July 2, 2007

Bryan C. Bower
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West Valley Demonstration Project
10282 Rock Springs Road
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SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION COMMENTS ON WVDP SAMPLING ANALYSIS PLANS RELATED TO THE NORTH PLATEAU GROUNDWATER PLUME

Dear Mr. Bower:

The U.S. Nuclear Regulatory Commission (NRC) has reviewed the U.S. Department of Energy (DOE) West Valley Demonstration Project (WVDP) Sampling Analysis Plans for: 1) Characterization of the North Plateau Plume Area for Metals, and 2) Background Subsurface Soil Data on the North Plateau. NRC staff offers the attached comments in conjunction with our review and consultation role under the WVDP DOE-NRC Memorandum of Understanding.

If you have any questions regarding the attached comments, please contact Chad Glenn of my staff at (301) 415-6722.

Sincerely,

/RA/

Keith I. McConnell, Deputy Director
Decommissioning and Uranium Recovery
Licensing Directorate
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

cc: Addressee list

Enclosure: Comments WVDP Sampling Analysis Plans

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Review of West Valley Demonstration Project Sampling and Analysis Plan for Characterization of the North Plume Area for Metals

A. General Comments

1. To maximize the information collected during this sampling, it is recommended that the exposed cores be photographed and, if possible, the core lithology described to further characterize the thick bedded unit, slack water sequence and till at the sample locations.

2. It is recommended that bulk density and particle density be measured on some of the saturated core samples at each location so porosity may be determined for use in fate and transport calculations.

B. Specific comments

1. Section 1.1, paragraph 6, the Sampling and Analysis Plan (SAP) should clarify the statement "The maximum detected metals concentration in the groundwater exceeded the TOGS [NYSDEC Technical Operation and Guidance Series] standards or guidance value at most of these locations; however, almost all of these exceedances were obtained at one location, indicating that metals contamination was not found in most of the plume's area." It is also recommended that an example figure demonstrating a metal concentration distribution in groundwater from July 2005, which illustrates this assertion, be provided.
2. Section 1.2, paragraph 1, it is difficult to assess the adequacy of the sample locations chosen in Figure 2 for this SAP based on the information provided. The document states that metals are not found in most of the plume's area and the goal of this SAP is to identify whether Resource Conservation and Recovery Act (RCRA) metals are present in the subsurface in the area of the Main Plant Process Building (MPPB). If this is the case, the SAP should consider the placement of more sampling points closer to the MPPB, such as west of GP72, and west and east of GP83.
3. Section 1.2, paragraph 4, the SAP did not state that the ground surface elevation would be surveyed at sample locations. The SAP should include an elevation survey at all sampling locations to ensure depth intervals can be correlated between locations.
4. Section 1.2, paragraph 4, states continuous cores will be taken from the ground surface to the prescribed depth. The SAP needs to provide an explanation as to why the depth intervals (3-5', 8-10', 13-15') were selected instead of sampling every two feet along a continuous core.
5. Section 1.2, paragraph 4 and Section 3.2, the SAP should state the type of Geoprobe core liners to be used.
6. Section 1.2, paragraph 4 and Section 3.2, the SAP should describe how partially filled cores will be addressed with respect to depth.
7. Section 1.2, paragraph 4, the SAP should describe how cores will be extruded, examined, radiologically surveyed and sampled in the two foot depth intervals selected (e.g., core liner will be cut open to preserve structural integrity and soil distribution, described, radiologically tested and sampled from the middle).
8. Section 1.2, paragraph 4 and Section 3.2, the SAP should address how extruded sections will be archived to preserve depth (e.g., two foot sections will be mixed, jarred

and labeled).

9. Section 1.2, paragraph 4, states that no vadose zone soil samples will be collected at the down gradient location of GP83, and the two new locations between 408 and 501. This approach seems reasonable given the apparent lack of overlying source. However, the seasonal variation in water table at this site and smearing that can occur along the capillary fringe, may have transported metals and Sr-90 into the unsaturated zone which may be flushed by recharge into the saturated zone. The SAP should consider this issue before excluding these locations.
10. Section 1.2, paragraph 4, it may be possible for more than one zone of high radioactivity to be encountered along the continuous core at some depth separation (e.g.,10 ft). The SAP should state how this issue will be addressed.
11. Section 1.2 , paragraph 5, with respect to ground water sampling, it is possible for the soil sample with the highest radioactivity to be located in the unsaturated zone. The SAP should explain how the ground water sampling will change if this is the case or state that a ground water sample will be taken in the highest radioactivity location in the unsaturated zone if this happens.
12. Section 1.2, paragraph 5, the SAP should state how the top of the saturated zone at a sampling location will be determined (e.g., continuous cores from the soil boring will be examined for degree of saturation to identify depth to saturation zone in ground water test boring).
13. Section 3.1, paragraph 2, the SAP should state the expected separation distance between the two test borings and survey the ground surface elevation of each bore hole.

Review of West Valley Demonstration Project Sampling and Analysis Plan for Background Subsurface Soil Data on the North Plateau

A. General Comments

1. To maximize the information obtained, it is recommended that the SAP include photographing the exposed cores and, if possible, describing the core lithology to characterize the thick bedded unit, slack water sequence and till at the sample locations.

B. Specific comments

1. Section 1.2, paragraph 3, the SAP should include an elevation survey at each sampling location to ensure depth intervals from different sampling locations can be correlated.
2. Section 1.2, paragraph 3 and Section 3.2, the SAP should describe the type of Geoprobe core liners to be used.
3. Section 1.2, paragraph 3 and Section 3.2, the SAP should describe how partially filled cores will be addressed with respect to depth.
4. Section 1.2, paragraph 3, the SAP should state how cores will be extruded, examined, and sampled in the two foot depth intervals selected (e.g., core liner will be cut open to preserve structural integrity and soil distribution, photographed, described, and sampled from the middle).
5. Section 1.2, paragraph 3 and Section 3.2, the SAP should explain how extruded sections will be archived to preserve depth (e.g., two foot sections will be mixed, jarred and labeled).

6. Section 1.3.4 indicates that all cores will be radiologically screened, but the SAP does not explicitly state this in Section 1.2. The assumption is that these are background locations, but it is critical to perform a radiological survey of the continuous cores to verify this is the case and develop procedures to handle any cores with clearly greater than background levels of radioactivity (e.g., take and analyze more samples to characterize distribution). This is especially important at locations BG07-05 and BG07-04, which can not be entirely excluded from the plume migration path given the groundwater elevation contours. The SAP should clearly address this issue.