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8
9 **IN THE SUPERIOR COURT OF THE STATE OF ARIZONA**
10 **IN AND FOR THE COUNTY OF MARICOPA**

11 IN RE: THE GENERAL
12 ADJUDICATION OF ALL RIGHTS
13 TO USE WATER IN THE GILA RIVER
14 SYSTEM AND SOURCE

15 W-1 (Salt)
16 W-2 (Verde)
17 W-3 (Upper Gila)
18 W-4 (San Pedro)
19 (Consolidated)

20 **COMMENTS OF FREEPORT-
21 MCMORAN CORPORATION ON
22 ARIZONA DEPARTMENT OF
23 WATER RESOURCES SUBFLOW
24 ZONE DELINEATION REPORT FOR
25 THE SAN PEDRO RIVER
26 WATERSHED**

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28 **DESCRIPTIVE SUMMARY:** Freeport-McMoRan Corporation submits its
29 Comments on the Arizona Department of Water Resources' ("ADWR") Subflow
30 Zone Delineation Report for the San Pedro River Watershed.

31 **NUMBER OF PAGES:** 14

32 **STATEMENT OF CLAIMANT NOS:** 39-02297 *et al.* (numerous claims)

33 **DATE OF FILING:** December 31, 2009

34 **I. INTRODUCTION**

35 Freeport-McMoRan Corporation ("Freeport") submits the following comments
36 on the Arizona Department of Water Resources ("ADWR") Subflow Zone Delineation
37 Report for the San Pedro River Watershed dated June 30, 2009 (the "Report").

1 Freeport commends ADWR on its comprehensive analysis and attention to detail
2 in this Report. In particular, the Report generally adheres to the criteria set forth in the
3 Court's "Order Re: Report of the Special Master on the ADWR's Subflow Technical
4 Report, San Pedro River Watershed and Motion for Approval of Report" dated
5 September 28, 2005 ("2005 Subflow Order") to map the subflow zone for the San
6 Pedro River Watershed. However, some aspects of the Report diverge from the
7 applicable law regarding groundwater in Arizona. Freeport submits the following
8 limited comments to address these legal issues and to identify concerns regarding some
9 technical procedures used in the preparation of the Report.

10 Freeport's comments derive largely from two guiding legal principles that
11 control the definition of subflow in Arizona. First, "[u]nderground waters are presumed
12 to be percolating and, therefore, not appropriable as subflow." *In re the General*
13 *Adjudication of All Rights to use Water in the Gila River Sys. and Source*, 198 Ariz.
14 330, 335, 9 P.3d 1069, 1074 (2000) ("*Gila IV*"). Second, this presumption may only be
15 overcome by presenting clear and convincing evidence that water withdrawn from a
16 well is actually part of a stream's subflow and, therefore, appropriable. *Id.*¹

17 These legal principles have been the law in Arizona since before statehood,
18 when the Territorial Supreme Court decided *Howard v. Perrin*, 8 Ariz. 347, 354, 76 P.
19 460, 463 (1904), *aff'd* 200 U.S. 71 (1906), and they have been repeatedly and
20 consistently reaffirmed. *See Maricopa County Mun. Water Conservation Dist. No. 1 v.*
21 *Southwest Cotton Co.*, 39 Ariz. 65, 85, 4 P.2d 369, 376 (1931); *Neal v. Hunt*, 112 Ariz.
22 307, 311, 541 P.2d 559, 563 (1975); *In re the General Adjudication of All Rights to Use*
23

24 ¹ The Arizona Supreme Court has held that the clear and convincing evidence standard requires
25 proof that an assertion is "highly probable." *State v. King*, 158 Ariz. 419, 422-23, 763 P.2d 239,
26 242-43 (1988).

1 *Water in the Gila River Sys. And Source*, 175 Ariz. 382, 392, 857 P.2d 1236, 1246
2 (1993) (“*Gila II*”); *Gila IV*, 198 Ariz. at 335, 9 P.3d at 1074.

3 In *Gila IV*, the Arizona Supreme Court affirmed the Superior Court’s
4 determination that the saturated floodplain Holocene alluvium constituted the “subflow
5 zone” for the San Pedro River Watershed and directed ADWR to “determine the
6 specific parameters of that zone in a particular area by evaluating all of the applicable
7 and measurable criteria set forth in the tribal court’s order and any other relevant
8 factors.” *Gila IV*, 198 Ariz. at 344 , 9 P.3d at 1083.

