



KAFB BFFS
ST 106/55-111

Cobrain, Dave, NMENV

From: sbrandwe <sbrandwe@q.com>
Sent: Thursday, April 11, 2019 4:19 PM
To: McQuillan, Dennis, NMENV
Cc: Cobrain, Dave, NMENV; Kieling, John, NMENV
Subject: [EXT] RE: KAFB BFF vadose zone

Dennis,

Thank you for taking the time to read my email and respond to me. I'll be glad to meet with you in person and I think that is the best and easiest way to discuss things and look at maps/figures. If you are in Albuquerque for business reasons in the relatively near future we could meet at the D1 office. Or, I suppose, I could drive up to Santa Fe for touring purposes and meet you somewhere.

As for the regional cross-sections, my concerns are not whether they have anything to do with sequence stratigraphy or not. (To me they seem to be using the standard lithostratigraphic approach and not a sequence stratigraphic approach which would link sedimentary deposits into units and explain these stratigraphic units in terms of variations in sediment supply and variations in the rate of change in accommodation space). My concerns are with the basic mechanics of producing accurate cross-sections such as agreement with the location map, agreement between each cross-section, why there is disagreement between AECOM interpretations and existing NMBMMR

and Sandia National labs interpretations without explanation, etc.

As for the geophysical logs, my differences are not with the USGS induction logs. but with the Jet West induction logs. In fact, the USGS logs obtained in the same wells as Jet West

logs clearly show the problem with the Jet West logs. The Jet West induction logs are not calibrated properly and are not useful for finding the zones with the highest resistivities,

which would have proved useful planning optimum location of soil vapor extraction points. In fact, at a meeting with Shaw and the AFCEE personnel the Jet West representative admitted

that there were issues with the induction logs and could relog some holes but the Air Force and their contractors and NMED never pursued the issue.

We can also discuss the statement that the geophysical logs were used in the interpretation

of the stratigraphy. I have my doubts that they were used to any significant extent. I have

not seen, for example, any discussion of the results of the geophysical logging, any results

of how they corrected the inaccurate lithologic contacts from the ARCH drilling method to the

accurate contacts from the geophysical logs, how they used the neutron logs for determining

porosity value (as they suggested they could in the planning documents) or looking for higher

velocity flow paths in the groundwater, or what the results of the gamma logging were, etc.

If they did look at the induction logs carefully they surely would have mentioned the 250-300

foot depth range in the vadose zone in the source area as critical to understanding the downward migration of the contaminant, or at least described why they thought it was not important. The two fine-grained zones in that depth range are continuous and dip in the direction of the shift of the soil vapor concentrations from above that depth zone to below



that zone, and show an area of discontinuity over the area with the highest soil vapor concentration from below that zone, as described in my previous email. Thank you for your interest and I look forward to our discussion of these issues. Let me know what dates and times you may have available. If you have any staff that is cognizant of the geology at the base and wish to have them involved in the discussions that would be fine. Again, thank you for your time and interest.
Sid Brandwein
sbrandwe@q.com

----- Original Message -----

From: McQuillan, Dennis, NMENV <dennis.mcquillan@state.nm.us>
To: sbrandwe <sbrandwe@q.com>
Cc: Cobrain, Dave, NMENV <dave.cobrain@state.nm.us>, Kieling, John, NMENV <john.kieling@state.nm.us>
Sent: Tue, 09 Apr 2019 20:09:24 -0400 (EDT)
Subject: RE: KAFB BFF vadose zone

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Sid,

Thanks for checking in. As it turns out, I was just looking at the most recent Q4 2018 soil vapor data today, and the eastward shift of the high vapor contaminant levels with depth from the source area is still quite evident. The bioventing pilot project will get underway this year to deliver some oxygen and moisture to the soil bacteria. They were severely desiccated by 12 years of SVE, with water activities low enough to greatly slow down biodegradation.

We will soon have some additional vadose zone info from the LNAPL coring that was recently completed in the source area.

It is my understanding that AECOM is no longer under contract to the Air Force, or at least not tasked to do further work on the KAFB site. As you know, the AECOM sequence stratigraphic sections were based upon drill cuttings, cores, and geophysical logs. They created an archive of cuttings and cores in one of the empty bunkers at KAFB. Their strat sections generated a lot of discussion and arguments among geologists, as we do like to argue with each other. There was one gentleman who took the position that sequence stratigraphy is exclusively in the domain of petroleum exploration and, while he did not disagree with AECOM's strat section interpretations, he vehemently disagreed that what they did was sequence stratigraphy. AECOM countered that the ancestral Rio Grande, as well as the alluvial fan drainages, were none the less subject to cyclic events and other sequential phenomena that influenced deposition and stratigraphy. But what is not subject to dispute is the Herculean effort that went

into assembling all that info and interpreting it at the scale that Tom and Colin did. Their stratigraphy served us well in locating extraction wells and screened intervals for the groundwater pump-and-treat, as we are collapsing the plume pretty much in accordance with what the models predicted before we even turned on the first extraction well.

I would like to visit with you in person or by phone to hear your concerns about the 2015 AECOM stratigraphic sections. Also, did you ever resolve your differences with the USGS on some of their geophysical logs and interpretations? Please let me know.

Best regards,

Dennis McQuillan

Chief Scientist

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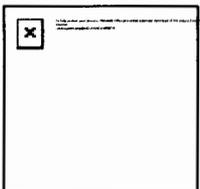
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