January 14, 2004

Daniel Sullivan
U.S. Department of Energy
West Valley Demonstration Project
10282 Rock Springs Road
West Valley, NY 14171

SUBJECT: COMMENTS ON RISK-BASED END STATE (RBES) VISION DOCUMENT FOR THE WEST VALLEY DEMONSTRATION PROJECT

Dear Mr. Sullivan:

The U.S. Nuclear Regulatory Commission (NRC) has reviewed the Department of Energy's (DOE's) Draft Risk-Based End State (RBES) Vision Document for the West Valley Demonstration Project (WVDP), dated November 2003. Comments on the report are enclosed. By letter dated January 30, 2003, NRC has provided comments to DOE headquarters regarding DOE's initiative "Cleanup Program Driven by Risk-Based End States Project."

As stated in our previous comments on DOE's initiative, the NRC staff encourages your risk-based decision approach, and believes that such an approach would establish a linkage between the intended cleanup actions with the realistic risk/dose impacts associated with the expected end land use. The WVDP RBES document provides a first step to understanding risk; however, it does not offer any insight on relative magnitude or duration of risk for the site. The document does not include any risk factors or performance assessment results to streamline or prioritize DOE resources to focus on high risk areas. Such details could help in deriving the resultant doses so that the risk-based end state for each hazard area can be better defined.

Thank you for the opportunity to review this document. If you have any questions regarding the comments provided, please contact Anna Bradford at 301-415-5228.

Sincerely,

/RA/

Lawrence E. Kokajko, Chief
Environmental and Performance
Assessment Branch
Division of Waste Management

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NRC Comments on the Department of Energy's Risk-Based End State Vision Document for the West Valley Demonstration Project, November 2003

Comment 1:

A summary of each hazard area is provided, along with release mechanisms and exposure pathways; however, the report is limited to comparing present conditions to conditions when cleanup actions are completed. While this conceptual model information is a first step to understanding risk, it does not offer any insight on relative magnitude or duration of risk. The document does not provide a quantitative assessment of end-state risk posed by radioactivity levels expected to remain at the site following remediation, or the duration of risk. The document does not include any risk factors or performance assessment results to streamline or prioritize the Department of Energy (DOE) resources to focus on high risk areas. Further, the document does not provide an adequate level of detail as to the radiological concentrations and magnitudes of the various sources, and their projected mobilization rates. Such details could help in deriving the resultant doses so that the risk-based end state for each hazard area can be defined. Because the document neither provides an assessment of end-state risk nor an adequate level of data to derive risk for the proposed end state, it is of little use for risk insights or for determining a risk-based end state vision. Without a clear definition of the end-state radiological hazards in a quantitative sense, as well as the resultant long-term risks during the performance period, the DOE's Risk-Based End State (RBES) approach for the West Valley Demonstration Project (WVDP) does not appear to increase the understanding of magnitude or duration of risk for the site.

Recommendation:

Provide a comparison of the magnitude and duration of risk or dose resulting from key radionuclides for each hazard area, and then include the mitigative effects of the physical barriers and interventions for the expected environmental pathways so that the risk from the hazards can be clearly defined. Under the NRC's License Termination Rule (LTR), such estimates should assume 1) institutional controls and engineered barriers are in place; and 2) institutional controls fail and engineered barriers degrade over time.

Comment 2:

The report only includes a consideration of the risks out to a time period of 2045, which could be very misleading from a risk context. For example, the Sr-90 plume is not expected to migrate offsite by 2045 and the continuation of institutional controls is the primary basis for prevention of intruder contact with highly concentrated waters from the plume. However, upon loss of institutional controls, the risks from the Sr-90 plume may not be insignificant.

Recommendation:

The risk-based end state approach should consider both long-term (e.g., at 1000 years) as well as short-term impacts.

Attachment

Comment 3:

Section 1.4 states that "evaluation of a potential final WVDP end state is subject to completion of the Decommissioning and/or Long-Term Stewardship Environmental Impact Statement." It should be noted that the purpose of the risk-based end state vision analysis is to focus resources on areas of high potential risk to the public and the environment. The risk insights in the Environmental Impact Statement (EIS), and dose assessments done in the WVDP Decommissioning Plan to demonstrate compliance with NRC's LTR consistent with the NRC's West Valley Policy Statement, could be used in ranking and prioritization of DOE cleanup actions.

Recommendation:

The document should use the results of the risk insights from dose assessments for the LTR and the EIS to establish the risk-based end state vision. As DOE recognizes, the choice of the final WVDP end state (i.e., DOE's Record of Decision) is subject to the outcome of the Decommissioning EIS.

Comment 4:

Page 15 states that "NFS's operating license from NRC was terminated." This should be revised to reflect that the NRC license was not terminated, but that NFS was removed from the license. The New York State Energy Research and Development Authority (NYSERDA) continues to hold the NRC license for the site. It is also stated that "NYSERDA is responsible for making a timely application for an NRC license to reassume possession." NYSERDA would not need to apply for a new NRC license, but rather would need to apply for a license amendment for any changes to the license.

Recommendation:

Revise the document accordingly.

Comment 5:

It is not clear to the NRC that DOE is not responsible for material that DOE placed in the NRC-licensed disposal area, as stated for Hazard Area 1.

Recommendation:

DOE should reconsider the statements made regarding responsibility for Hazard Area 1.

Comment 6:

Page 50 states that, by 2045, Hazard Area 6 will have had all sources of radioactive and chemical contaminants eliminated, and that no contaminants would be present. However, under Barriers/Interventions for Hazard Area 6, it is stated that "monitored process and institutional controls limit public and worker exposure." It is unclear why there would be any institutional controls or possible exposures if all sources and contaminants have been removed.

Recommendation:

Revise document to provide consistency in the discussion of Hazard Area 6.

Comment 7:

The figures provided on pages 23, 24, 28, 30, 32, 35, 39, 41, and 43, present information regarding the exposure pathways to receptors. This information is of limited use due to absence of data on exposure parameters corresponding to each pathway listed in these figures.

Recommendation:

Provide tables summarizing data (or ranges) of exposure parameters corresponding to specific exposure pathways.

Comment 8:

Due to the uniqueness of this site, the end state vision should show the relationship with the requirements of the NRC's LTR. The final end states described do not reflect end states that could result from dose assessments done for compliance with the LTR. For example, large areas of the 3300 acre site could potentially meet the LTR unrestricted use dose criterion while others would need to be restricted use areas with institutional controls in place for a specified duration.

Recommendation:

Consider using the risk categories and associated unrestricted/restricted use end states under the LTR, both as an approach to communicate relative risk of hazard areas and establish necessary institutional controls under the LTR. NRC has recently developed a risk informed graded approach for restricting use with institutional controls that gives a risk ranking scheme that could be of use in prioritizing risk categories: 1) no risk (<25 mrem/yr), 2) lower risk (25-100 mrem/yr), and 3) higher risk (100-500 rem/yr). This approach is described in a May 2, 2003, Commission paper (SECY-03-0069), which the Commission has approved.

Comment 9:

The document should clarify that the barriers and institutional controls that are in place at 2045 would continue to provide protection beyond this time frame.

Recommendation:

Revise the document accordingly.

Comment 10:

The numbering of figures (e.g., Figure 4.1a2.) and the order of placing figures in the text are confusing. The document has no Table of Contents and Figure 1 is missing.

Recommendation:

The document should be revised accordingly and the numbering of figures should be simplified or explained.