9 In *Gila IV*, the Supreme Court set forth the test to be used by ADWR in order to
10 determine if the presumption that underground waters are presumed to be percolating
11 and, therefore, not appropriable, could be overcome. The Supreme Court held that
12 “[w]hen DWR determines and establishes that a well is in the subflow zone by using
13 the pertinent criteria or that it is pumping subflow by reason of its cone of depression,
14 DWR provides clear and convincing evidence of that fact.” *Id.* at 1082, 9 P.3d at 343.
15 To meet this test, ADWR must prove that it is “highly probable” that (1) a well is
16 located within the “subflow zone” for the San Pedro River Watershed (i.e., the saturated
17 floodplain Holocene alluvium) and (2) all other pertinent criteria required to delineate
18 the subflow zone are met (e.g., the subflow zone is adjacent only to perennial and
19 intermittent streams, and not ephemeral streams).

20 Given the strong initial presumption that a well is pumping percolating
21 groundwater and the potential impact to well owners in the San Pedro River Watershed
22 included within the subflow zone, the importance that ADWR’s analysis to delineate
23 the subflow zone be as accurate and reliable as possible cannot be overstated. In *Gila*
24 *II*, the Supreme Court recognized that:

1 [U]se of a flawed test for identifying wells pumping subflow
2 could cause significant injustice. Many [land] surface
3 owners unable to mount a challenge could effectively lose
4 their right to pump percolating groundwater, simply because
5 their wells were improperly presumed to be pumping
6 appropriable subflow. Considering the time, expense, and
7 importance of accurate hydrographic survey reports, and the
8 complex lawsuits over their correctness, it would be a
9 senseless waste to use a flawed presumption for identifying
10 wells pumping subflow.

11 *Gila II*, 175 Ariz. at 388-89, 857 P.2d at 1242-43.

12 In *Gila IV*, the Court further stated:

13 Thus, it is critical that any test used for determining the
14 boundaries of a subflow zone be as accurate and reliable as
15 possible. Otherwise, use of an inaccurate test to determine
16 whether a well is pumping subflow would not satisfy the
17 clear and convincing evidentiary standard and would
18 improperly shift the burden to the groundwater user to show
19 that its well is not pumping subflow.

20 *Gila IV*, 198 Ariz. at 335, 9 P.3d at 1074.

21 The right to use groundwater is vitally important to the people of the State of
22 Arizona. In the San Pedro River Watershed, groundwater is an essential component of
23 the water supply for numerous municipal, commercial, industrial, agricultural and
24 domestic water users. Application of a flawed delineation of the subflow zone will
25 improperly and unjustly shift the burden of proof to certain groundwater users to prove
26 that their wells are not pumping subflow or be subject to the deprivation of their right to
27 pump and use percolating groundwater.

28 In the 2005 Subflow Order, this Court directed ADWR to follow certain criteria
29 and procedures to delineate the subflow zone within the San Pedro River Watershed.
30 For the reasons stated by the Supreme Court, it is of great importance that the parties

1 and the Court now carefully vet the Report to ensure that ADWR's application of those
2 criteria and procedures meets the clear and convincing evidentiary standard for each
3 segment of the streams considered (i.e., the San Pedro River, the Babocomari River,
4 and Aravaipa Creek). As discussed below, Freeport believes that, in some instances,
5 the Report reaches conclusions on the location of the jurisdictional subflow zone that
6 are not supported by clear and convincing evidence. Where the requisite burden of
7 proof has not been met, the presumption in favor of percolating groundwater must
8 prevail to preclude any such areas from inclusion in the jurisdictional subflow zone.
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10 **II. SPECIFIC COMMENTS TO REPORT**

11 Freeport's specific comments on the Report can be separated into to categories:
12 (A) comments on ADWR determinations of predevelopment streamflows and (B)
13 comments regarding ADWR mapping of the floodplain Holocene alluvium for the San
14 Pedro River, Babocomari River and Aravaipa Creek. Each category is discussed in turn
15 below.

