



Department of Energy
West Valley Demonstration Project
10282 Rock Springs Road
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April 7, 2014

Mr. Michael Norato, Chief
Materials Decommissioning Branch
Decommissioning and Uranium Recovery Licensing Directorate
Division of Waste Management and Environmental Protection
Office of Federal and State Materials and Environmental Management Programs
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

ATTENTION: C. Glenn

SUBJECT: Responses to Comments on Task Order 4 and 5 Radiological Characterization Reports

REFERENCE: Letter (362920), M. Norato to M. Maloney, "U.S. Department of Energy West Valley Demonstration Project Transmittal of Radiological Characterization Report for the High Level Waste Canister Interim Storage Area (Task Order 4); and Radiological Characterization Report for the Balance of Site Facilities (Task Order 5)," dated January 29, 2014

Dear Mr. Norato:

Please find enclosed responses to U.S. Nuclear Regulatory Commission comments received in the referenced letter.

If you have any questions regarding this matter, please contact Cathy Bohan on (716) 942-4158.

Sincerely,

Bryan C. Bower, Director
West Valley Demonstration Project

Enclosure: Comment Response Matrix

cc: DOE-WVDP Staff (email)
P. J. Bembia, NYSERDA, AC-NYS, w/enc.

CMB:363176 - 450.4



DOE Responses to the January 29, 2014 NRC Comments on the US DOE West Valley Demonstration Project Transmittal of the Radiological Characterization Report for the High Level Waste Canister Interim Storage Area (Task Order 4) and the Radiological Characterization Report for the Balance of Site Facilities (Task Order 5).

Number	Comment	Response
1	<p>It appears that some biased soil samples from the Characterization Reports were taken only as single samples (to 1 m depth) as opposed to 2 samples (one sample to 15 cm and another from 15 cm to 1 m). Section 6.5 (Determine Extent of Surface Soil Contamination) of the Characterization Sampling and Analysis Plan (CSAP) states that "In general (with the exception of sampling from wetlands in response to GWS inaccessibility), two samples will be collected from each location, one representative of a 0-to 15-cm depth, and one representative of a 15-cm to 1-m depth. The purpose of the 0-to 15-cm sample is to address the concern that elevated contamination levels may be limited to the immediate surface and exist at levels that would cause direct exposure dose issues, but that would be diluted by a 0-to 1-m depth sampling protocol. The purpose of the 15-cm to 1-m depth sample is to provide data that can be combined with data from the 0- to 15 cm interval to construct activity concentrations representative of, and comparable, to the surface soil CG definition."</p>	<p>The following biased soil samples were collected and analyzed:</p> <ol style="list-style-type: none"> 1) HLW Canister Storage Pad (5 locations - 0-15 cm and 15-100 cm) 2) Maintenance Triangle (1 location - 0-100 cm) 3) Product Storage Area (1 location - 0-100 cm) 4) Old Warehouse Foundation (1 location - 0-15 cm and 15-60 cm) <p>Gamma walkover surveys did not identify any elevated activity that warranted biased sampling at the Vitrification Fabrication Shop or the Vitrification Test Facility Waste Storage Area.</p> <p>The biased samples collected at the Maintenance Triangle and the Product Storage Area were collected with a 2-inch diameter sampling device advanced with a drilling rig. This sampling method did not provide sufficient soil volume for the analysis of the 18 radionuclides of interest (ROI) and 12 potential radionuclides of interest (PROI) from the 0-15 cm interval so the entire 1 meter sample was homogenized and analyzed. The Old Warehouse Pad Foundation was not sampled from 60-100 cm as the hand auger could not advance any further into the dense Lavery till.</p>
2	<p>From the Characterization Reports, it does not appear that a down-hole gamma scan was performed every time a soil core was taken. Of the down-hole core samples taken, some were taken in 6" increments, while others were taken in 12" increments. Section 6.6 (Identify the</p>	<p>Down-hole gamma scans were performed on soil borings in the following areas:</p> <ol style="list-style-type: none"> 1) HLW Canister Storage Pad Hardstand Sampling Locations 2) Sand and Gravel Unit Reference Area Systematic

