From: Norman, Yolande
Sent: Thursday, February 24, 2011 1:31 PM
To: Rodriguez, Sandra
Subject: FW: 210 Pb samples - UNC 2010 Annual Report
Attachments: drjohans 210 Pb.pdf

Here goes.

From: Dixon, Earle, NMENV [mailto:Earle.Dixon@state.nm.us]
Sent: Tuesday, February 22, 2011 8:27 PM
To: Mark Jancin
Cc: Coltrain.Katrina@epamail.epa.gov; Norman, Yolande; Guo, Lifeng; E. Esplain; Blickwedel, Roy (GE, Corporate); Bush, Larry (GE Aviation, US)
Subject: 210 Pb samples - UNC 2010 Annual Report

Hi Mark and James at Chester Engineers,

I quickly scanned and read parts of the 2010 Annual Report for the UNC Site and as usual it is a very nicely done report with great tables and maps. I will go back and reread some sections as we move forward on some of our efforts this coming year.

I was surprised and interested to learn about the 210 Pb results – anomalies in the samples. If the values of a given parameter go up site wide and in all three hydrostratigraphic units, it has to be a lab error. We had Pb values go up mine wide in 1990 for one quarterly set of water samples at our Peabody Black Mesa-Kayenta Coal Mines in northern Arizona on the Navajo Nation (100 monitoring wells and three hydrostratigraphic units). The lab was ACZ in Steamboat Springs, CO. The calibration of their ICP machines was off during the run for our lot of samples so the measurements ran and reported high. Of course we had to explain it all to OSCMRE in Denver, but eventually they were convinced it was a lab error. Energy Labs should be able to give a good explanation of what they think happened.

For 210 Pb it is complex since it is a radioactive counting of the daughter 210 Bi I think. It sounds like there could be any number of places where errors are introduced in the laboratory steps leading to a final value. Colloids may be problematic even though the low flow sampling methodology employed by UNC produces very low TSS. The geochemistry of Pb, several other metals, and radioactive isotopes in the UNC setting is a complicated situation.

I found this thesis/website on 210 Pb and 210 Po measurements. The measurement of 210 Pb is not the easiest thing to accomplish some times. This document might be helpful when we try to understand and explain what happened in the UNC samples. It has some good summary information about lab measurements and overall geochemistry. I am troubled by the lab statement that the values should not be used for compliance purposes.

Check out this document for more insight and we will talk in the near future.

Thanks, Earle

http://www.zsr.uni-hannover.de/arbeiten/drjohans.pdf