16 **A. Comments Regarding Predevelopment Stream Classifications**

17 In *Gila IV*, the Arizona Supreme Court approved this Court's determination that
18 the subflow zone "is adjacent to and beneath a perennial or intermittent stream *and not*
19 *an ephemeral stream.*" *Gila IV*, 198 Ariz. at 338, 9 P.3d at 1077 (approving Order of
20 Hon. Stanley Z. Goodfarb dated June 30, 1994 ("Goodfarb Order") (emphasis added).
21 Consequently, it is essential to ADWR's delineation of the subflow zone for the San
22 Pedro River Watershed that ADWR accurately and reliably determine the whether the
23 streams in question are perennial, intermittent or ephemeral.
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1 In his June 30, 1994 order, Judge Goodfarb adopted the following definitions of
2 “perennial,” “intermittent,” and “ephemeral” streams:

3 Perennial streams discharge water continuously through the
4 year. Their source of supply is normally comprised of both
5 direct runoff from precipitation events or snow melt, and
6 baseflow derived from the discharge of groundwater into the
7 stream.

8 Intermittent streams discharge water for long periods of
9 time, but seasonally. For example, an intermittent stream
10 may flow all winter, every winter, but never flow
11 continuously during the summer. During seasons when
12 baseflow is maintained, groundwater is contributing to the
13 stream. During seasons of discontinuous streamflow,
14 natural and cultural losses may be greater than the
15 contribution from groundwater, resulting in a losing stream.
16 Or, the amount of groundwater discharge itself may have
17 decreased due to natural or cultural uses.

18 Ephemeral streams discharge water only in response to
19 precipitation events or snowmelt, and do not have a
20 baseflow component at any time of the year; they flow out
21 sporadically. The groundwater system and surface water
22 systems do not establish a hydraulic connection in these
23 systems.

24 Goodfarb Order at 23-24. This Court approved the Special Master’s recommendation
25 to direct ADWR to use these definitions in delineating the subflow zone for the San
26 Pedro River Watershed. *See* 2005 Subflow Order at 41; Report of the Special Master on
the Arizona Department of Water Resources’ Subflow Technical Report, San Pedro
River Watershed dated July 16, 2004 (“Special Master’s Report”) at 28.

To determine whether a stream is perennial, intermittent or ephemeral, this
Court, in its 2005 Subflow Order, further directed ADWR to consider predevelopment

1 streamflow conditions. In directing ADWR to consider predevelopment streamflow
2 conditions, the Court stated:

3 The predevelopment stream flow conditions ADWR
4 considers in its stream flow analysis should be those existing
5 during an identifiable chronological year or range of years
6 immediately prior to regular discernable diversion or
7 depletion of stream flows resulting from human activity...
8 ADWR should take a practical approach and adopt the
earliest predevelopment period timeframe *for which*
accurate and reliable data is available.

9 2005 Subflow Order at 21 (emphasis added). As the Special Master's also recognized
10 in his report, any period selected

11 must consider the feasibility of obtaining the requisite
12 technical data and evidence; potential delay and expense of
13 those efforts and of subsequent investigations; level of
14 accuracy and reliability of the subflow analysis; *confidence*
of meeting the clear and convincing evidence standard;
and fairness.

15 Special Master's Report at 51 (emphasis added). Therefore, as with other aspects of
16 ADWR's analysis, ADWR's determination of predevelopment streamflow conditions
17 must be sufficiently accurate and reliable to meet the clear and convincing evidence
18 standard.

19 In consideration of the applicable evidentiary standard, Freeport submits the
20 following specific comments on ADWR's analysis of predevelopment streamflow
21 conditions:

- 22 • Page 3-7, Section 3.2.1, 2nd paragraph: ADWR relies upon historical
23 accounts of streamflow in its analysis. Such information should be used
24 cautiously because by human nature, items that are more often noticed and
25 recorded are the abnormal or extraordinary events, such as a flood event,
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1 rather than the normal baseline flow conditions. ADWR considered several
2 different sources of information for its predevelopment streamflow analysis.
3 However, ADWR has apparently applied equal weight to all lines of
4 evidence considered, despite the reliability or ambiguity of such evidence.
5 The reliability of the historical accounts is questionable in some instances
6 and should be weighted accordingly. Furthermore, several stream reaches
7 have numerous conflicting accounts of streamflow. [*Id.* at Figure 3-6,
8 Historical Accounts of Stream Flow Conditions.] ADWR does not, however,
9 disclose the process used to reconcile these types of differences in the
10 Report. For example, ADWR does not explain whether the conflicting
11 evidence was weighted one way or another to make a determination
12 regarding predevelopment streamflows. Where conflicting evidence cannot
13 be reconciled clearly in favor of a perennial/intermittent determination, the
14 presumption in favor of percolating groundwater should prevail and the
15 stream segment should be classified as ephemeral for purposes of the
16 delineation of the subflow zone in the San Pedro River Watershed.

