September 4, 2008

Bryan C. Bower, Director
U.S. Department of Energy
West Valley Demonstration Project
10282 Rock Springs Road
West Valley, NY 14171-9799

SUBJECT: REPORT OF JULY 24, 2008 MEETING WITH U.S. DEPARTMENT OF ENERGY TO DISCUSS DOSE MODELING APPROACH FOR PHASE 1 DECOMMISSIONING PLAN

Dear Mr. Bower:

On July 24, 2008, the U.S. Nuclear Regulatory Commission (NRC) and the U.S. Department of Energy (DOE) met to discuss the derivation of derived concentration guideline levels (DCGLs) for DOE's Phase 1 Decommissioning Plan for the West Valley Demonstration Project. The meeting report is enclosed. This information is also available on NRC's public meeting website: http://www.nrc.gov/about-nrc/regulatory/decommissioning/public-involve.html. If you have any questions related to this matter, please contact Chad Glenn on my staff at 301-415-6722.

Sincerely,

R/A

Rebecca Tadesse, 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

Docket No.: P-32

Enclosure:
Meeting Report

cc w/encl: West Valley List

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ML082460569

Office	DWMEP	DWMEP	DWMEP	DWMEP	
Name	CGlenn	SMichonski	CBarr	RTadesse	
Date	09/04/08	09/02/08	09/04/08	09/04/08	/ /

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July 24, 2008 DOE-NRC Meeting Report on the
DOE West Valley Demonstration Project Phase 1 Decommissioning Plan
NRC One White Flint North, Room: O-3B4
Rockville, Maryland

Introduction

On May 19, 2008, the U.S. Department of Energy (DOE) met with the U.S. Nuclear Regulatory Commission (NRC), in a public meeting, to discuss the scope and content of the DOE/WVDP Decommissioning Plan (DP) to support Phase 1 decommissioning. On June 2, 2008, NRC staff issued a meeting summary documenting the results of this meeting. In response to DOE's request, a follow up meeting was scheduled for July 24, 2008 to discuss the derivation of derived concentration guideline levels (DCGLs) for the Phase 1 DP. A summary of the July 24, 2008 meeting is provided below.

In addition to NRC and DOE staff, attendees included representatives of the New York State Energy Research and Development Authority (NYSERDA), New York State Department of Environmental Conservation (NYSDEC), U.S. Environmental Protection Agency, and Nuclear Information and Resource Service. The agenda is located at ML081830774, and the presentations for this meeting are located at ML082040540, and ML082040563. The list of attendees is included as Attachment 1 (ML082480334).

Discussion

NRC staff made a presentation on its expectations for dose modeling and DCGL development. DOE intends to derive DCGLs to guide remediation of Phase 1 source areas to unrestricted release levels. NRC emphasized the need for an integrated dose assessment considering Phase 1 and Phase 2 source contributions to the total dose to ensure all decommissioning options are preserved at the end of Phase 2 (e.g., unrestricted release, restricted release, long-term or perpetual license). NRC staff explained that the level of detail necessary for the integrated dose assessment could be substantially reduced if certain conditions were met. For example, DOE can demonstrate that Phase 2 sources do not significantly overlap with Phase 1 sources, thereby simplifying dose integration analysis. DOE can also demonstrate that the relative risk from Phase 1 sources following Phase 1 remedial efforts is insignificant with respect to the unrestricted release standard of 25 mrem/yr, making additional remediation of Phase 1 sources impractical, also simplifying dose integration analysis.

Because additional data will be collected, analyses performed, and other uncertainties addressed during the ongoing assessment period to assist with making a final decision on decommissioning the site (including Phase 1 sources), NRC expects that the complexity and level of analysis needed to support Phase 2 decommissioning activities to be much greater than Phase 1 analysis. Phase 2 analysis should include a comprehensive dose assessment integrating all Phase 1 and 2 source areas to demonstrate compliance with unrestricted or restricted release if license termination is sought. NRC noted that additional remediation of Phase 1 sources to meet unrestricted release criteria at the end of Phase 2 decommissioning could not be precluded in those cases where DOE estimates of the residual risk are significantly underestimated or recontamination of Phase 1 source areas occurs during the ongoing assessment period.

