From: Norman, Yolande
To: Castellon, Krupskaya;
cc: Norman, Yolande;
Subject: FW: UNC Zone 3 Injection Pilot Well Proposal
Date: Thursday, August 12, 2010 11:44:29 AM

Could you please add the following document in ADAMs by 08/19. The document profile is as follows:

Title: RE: UNC Church Rock Mill –Zone 3 Injection Pilot Well Proposal. E-mail from U.S. EPA (Mark Purcell) to Chester Engineers (Mark Jancin) *et al.* dated March 4, 2010.

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From: Purcell.Mark@epamail.epa.gov [mailto:Purcell.Mark@epamail.epa.gov]
Sent: Thursday, March 04, 2010 3:19 PM
To: mjancin@chesterengineers.com; Roy.Blickwedel@ge.com; larry1.bush@ge.com; e.esplain@yahoo.com; Norman, Yolande
Cc: earle.dixon@state.nm.us; kdbecher@usgs.gov; dlnaftz@usgs.gov
Subject: Fw: UNC Zone 3 Injection Pilot Well Proposal

Roy, Larry, Mark,

As requested, I have attached some questions and concerns raised by NMED regarding the UNC proposal for our teleconference on March 12, 2010.

Please note that these are not formal comments, but technical points that require some discussion or clarification. After the call, written comments will be provided to UNC.

Mark

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---- Forwarded by Mark Purcell/R6/USEPA/US on 03/04/2010 02:11 PM ----

From: "Dixon, Earle, NMENV" <Earle.Dixon@state.nm.us>
To: Mark Purcell/R6/USEPA/US@EPA
Cc: "Bahar, Dana, NMENV" <dana.bahar@state.nm.us>, "Jetter, Steve, NMENV" <steve.jetter@state.nm.us>, "Schoeppner, Jerry, NMENV" <jerry.schoeppner@state.nm.us>
Date: 02/16/2010 10:15 AM
Subject: UNC Zone 3 Injection Pilot Well Proposal

Hello Mark,

On Friday, 2/12/2010, NMED internally discussed the proposal by UNC-Chester Engineers (Mark Jancin's Dec 17, 2009 email letter) to drill a pilot well in Zone 3 for injection testing to construct an array designed to create a hydraulic barrier, and later, possibly, a geochemical barrier to impede migration of tailings seepage in Zone 3 toward the northeast boundary of the UNC Church Rock Mill property. A number of questions-issues came forth from the discussion that I need to share with you, and ask for your opinion-permission. Once you look over these questions we could discuss by phone if that is easier, but NMED asks if it is OK to speak directly to Mark Jancin (and NRC) about these issues to help inform our letter to EPA and to assist EPA with this issue overall.

1. **NMED plans to draft a recommendation letter to EPA with our comments on the UNC proposal and copy UNC on the letter. NMED conceptually supports the proposal as long as it meets state requirements.**
2. **The letter will contain comments and questions because basically, the proposal by Chester Engineers is viewed as too brief and lacking adequate information.**
3. **Is it really necessary to drill a new pilot injection well when UNC drilled five new wells in late 2008 (NW-1 thru NW-5)? Can these wells be used for the same kind of testing as was done on NBL-02?**
4. **What is/are the proposed conceptual locations for the newest pilot injection well(s)? What would a new array of injection wells look like? Would the new array utilize existing wells?**
5. **Will injection of mill supply water create unwanted geochemical results on the existing, non-tailings seepage water quality? Maybe there would be benefit from running PHREEQE geochemical software and mixing the two water types to see what a resultant (third mixture) water type would look like so there is no degradation of existing water quality in Zone 3.**
6. **How would and when would it be determined that the utilization of alkalinity enhanced injectant water would commence?**
7. **Would it be beneficial to an analysis and discussion that as much emphasis on dewatering be given consideration in trying to reduce the migration of tailings seepage water because it is possible the injection program could exacerbate the movement of seepage water toward the northern UNC property boundary? It appears that extraction well pumping has moved the nose of the plume 250 feet in 2009.**
8. **Based on the 2009 Annual Review Report for the UNC Church Rock Site, and compared to the position of the nose of the seepage plume in 2008: the plume moved from PB-04 to the northeast side of NW-1 in 12 months (Oct 2008 to Oct 2009). This distance is approximately 250 feet. In 2007-2008, the plume moved about 50 feet in 12 months. It appears the variation in tailings seepage velocity is due to extraction pumping of the five new wells (800K gallons removed in 2009)? Under non-pumping and extraction well pumping scenarios, what is the revised, estimated time the tailings seepage plume will reach the northern boundary?**
9. **Geochemical sampling data from NBL-01 is the only well sampled by full suite of parameters to determine the position of the tailings seepage plume. NW-1 has not been sampled even though by monthly field parameter and water level monitoring, the nose of the seepage plume is at or past NW-1 (see Figure 35 in the 2009 Annual Review Report). Pumping of the NW series of wells is reported as ongoing (2009 Annual Review Report Appendix B). It appears that extraction well pumping at NW-1 thru NW-5 has increased the migration of the tailings seepage plume to these well locations?**
10. **Does UNC need to consider, simultaneously, drilling monitor wells along the northern property boundary immediately to determine if and when the seepage plume reaches and moves past their property boundary? A sentinel line of wells, so to speak? There are no Zone 3 monitoring wells past the UNC property boundary on Navajo Nation land?**
11. **Does Navajo Nation and EPA need to consider, drilling monitor wells north of the Navajo Nation-UNC property boundary to establish base line water quality conditions in Zone 3 unimpacted by tailings seepage in order to prepare for and monitor for existing changes in water quality due to the possibility of tailings seepage migration past the UNC boundary? This activity would need to be done ASAP in order to allow time for funding, access, approval, drilling, development, and then a few quarters of water sample collection and laboratory analysis.**
12. **If the injection of mill water is to become a viable hydraulic barrier-deterrent to slowing down the tailings seepage plume in the Zone 3 aquifer and trying to prevent it from moving past the UNC northern property boundary and into lands of the Navajo Nation: should the NW series of wells be used now to conduct pilot testing of injectant water?**
13. **NBL-02 has a historic (natural?) concentration range of uranium from approximately 200-360 ug/L. NBL-02 water quality is very similar to well 0411 year 1998 water quality levels, and yet, NBL-02 is considered not impacted by tailings seepage water? Is there any need to confirm that NBL-02 is not impacted? Well 0411 was removed from the monitoring program in 1998 due to oil in the well which prevented water sampling and water level measurement.**

I know you will need some time to digest these points and questions using the 2009 Annual Review Report as source material. At your convenience, give me a call.

Thanks,

Earle

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