SAVE THE VALLEY
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Dr. Thomas McLaughlin
Materials Decommissioning Branch
Division of Waste Management and Environmental Protection
Office of Nuclear Materials Safety and Safeguards
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Dear Dr. McLaughlin:

We are writing to inform you of our assessment of the Army's responses to the action items identified during the September 8, 2005 meeting regarding the Field Sampling Plan for the DU Impact Area Site Characterization at Jefferson Proving Ground in which we participated via telephone. We preface this assessment with some observations we believe are pertinent to the situation at hand.

First we cite the incredibly long learning curve the Army has exhibited regarding sufficient site characterization. Throughout the decommissioning process, beginning with their first attempt at a license termination plan in 2000 and continuing on through the subsequent plans and revisions of plans, the Army was content to rely almost completely on assumptions about the site. Without rehashing all those assumptions in great detail suffice it to say that the plans, in general, were desperately limited in determining the nature and extent of the source term, the true geological and hydrogeological character of the site, and thereby any realistic dose modeling projections.

Additionally, some of the data contained in previous plans have been recognized as just wrong, and obviously so to the most casual observer. Witness as examples the description of prevailing winds being "to the south" and the refusal to acknowledge that there are off-site groundwater wells used for drinking water in close proximity to the western boundary of JPG, both contained in earlier plans.

Now that it seems the Army has at least acknowledged the requirement for better site characterization, we must be careful to ensure that a truly functional characterization is achieved. It is in this light that we offer the following specific comments.

There are a number of problems with the Army's responses. On virtually all of the critical issues, the Army is telling the NRC "no", that they intend to do things the way they proposed. And, as is discussed below, what they intend to do is define the project initially on a subjective basis (the fracture analysis) and subordinate all subsequent data collection to that basis.

Response 1

". . . the schedule reflects an attempt to implement a plan that is consistent with the Army's resource constraints." There needs to be a limit with respect to deferring to the budget restrictions. It may be an inevitable factor, but it should not be a controlling limit. As far as the schedule sequence itself, it is probably reasonable. The fracture trace analysis has to be completed before the EI can be done. There are issues related to times needed for design, placement, etc. The frost issue is actually a non-issue, but an EI before spring probably should not happen anyway. However, by "spring", they should be talking March, not May or June. The water levels will almost certainly be highest in March, saturating the most conduits, including, importantly, those that are most shallow (closest to the source) and that operate only in times of high groundwater.

Response 2

We disagree strenuously with this entire answer, and it goes to the overarching weakness of the entire program. The Army, or SAIC, is assuming that what they can identify on fracture analysis, a dominantly subjective analysis at best, is going to give them all of the significant features that exist with respect to dominant ground water features. The EI will localize only the features identified in the fracture analysis; the wells will be drilled only into features localized by the EI; and that will be all that is characterized and monitored. The streams will be monitored only where convenient and cheap, not necessarily where they interact with the groundwater system.

The response misses the point of the "stream walk", or chooses to ignore it. What is being asked is not in lieu of what they propose; it is in addition to what they propose. There are two things we can know with certainty: how much rain falls and how much of that rain ultimately leaves through the streams. If we look at when and where groundwater enters the stream, we also begin to get a handle on how much rain gets into groundwater and where the conduits empty to the streams. It is an independent check on the accuracy and adequacy of the fracture analysis characterization. It may narrow down which fractures are important and which are not, and it may identify conduits that don't show up on the fracture analysis. It will also help identify optimum locations to measure stream flow with respect to what stream flow tells about the hydrogeology. Some of

those locations may be at bridges, but some will require a bit of a hike to download the data from transducers.

Also, there is absolutely no reason not to identify the gain/loss information from the "stream walk" immediately and use it to help define the EI and well programs, along with the fracture trace analysis. The ability to correlate rainfall and stream response is independent of observations in wells. The greater the time-sequence of stream data and the greater the range of conditions over which that data is collected, the more guidance there is for the rest of the program.

The "stream walk", the specific location of reaches of gain/loss for streams, and the long-term collection of stream data at positions of hydrologic significance, rather than operational convenience, collectively have the potential to undermine/verify the army's presumption that the fracture analysis is the one tool that is needed to characterize groundwater flow conduits at the facility, and the corollary that the fracture analysis will identify 100% of everything out there that is important to the flow system. Maybe that presumption will prove accurate. But right now there is no mechanism to demonstrate that accuracy.

Response 5

Drilling in areas with karst development can be tough; there is no question about it. Logging boreholes where there are zones of karst development can be difficult - sometimes impossible - across some zones in the borehole. But, that doesn't mean you don't try. The purpose of logging is to learn more about what you drill through. Completing in the conduit is part of the objective. But, so is learning about the soils and rock between the surface and the conduit. Are there zones that have characteristics that will retard the migration of uranium? Are those characteristics in the bedrock or are they in the fractures? Are there traces of uranium that can be identified on the way to the conduit? Are there zones of migration (conduits) that can be observed in the borehole that aren't active at the time of drilling because water levels are too low at the time of drilling but that would be active under conditions of higher water?

There is almost certainly a need for flexibility in the logging program, depending upon conditions for a given borehole. Not all boreholes can be completely logged. One does not want to put tools with a radioactive source into a borehole that might cave and trap it. Muddy water doesn't allow good video imaging. But, bore hole televiewers (sonic, not optical devices) work in muddy holes. Calipers aren't expensive if you lose one. There are geophysical logging devices that get at least some data even through casing.

You will not be able to get perfect geophysical data in all boreholes, or in a single borehole from top to bottom. But, you will get some data and that is better than no data. The proposed program gets you no such data. It absolutely restricts you to data from the zone of completion, picked from the EI, a survey that is designed based on the subjective fracture analysis. It is a self-imposed set of blinders that will preclude new information that might cause someone reasonably to decide that something more than the starting

presumptions may be going on. It simplifies a complex geologic setting into what you already think you know about it.

There is no reason to eliminate slug tests from the tool box used for aquifer evaluation. They are fast. They are cheap. And they always provide useful information. True, a slug test will not provide an evaluation of the hydraulics of a zone that is completed in a major karst feature that is open for flow. But, performing a slug test in such a zone will provide one more piece of confirmatory data that the zone is a major karst feature that is open for flow. On the other hand, if the zone only looks like it is a major karst feature that is open for flow, a slug test response will also tell you that, which can be extremely important in interpreting subsequent water level data from that well, and provide insight into the limitations of the fracture survey and the EI.

Like other issues discussed above, refusing to slug test almost looks like the objective is to avoid the chance of getting any data that doesn't fit the initial analysis. In that light, the response to the possibility of aquifer testing is a bit ironic. Aquifer testing will perhaps be allowed, if the evolution of the "conceptual model" indicates there is a reason for it. But, no data collection - not additional stream surveys, not logging, not slug testing - is being performed (according to the plan yet) that would allow any evolution the conceptual model that is defined by the fracture analysis. The conceptual design and the characterization program are defined by the presumption of intelligent design by SAIC, not evolution based upon data collection.

Sincerely,

Richard Hill
President STV

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