

2018 WERC Design Contest FAQ

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Track 1: Industry Need

Task 2: Sulfate Removal from Mine Impacted Waters

Q: What site is the treatment system designed for?

A: Freeport has multiple sites that where sulfate could potentially be regulated. Currently we are not treating any water for sulfate removal but expect to in the future.

Q: How accessible is the site?

A: The contest is based on potentially treating water at our Sierrita Mine near Green Valley, Arizona. This mine is accessible. Any access to this site should be coordinated through Luis Platt.

Q: What will the water be used for after treatment?

A: Discharge from the mine to groundwater or surface water

Q: What is the current method that Freeport Mc Mo Ran uses for water filtration?

A: Freeport has investigated many methods for sulfate removal from water. Currently all sulfate impacted water is recycled within our mines. At closure, this could change.

Q: What is the flow rate of the water that is being treated?

A: We are not currently treating sulfate impacted water but per the design task recommends designing full scale at 2000 gpm. We anticipate flows may be in this range.

Q: What problems, if any, does Freeport McMoRan have with their current filtration method?

A: We do not have a current method we are using to treat sulfate impacted water. As stated previously Freeport has investigated multiple technologies, including precipitation, ion exchange and others. Each of them has disadvantages and advantages.

Q: Is there anything specific Freeport Mc MoRan is expecting for the treatment system?

A: We are specifically looking at low-cost technologies that meet the final discharge limit of 250 mg/L sulfate. Other than that we are open to any technology or combination of technologies.

Q: Underneath Design Considerations and the problem statement, it says the water treatment approach should reduce the amount of sulfate from 1500 mg/L to 250 mg/L or less.

Underneath the Bench-Scale demonstration, it says the gypsum saturated water provided to us will be made by mixing 3g of gypsum per liter of water; considering the solubility of calcium sulfate is 0.21g/100 mL in water, the concentration of the water provided would be roughly 2100 mg/L. So should we be designing our process to decant what should be 2100 mg/L?

A: The 2100 mg/L that you are referring is as calcium sulfate and the 1500 mg/L is as sulfate. You can choose either way to express the sulfate concentration on the water.

Q: Regarding the sulfate measurement, particularly what it is testing for what exactly the procedure for the measurement entails? Would this measurement be using a Hach turbidimeter in addition to the conductivity probe?

A: The Hach measures the concentration of sulfate which will provide information about the removal efficiency of your water treatment approach specifically to sulfate. The conductivity probe measures the conductivity of the water and provides information about the total amount of dissolve solids.