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	<p>Presence/Absence of Subsurface Soil Contamination) of the CSAP states that "When soil cores are used for sample collection (either specifically for subsurface contamination characterization or as part of surface soil characterization work), a down-hole gamma scan will be conducted by using an appropriate NaI detector (e.g., a 1 in. x 1 in. NaI detector with shielding to control gamma flux through the top and bottom of the detector). Biased samples will be collected from specific subsurface soil intervals that exhibit the most elevated gross activity levels based on the down-hole gamma scan data."</p> <p>It was not clear that the location, number, and depth of background borehole gamma logs were consistent with the CSAP. According to CSAP Section 8.2 (Background Soil Sample Reference Data Collection) "Four soil cores will be obtained from within the reference area to a depth of at least 1 m into the Lavery Till. The locations of the soil cores will be selected so that they are representative of four quadrants within the reference area. The soil cores will be retrieved in a manner that allows retrieval of intact cores and down-hole gamma scans by using a suitable detector. Down-hole gamma scans will be conducted by taking a 30-second static reading at 15-cm intervals down-hole. Data will be recorded in electronic spreadsheets in a fashion that clearly identifies the detector type and identifier, the location of the core, the depth of the reading, and gross counts in counts per minute. Soil cores will also be scanned ex situ with a suitable detector. As part of this work, the soil type will be recorded for the length of the soil core along with soil moisture estimates."</p>	<p>Sampling Locations</p> <ol style="list-style-type: none"> 3) Lavery till Reference Area Systematic Sampling Locations 4) Maintenance Triangle and the Product Storage Area Biased Sampling Locations <p>Down-hole gross gamma activity levels did not require collection of biased samples. Down-hole gamma scans will be performed for all future soil coring activities at the WVDP in accordance with the requirements in the CSAP to the extent possible.</p>
3	<p>The CSAP envisioned that one reference area would be selected to 1) develop background gross gamma activity survey data sets, 2) evaluate the performance of gamma detectors, and 3) establish representative background radiological soil concentrations for both the Sand and Gravel Unit and the underlying Lavery Till at the WVDP. Since there are two different stratigraphic units exposed at the surface within the WVDP, Safety & Ecology Corporation (SEC) instead selected two separate reference areas within the Western New York Nuclear Service Center (WNYNSC), one within the Sand and Gravel Unit and the other within the Lavery till.</p> <p>Both reference areas were 2,000 m² in area and each was subdivided into ten 200 m² areas in which two sets of ten soil samples were collected and analyzed for the 18 radionuclides of interest (ROI) and the 12 potential radionuclides of interest (PROI) described in the CSAP. One set of samples represented a depth interval of 0-15 cm and the other set the 15-100 cm depth interval. Down-hole gamma scans were performed at each of the 10 boring locations in the Sand and Gravel Unit and each of the 10 boring locations in the Lavery till. The retrieved soil cores were also scanned ex-situ for</p>	<p>The CSAP envisioned that one reference area would be selected to 1) develop background gross gamma activity survey data sets, 2) evaluate the performance of gamma detectors, and 3) establish representative background radiological soil concentrations for both the Sand and Gravel Unit and the underlying Lavery Till at the WVDP. Since there are two different stratigraphic units exposed at the surface within the WVDP, Safety & Ecology Corporation (SEC) instead selected two separate reference areas within the Western New York Nuclear Service Center (WNYNSC), one within the Sand and Gravel Unit and the other within the Lavery till.</p> <p>Both reference areas were 2,000 m² in area and each was subdivided into ten 200 m² areas in which two sets of ten soil samples were collected and analyzed for the 18 radionuclides of interest (ROI) and the 12 potential radionuclides of interest (PROI) described in the CSAP. One set of samples represented a depth interval of 0-15 cm and the other set the 15-100 cm depth interval. Down-hole gamma scans were performed at each of the 10 boring locations in the Sand and Gravel Unit and each of the 10 boring locations in the Lavery till. The retrieved soil cores were also scanned ex-situ for</p>

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4	<p>It was noted in the Phase 1 Final Status Survey Plan (FSSP) for the West Valley Demonstration Project that "...the CSAP has been developed so that data generated by the CSAP, when appropriate, meet the data quality objectives (DQOs) specified by this FSSP," and that "the intent is that data associated with the CSAP, if collected consistent with FSSP protocols and data quality standards, can potentially be used for FSS purposes if contamination levels requiring remediation are not identified." The Task 4 and 5 Characterization Reports were reviewed in light of the potential to use results for FSS purposes. It appears that the goal of the characterization data provided was not to act as a FSS, but rather to primarily perform characterization or remedial action support surveys. The staff also noted that the Characterization Reports did not define survey units for FSS or determine a required number of systematic samples. Section 1.2 (Project Description) of Task Order 5 does indicate that "The SEC sampling team will perform the Remedial Action Surveys. After the completion of the Remedial Action Surveys, SEC may also be required to perform Phase I Final Status Surveys (FSSs) in accordance with the Final Status Survey Plan (FSSP)." Per commitments in the Phase I Decommissioning Plan the U.S. Department of Energy should notify the U.S. Nuclear Regulatory Commission prior to beginning Phase I Final Status Surveys.</p>	<p>gamma radiation by a NaI detector before sample preparation and packaging.</p> <p>The intent of the gamma walkover survey and soil sampling activities described in the Task Order 4 Radiological Characterization Report was to obtain surface soil characterization data in the area of the proposed High-Level Waste Canister Interim Storage Facility. The intent of the survey and soil sampling activities described in the Task Order 5 Radiological Characterization Report was to obtain soil characterization data to document soil conditions remaining after the removal of the Balance of Site Facilities (BOSF) described in the TO5 report.</p> <p>The radiological characterization reports did not define survey units for a final status survey (FSS) as DOE-WVDP did not plan on using the results from the Task Order 4 and 5 characterization activities to support a FSS. Systematic soil sampling to a depth of 15 cm was performed in accordance with the CSAP at a sampling density of one location per 200m².</p> <p>DOE-WVDP is not currently planning on performing any FSS at the WVDP in the immediate future. However, DOE-WVDP will provide the NRC advance notification if DOE-WVDP decides to perform a FSS at the WVDP.</p>