- 17 • Page 3-11, Section 3.2.3, 3rd paragraph: ADWR's conclusion that the
18 "seepage runs" were perennial or intermittent was apparently based upon a
19 one-day measurement conducted in March 1899 and a one-day measurement
20 conducted in March 1921. These are extremely small datasets used to
21 evaluate flow conditions could easily be misinterpreted. As with the other
22 historical accounts considered for the Report, these accounts should be
23 weighted as any evidence, based on their perceived accuracy and reliability.
- 24 • Page 3-13, Section 3.2.4, 2nd full paragraph: In the Report, it is stated that
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1 “ADWR used the tone, texture, and shape of features in the
2 Fairchild photographs to identify stream reaches where flow
3 was likely. Where a stream channel is believed to be dry, it
4 often appears on aerial photographs in light tones in contrast
5 to the dark, nearly black tones where water in the channel is
6 believed to be relatively deep. Gray or medium tones
7 suggest reaches where water in the channel is shallower or
8 channel sediments are moist from recent streamflow or
9 shallow subsurface water. The active channel can be
distinguished from nearby riparian vegetation by its
smoother texture and sinuous shape. Figure 3-14 shows a
Fairchild photograph of the San Pedro River near Redington
where ADWR inferred a dry reach and reaches of relatively
shallow and deep water.”

10 While the actual photographs may be more illustrative and useful for the
11 purposes identified by the ADWR, the reproductions of the Fairchild
12 photographs provided in the Report do not appear to be definitive for the
13 purposes identified by the ADWR. As a result, ADWR’s interpretations
14 based on “tone, texture and shape of features” in the photographs appear
15 questionable and could be subject to differing interpretations. The Report
16 could be improved by providing additional information to the parties and
17 Court to allow proper legal consideration of the value of this type of
18 evidence.

19 The following examples of problem areas in the photographs are illustrated
20 on Figure 3-14:

- 21 • Sunlight appears to be coming at a low angle from the SSW and
22 casts shadows to the NNE, but the NE bank of the river near the
23 “Dry Alluvium” label is black and it should not be;
- 24 • The “Shallow Water” label might be nothing more than a shadow
25 cast by a river channel bank;

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- The “Dry Alluvium” section may very well have “Deep Water” along the NE side of the channel; and
- The “Deep Water” section could simply be a “Dry Alluvium” section that is accompanied by “shadow issues” similar to the “Dry Alluvium” section immediately downstream.

Given the apparent ambiguity with the Fairchild photographs, the photographs should not be relied upon as sole source of evidence of predevelopment streamflow conditions. The task of determining predevelopment conditions assigned to ADWR is daunting. We recognize that ADWR has limited tools available to use for this task, however that does not negate the fact that the conclusions regarding the photos are suspect in several instances and not sufficiently definitive to meet clear and convincing evidence standard.

- Page 3-19, Section 3.4.1, Sierra Vista Subwatershed, 1st bullet: Regarding lines of evidence, the 1935 Fairchild aerial photography represents just one point in time, whereas the other lines of evidence listed span longer periods of time. Freeport reasserts that the lines of evidence considered by ADWR should be weighted according to their degree of uncertainty prior to making any conclusions on streamflow. [*See also* Page 3-19, Section 3.4, 1st ¶, 4th bullet.]
- Page 3-20, Section 3.4.1, Benson Subwatershed: It appears that significant evidence of dry conditions was not given due consideration for this

1 subwatershed. ADWR's conclusions seem to be based largely on a one-
2 point-in-time aerial photograph. This is not sufficient data to support the
3 conclusion.

4 **B. Comments Regarding ADWR Mapping Techniques**

5 In the 2005 Subflow Order, this Court directed ADWR to follow certain
6 procedures and criteria concerning geologic conditions to delineate the subflow zones
7 within the San Pedro River Watershed, which included certain directions regarding
8 maps to be used by ADWR in its analysis. These criteria are restated in the Report at
9 Pages 2-3 through 2-4. Among those directions was for ADWR to "[t]ake special care
10 in transferring or re-projecting any depiction on a surficial map to a base map." Report
11 at 2-3 (citing 2005 Subflow Order at 41; Special Master's Report, Recommendation
12 No. 10).

