



Janet Napolitano
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ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Stephen A. Owens
Director

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June 3, 2008

Attention: Mike Jaworski, Site Manager
Freeport McMoran Gold & Copper Inc.
Copper Queen Branch
36 W Highway 92
Bisbee, Arizona 85603.

RECEIVED JUN 12 2008

Re: Mitigation Order on Consent, Docket No: P-121-07- Work Plan Amendment

Dear Mr. Jaworski:

The Arizona Department of Environmental Quality (ADEQ) has completed its review of the April 21, 2008 Work Plan Amendments submitted by Freeport McMoran Gold & Copper Inc., Copper Queen Branch (Freeport), and provides the following comments.

Revised Section 3.3.2

1. The section under New Monitoring Well Installation and Testing, should be numbered 3.3.3 instead of 3.3.2.
2. Section 3.3.3 Task 2.3 – New Monitoring Well Installation and Testing

The third page, fourth paragraph, second and third sentences state *“The vertical extent of sulfate will be established by installing wells beneath the impacted zone (sulfate concentrations greater than 250 mg/L) that yield water samples with sulfate concentrations below 250 mg/L. Co-located well installations are recommended to collect information on vertical zoning and for long-term monitoring of the vertical movement of the plume.”* ADEQ assumes the term “co-located well” is the same as a nested well. ADEQ recommends installation of nested wells to monitor both the sulfate plume and the portion of the aquifer beneath the sulfate plume.

3. Section 3.3.2.2 Well Design Rationale – General Considerations

In this section Freeport should include language that acknowledges the potential “risks” of using long screen intervals for obtaining “average” aquifer characteristics and concentrations. Freeport discusses disadvantages of short well screens but does not

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include similar discussion for long well screens. ADEQ suggests one potential disadvantage is underestimating a potentially highly conductive portion of the aquifer.

4. Section 3.3.2.2 Well Design Rationale

a. Wells on the Margin of the Plume

Freeport should state that information determined during the installation of monitoring wells within the plume will be utilized to determine screen intervals for wells at the margin of the plume. Further, if information obtained during drilling of monitoring wells within the plume indicates that the sulfate plume has begun to go deeper, the monitoring wells on the margins of the plume should be screened according to the new information and be screened deeper within the aquifer.

b. Wells Within the Footprint of the Plume

In this sub-section Freeport should revise the language to state that drilling and sampling will continue in the basin fill aquifer to at least 200 feet below the impact zone or until bedrock is encountered. The well would then be screened within 100 feet below the base of the impact zone. The revised language should describe actions the company will take if sulfate contamination over 250 mg/L is found going into bedrock. Generally, ADEQ recommends that Freeport continue drilling into bedrock until sulfate concentration falls below 250 mg/L, in order to determine the full vertical extent of sulfate contamination. The language should state that Freeport will consult with ADEQ prior to making any final determinations to discontinue drilling into bedrock if sulfate contamination over 250 mg/L is found.

Appendix F.2 – Aquifer Test Procedures for Hydraulic Testing of New and Existing Wells

1. 3.2.1.2 Manual Water Level Measurement

Freeport states in the second bullet on Page 4, “The water level in the pumped well should be measured at 1 minute intervals during the first 5 minutes of each step and then at 10 minute intervals for the remainder of the first two steps and during the first hour of the third step, and every 30 minutes thereafter.” Collecting water levels during the aquifer test should be more dynamic and responsive to potential issues. ADEQ recommends that Freeport include language that states that if water levels continue to show rapid draw-down at the four and five minute mark at greater than two-feet per minute, the time step for water levels would stay at one-minute intervals until the rate of draw-down slows to less than one-foot per minute. At that point the time interval would change to once every 10 minutes for the remainder of the test.

2. Section 3.3.1 Aquifer Test
 - a. Freeport should include language that contemplates conducting the first two step-tests for longer than 60 minutes if the aquifer has not stabilized.
 - b. Freeport should describe the conditions that will form the basis for terminating the constant discharge portion of the aquifer test and moving into the recovery test stage of the aquifer test.

Revised Appendix G and Section 4.3

ADEQ acknowledges and is satisfied with the schematic well construction diagram presented by Freeport, as well as the company's description of its planned drilling, reconnaissance water sampling activities and materials it intends to use for well construction.

Please call me at 602-771-4614 if you have any questions.

Sincerely,



Robert Casey, Manager
Water Quality Enforcement Unit

cc: Stuart M. Brown, President
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