Enclosure

NRC expects DOE to provide sufficient information to support its demonstration of compliance with unrestricted release criteria for Phase 1 sources including demonstrating its understanding of the potential overlap of Phase 1 and 2 sources in space and time in relation to the peak dose (i.e., DOE should demonstrate its understanding of how various Phase 1 and 2 sources contribute to the peak dose). DOE should evaluate erosion of Phase 1 sources for the entire compliance period, although erosion analyses are expected to be more comprehensive to support Phase 2 decommissioning after additional data and analyses are conducted. NRC expects DOE to develop realistic scenarios and evaluate less likely, but plausible exposure scenarios. DOE should justify its selection of mathematical and computer model to derive DCGLs and use conservative assumptions when uncertainty is great and cannot be reduced.

Next DOE provided a presentation on its approach to developing DCGLs and performing a limited sitewide dose assessment. Significant topics of discussion related to DOE's presentation included the following:

- Conceptual site model development—NRC recommended that DOE use information provided in the Draft Environmental Impact Statement for Long-term Stewardship and Decommissioning to develop a conceptual site model to support the dose assessment analysis for Phase 1 decommissioning. For example, information gained from groundwater analysis and modeling should be used to estimate flow directions and timing from Phase 1 source areas and potential overlap of Phase 1 and 2 sources. Development of a hydrogeological conceptual model is necessary to identify important pathways, guide scenario development, and ensure that an integrated dose assessment is performed.
- NRC and DOE also discussed selection of the computer code to perform the dose calculations. DOE intends to use RESRAD to develop DCGLs for Phase 1 decommissioning including (i) subsurface soils, (ii) surficial soils, and (iii) streambed sediments. NRC questioned how RESRAD would be used to model subsurface contamination in the saturated zone at the bottom of the Phase 1 source area excavations. DOE indicated that it would consider use of another code to model this pathway.
- DOE indicated that it would not consider erosion for the surficial soils and streambed sediment DCGL calculations, as it was more conservative to neglect erosion. NRC agreed that in the case of surficial contamination, including streambed sediments, it was more conservative to ignore erosion which would serve as a removal mechanism. However, NRC questioned how erosion would be considered for subsurface contamination. In this case, erosion would deplete the overlying cover materials and should be considered. NRC also questioned whether DOE should consider gully intrusion into the lagoons in WMA 2 as these source areas are closer to surface water. DOE is evaluating how it will consider erosion in these cases.
- NRC questioned the practicality of remediating streambed sediments when streambeds will continue to be contaminated from groundwater plume seeps, discharge, and runoff from contaminated sediments. DOE indicated that operation of the low level waste treatment facility (which also discharges to surface water) may also impact the decision to remediate streambed sediments. DOE indicated that it would use dose to source factors to account for sediment as a continuing source to groundwater based on erosion and transport modeling.
- NRC expects DOE to model the engineered barrier performance to ensure that no unintended impacts result (e.g., hydraulic barrier failure leading to recontamination of Phase 1 source areas). NRC also expects DOE to consider how engineered barrier

performance and degradation would affect the flow field and justify any modeling assumptions.

- NRC expects DOE to evaluate the sensitivity of model results to parameter values and alternative conceptual models. An attempt should be made to develop site-specific parameter values for those parameters with the most impact on dose. If site-specific information is not available and uncertainty in the parameter values cannot be otherwise reduced, DOE should use conservative assumptions in conducting its deterministic compliance demonstration.
- DOE indicated that it would take credit for a 30 year decay period. Although a decision on Phase 2 could occur at any time during the 30 year ongoing assessment period, DOE would not expect site release prior to 30 years.
- DOE indicated that it would use RESRAD for the streambed sediment DCGL calculations making simplifying assumptions regarding shielding from the stream water.
- NRC and DOE agreed that as additional data is collected to reduce uncertainty in the source concentrations, DOE will revise DCGLs as necessary. DOE stated that after remediation is complete, it would use actual data to estimate the potential dose from Phase 1 sources.

Action Items

- DOE indicated that it would provide information regarding development of site-specific Kds for Sr-90 and other constituents. NRC stated that this information needs to be fully justified and explained in the DP. NRC recommended that DOE also use its calibrated groundwater model to support the site-specific Kds developed from experimental data.
- DOE indicated that it would provide all available data from geoprobe sampling including the geoprobe date collected in 2008.
- DOE and NRC also agreed to a follow up meeting to continue to clarify the scope and content of DOE's WVDP Phase 1 DP.

Attachment:
1. Attendees list