

My concern with AMC's is insuring that the accumulation and use of AMCs is aquifer neutral. I believe it is essential that AMCs represent "wet" water, and not just "paper" water. Here are two possible concepts to insure this, followed by a third section of questions/thoughts.

1. As proposed, AMCs can only be accumulated when aquifer water-levels are too high to allow for physical recharge. The source water from the Little Arkansas River would be treated and sent to the City in lieu of pumping groundwater from the aquifer. I believe it is important for AMCs to be accumulated there has to be an equal reduction in groundwater pumping that would have **normally** occurred to meet the City's daily demand. This has to be groundwater that would have been pumped for the City's daily use, not groundwater that would have been pumped for the purpose of creating storage room in the aquifer for physical recharge, and not water that would have been pumped from Cheney Reservoir. In other words, the treated Little Ark River water sent to the City instead of being recharged has to be a direct replacement of groundwater the City normally would have pumped. I think the City's proposal is close to this, but it is not real clear in the proposal and there is some language in the proposal (page 3-5) that says the treated water sent to the City "...directly offsets groundwater that would have been pumped to meet daily demand and to create physical ASR recharge capacity". My suggestion is that the treated water sent to the City should only be used to offset groundwater that would have been pumped to meet daily demand, not groundwater that would have been pumped to create storage room in the aquifer. This makes the establishment of AMCs more aquifer neutral. Also, a commitment from the City to use as much surface water from Cheney Reservoir, when available, would be helpful. Additionally, either a permit condition or a commitment from the City that groundwater will not be pumped for the purpose of creating physical recharge storage space.
2. Replacement of AMC water pumped following a drought. Following a 1% drought, there should be adequate storage room in the aquifer for physical recharge for an extended period. Any AMC water pumped during the drought would have to be replaced by physical recharge and the City could not begin accumulating additional AMCs until the previously pumped AMC water was replaced with physical recharge. To achieve aquifer neutrality, there would also need to be a constraint on the accumulation of physical recharge credits until the AMC pumped water is replaced. There are several options on how this could be achieved/conditioned, including:
  - a. The first water physically recharged after the drought would not be counted as physical recharge credits until the AMC pumped water was replaced, or
  - b. A percentage of the physical recharge occurring after the drought would be counted as physical recharge credits, and a percentage would not be counted and go towards replacing AMC water pumped, or
  - c. After a predetermined quantity of physical recharge credits are accumulated, thereafter physical recharge would go towards replacing the AMC water pumped until any additional physical recharge credits could be accumulated.

3. Finally, I have several questions / concerns regarding the proposed ASR Physical Recharge & ASR Operations Plan as discussed in Section 3.5 of the proposal.
  - a. Based on current elevated groundwater levels and current infrastructure, what is the current total ASR Physical Recharge Capacity in MGD?
  - b. Based on lowered groundwater levels and current infrastructure, what is the total ASR Physical Recharge Capacity in MGD?
  - c. Are the recharge basins' recharge capacities included in the ASR Physical Recharge Capacity?
  - d. Why use January groundwater level measurements to determine the Physical Recharge Capacity of the aquifer. During irrigation season and increased municipal use, the aquifer levels are lowered and the Physical Recharge Capacity most likely increases, perhaps significantly in some years, during summer months.
  - e. Additional information and justification is needed to demonstrate that physical recharge cannot occur if the total Physical Recharge Capacity is below 5 MGD. 5 MGD is almost 17% of the ASR Phase II treatment capacity if operating at 30 MGD, and 33% if operating at 15 MGD.
  - f. In Example 3 on page 3-7, it appears to indicate that the ASR treatment plant can run at 30 MGD, but the ASR Physical Recharge capacity is only 15 MGD, meaning the City could still accumulate AMCs by running the ASR WTP at 30 MGD, even when aquifer levels are low? This is counter to what has been indicated that AMCs will only be able to be accumulated when the aquifer is full. This appears to indicate that AMCs can be accumulated even when the groundwater levels are low.
  - g. What is the City's plan to convert the rest of the City's wells to recharge/recovery wells? Currently, there are pending water permit applications to do so. Having additional recharge wells would facilitate physical recharge. I don't believe it is appropriate to be able to accumulate AMCs when the aquifer is low just because of a restriction caused by the City's infrastructure.
  - h. If the proposed ASR Physical Recharge & ASR Operations Plan would have been used for the recharge that has occurred, or could have occurred, to date, how much would have still been physically recharged and how much would have been AMCs?