments or justify its decision. Region 9's decision is clearly erroneous in light

of applicable factual circumstances and regulatory requirements. The decision also implicates important policy considerations at a time when USEPA's UIC program and its procedures and guidelines for issuing aquifer exemptions is under scrutiny. The Board should decide this appeal on the merits to send a signal that this Nation's drinking water supply is a critical resource, aquifer exemptions should not be taken lightly, and at the very least they should be defensible and targeted to protect as much of this country's drinking water resources as possible.

For these and all the others reasons discussed previously, Petitioners request that the Board remand the UIC permit to Region 9 with direction to require a new aquifer exemption application and revocation of the 1997 Aquifer Exemption.



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Christopher Kramer  
Barbara U. Rodriguez-Pashkowski  
GUST ROSENFELD P.L.C.  
One E. Washington, Ste. 1600  
Phoenix, AZ 85004  
Attorneys for the Town of Florence



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Ronnie P. Hawks  
Russell R. Yurk  
JENNINGS, HAUG & CUNNINGHAM,  
L.L.P.  
Attorneys for SWVP-GTIS MR, LLC  
January 19, 2017

## VII. Statement of Compliance with Word Limitation

This petition complies with 40 C.F.R. §§ 124.19(d)(3). The petition contains 12,339 words, using the word count function in Microsoft Word and excluding the table of contents, table of authorities, table of attachments, this statement of compliance, the certificate of service and the attachments.

A handwritten signature in blue ink, appearing to be 'R. Yurk', is written above a horizontal line.

Ronnie P. Hawks

Russell R. Yurk

Jennings, Haug & Cunningham, LLP

*Attorneys for SWVP-GTIS MR, LLC*

January 19, 2017

## VIII. Certificate of Service

I certify that a copy of this petition and all attachments were served upon the following parties by Federal Express, overnight delivery, on January 19, 2017:

Clerk of the Board  
U.S. Environmental Protection Agency  
Environmental Appeals Board  
1200 Pennsylvania Ave, N.W.  
Mail Code 1103M  
Washington D.C. 20460-0001

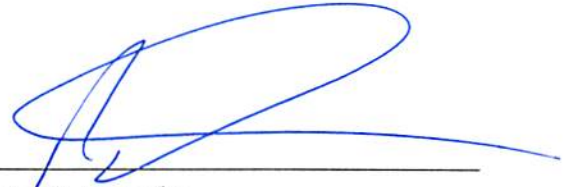
Alexis Strauss  
Acting Regional Administrator  
USEPA, Region 9  
75 Hawthorne Street  
San Francisco, CA 94105

D. Lee Decker  
Bradley J. Glass  
Gallagher & Kennedy, P.A.  
2575 E. Camelback Rd.  
Phoenix, AZ 85016-9225  
Attorneys for Permittee Florence Copper Inc.

In addition, an electronic copy of the petition only was served on the following parties by electronic mail on January 19, 2017:

Nancy Rumrill  
rumrill.nancy@epa.gov  
Drinking Water Protection Section (WTR-3-2)  
USEPA Region 9  
75 Hawthorne St.  
San Francisco, CA 94105

D. Lee Decker  
dld@gknet.com  
Bradley J. Glass  
brad.glass@gknet.com  
Gallagher & Kennedy, P.A.  
2575 E. Camelback Rd.  
Phoenix, AZ 85016-9225  
Attorneys for Permittee Florence Copper Inc.

A handwritten signature in blue ink, appearing to be 'Ronnie P. Hawks', written over a horizontal line.

Ronnie P. Hawks  
Russell R. Yurk  
Jennings, Haug & Cunningham, LLP  
*Attorneys for SWVP-GTIS MR, LLC*  
January 19, 2017

Ronnie P. Hawks  
AZ Bar No. 019122  
rph@jhc-law.com  
Russell R. Yurk  
AZ Bar No. 019377  
rry@jhc-law.com  
JENNINGS, HAUG & CUNNINGHAM, L.L.P.  
2800 N. Central Avenue, Suite 1800  
Phoenix, AZ 85004-1049  
Telephone: 602-234-7800  
Facsimile: 602-277-5595  
*Attorneys for SWVP-GTIS MR, LLC*

Christopher Kramer  
AZ Bar No. 013289  
CKramer@gustlaw.com  
Barbara U. Rodriguez-Pashkowski,  
AZ Bar No. 006958  
bpashkowski@gustlaw.com  
GUST ROSENFELD P.L.C.  
One E. Washington, Suite 1600  
Phoenix, AZ 85004  
Telephone: 602-257-7422  
Facsimile: 602-254-4878  
*Attorneys for the Town of Florence, Arizona*

**Before the Environmental Appeals Board  
United States Environmental Protection Agency  
Washington, D.C.**

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In the Matter Of Florence Copper, Inc. Florence Copper Project Underground Injection Control Program Permit No. R9UIC-AZ3-FY11-1
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UIC Appeal No. \_\_\_\_\_

**Statement of Conformity to  
Electronic Filing**

The accompanying hard copies of the Petition for Review and attachments are identical to the electronic copies filed with the Board on January 19, 2017 through the Board's eFiling System.





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Ronnie P. Hawks

Russell R. Yurk

Jennings, Haug & Cunningham, LLP

*Attorneys for SWVP-GTIS MR, LLC*

January 19, 2017