13 In the Report, it is stated that "ADWR prepared these maps by obtaining the
14 Geographic Information System ("GIS") data that the Arizona Geological Survey
15 ("AZGS") used to depict geologic units on its strip maps. After regrouping the units as
16 described above, ADWR transferred the GIS data from AZGS directly to USGS
17 quadrangles base maps." [*See Page 4-12, Section 4.3, 2nd full paragraph.*] Given the
18 importance of the maps in defining the subflow zone, the process of constructing the
19 ADWR maps from AZGS maps requires a more detailed explanation in the Report.
20 Specifically, Freeport believes that the explanation should at least address the following
21 questions:

- 22
- 23 • What AZGS data was used and how was it "transferred" to ADWR maps?
 - 24 • Were any manual or electronic smoothing functions applied to AZGS?
- 25
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- 1
- 2 • Is the AZGS data digitized from their field maps or from their compiled
 - 3 1:24,000 scale geologic maps?
 - 4 • Were all the individual AZGS digitized points used by ADWR?
 - 5 • Did the ADWR perform any manual transfer or tracing of unit contacts,
 - 6 or do the contacts represent an electronic transfer of data points and
 - 7 contact lines?

8 In addition, ADWR chose to reduce the scale of the AZGS mapping from
9 1:24,000 to an odd scale of approximately 1:52,000. The numerical ratio scale should
10 be added to ADWR maps and figures. Anytime scales are reduced, resolution of detail
11 is lost. Because of this reduction in scale, the ADWR Subflow Zone Maps are less
12 accurate than they should be for use as evidence in this case.

13 Furthermore, the AZGS mapping should include contact lines and geologic unit
14 designations. The distinctions between “solid, dashed and dotted” lines are not clear on
15 the maps provided so they are very difficult to discern. The alpha-numeric labeling of
16 geologic units are not clear. This is particularly important in the floodplain Holocene
17 alluvium and tributary Holocene alluvium units. Also, there appears to be some
18 inconsistency in the color of mapped units and the corresponding color in the legend.
19 For example, the Qy unit is blue on the maps and tan in the legend.

20 Finally, on Page 4-12, 4th full paragraph, of the Report, it is stated that “[t]he
21 maps in Appendix D-1 also show where tributaries *have recently* deposited alluvium on
22 top of the floodplain.” [emphasis added.] ADWR should consider revising this
23 statement to reflect the language on the maps in Section D-4, which state that tributaries
24 *have potentially* deposited alluvium on top of the floodplain. Likewise, the language
25 on Page D-4-1, 1st paragraph should be revised to read: “Review of the maps in
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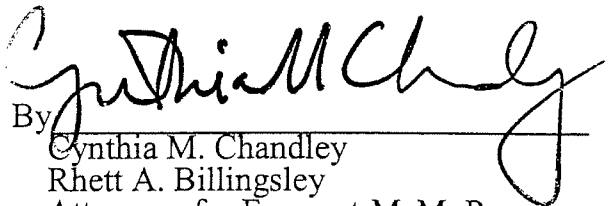
1 Appendix D-1 show that where tributary Holocene alluvium *potentially* overlies
2 floodplain Holocene alluvium...”

3 **III. CONCLUSION**

4 In summary, Freeport commends ADWR for its thorough and comprehensive
5 analysis in the Report. However, Freeport respectfully requests the Court to order
6 ADWR to revisit its analysis of predevelopment streamflow conditions and to provide
7 additional information, including but not limited to an explanation of its mapping
8 techniques, consistent with all of the foregoing comments.

9
10 RESPECTFULLY SUBMITTED this 31st day of December, 2009.

11
12 **RYLEY CARLOCK & APPLEWHITE**

13 
14 By _____

15 Cynthia M. Chandley
16 Rhett A. Billingsley
17 Attorneys for Freeport-McMoRan
18 Corporation

18 ORIGINAL of the foregoing filed this
19 31st day of December, 2009, with:

20 Clerk of the Superior Court
21 Maricopa County
22 Attn: Water Case
23 601 West Jackson St.
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25 ///

26 ///

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1 COPY of the foregoing mailed
2 this 31st day of December, 2009, to:

3 Honorable Edward P. Ballinger, Jr.
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5 Northeast Regional Court Center
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8 Special Master George A. Schade
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10 Maricopa County Superior Court
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13 All parties on the Gila River Adjudication
14 Court-approved Mailing List dated
15 July 27, 2009.

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