UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 17, 2021

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

SUBJECT: U.S. DEPARTMENT OF ENERGY WEST VALLEY DEMONSTRATION PROJECT – DEMOLITION READINESS OF THE MAIN PLANT PROCESS BUILDING DECOMMISSIONING AND DEMOLITION PLAN (DOCKET NO. 50-201 (POOM-032))

Dear Mr. Bower:

In the U.S. Nuclear Regulatory Commission's (NRC's) March 4, 2021, letter (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21028A132) to the U.S. Department of Energy West Valley Demonstration Project (DOE-WVDP), the NRC stated that the NRC has no further comments on the West Valley Main Plant Process Building (MPPB) Decommissioning and Demolition Plan, Rev. 4, but indicated that there were several outstanding items related to the MPPB decommissioning and demolition work plan that need to be provided to support NRC's review with respect to DOE-WVDP's implementation of the West Valley Demonstration Project Phase 1 Decommissioning Plan, Rev. 2 (Phase I DP). The purpose of this letter is to inform you that the DOE-WVDP has addressed all those identified outstanding items and to provide the NRC conclusions regarding the demolition readiness of the MPPB as related to Phase I DP[1].

Specifically, the DOE-WVDP provided the NRC with the MPPB radiological characterization, inventory and analyses verifying the MPPB demolition will not exceed the National Emissions Standards for Hazardous Air Pollutants limits (Title 40 of the *Code of Federal Regulations* (40 CFR) Part 61). Also, DOE provided additional information concerning the overall MPPB dose modeling results. The analyses provided by DOE-WVDP address portions of the uncertainty present in the modeling through the use of active management of demolition activities and verification of final inventory estimates. In addition, DOE provided an updated schedule (ADAMS Accession No. ML21126A023). After review of the modeling files for the MPPB, the NRC staff provided additional clarification questions (ADAMS Accession Nos. ML21242A036 and ML21351A334). Clarification teleconferences, at the request of NRC, occurred on December 6 and 16, 2021.

The NRC concludes that the DOE-WVPD has demonstrated adequate planning to the NRC that the MPPB is ready for open air demolition. The NRC concludes that:

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[1] Refer to Phase I DP, Appendix A, Decommissioning Plan Annotated Checklist (ADAMS Accession No. (ML100040393 Pkg.) for topics and agreements between NRC and DOE regarding requirements as applicable to the Phase I DP.

- The DOE-WVDP modeling approach appears reasonable and adequate for the purposes of assessing potential dose to members of the public and workers associated with MPPB demolition activities.

  Of Note:

  - DOE-WVDP's modeling approach relies on EPA models (CAP-88 and AERMOD) and model parameters that are expected to be suitable for regulatory purposes (i.e., demonstrating compliance with EPA regulations).[2] NRC has coordinated with EPA on review of the EPA models.

  - DOE-WVDP is following DOE regulations found in 10 CFR 835 for protection of workers, including internal dosimetry methods.[3] Methodologies for calculating release fractions are based on DOE experience (e.g., DOE Handbook).[4] The regulations at 10 CFR 835 are similar to NRC's regulations at 10 CFR 20[5]. . .

- NRC staff's independent review and modeling shows that there is significant uncertainty in modeling results; however, the safety margin is sufficient to mitigate these uncertainties.

- Monitoring (air monitoring, personal dosimetry, and radiological surveys) will help mitigate any potential unexpected release of radioactive material so that prompt corrective actions could be taken.

The NRC staff assumes that:

- Inventory is not significantly under-estimated.

- The Product Purification Cell South (PPC-S) has been remediated to levels that will not cause any unacceptable (i.e., above regulatory limits) dose to workers and members of the public.

- Meteorological conditions will be actively managed to ensure conditions do not invalidate modeling results.

- Air modeling assumptions are consistent with actual field conditions (e.g., rates of

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[2] In addition to using EPA's regulatory models (AERMOD and CAP-88), DOE also obtained approval from EPA on their source term as described in DOE's "Alternative Methodology for Radionuclide Source Term Calculations for Air Emissions from Demolition Activities at the West Valley Demonstration Project" document.

[3] 10 CFR 835, *Occupational Radiation Protection,* contains "Derived Air Concentrations (DAC) for Controlling Radiation Exposure to Workers at DOE Facilities" in Appendix A and "Surface Contamination Values" in Appendix D, which are used to determine radiological boundaries, postings, and controls.

[4] DOE, 1994. "Airborne Release Fractions/Rates and Respirable Fractions for Nonreactor Nuclear Facilities", DOE-HDBK-30 10-94, US Department of Energy, 1994, Reaffirmed 2013

[5] Although similar, there are some differences. For example, 10 CFR 835, "Occupational Radiation Protection" uses more recent internal dosimetry compared to 10 CFR 20, "Standards for Protection Against Radiation." Licenses may use a more modern dosimetry if approved by NRC. However, DOE is not a licensee. Nonetheless, NRC agreed that DOE may use DOE regulations for occupational radiation protection for the purpose of the Phase I DP.

demolition) and potential cumulative impacts of multiple decommissioning activities (i.e., demolition, debris pile, and load out emissions) are considered in determining the final demolition schedule and developing work orders.

- Controls are in place to take corrective actions, if needed.

The NRC staff concurs with DOE plans and recommends that DOE-WVDP:

- Place emphasis on ensuring that procedures and work orders that it plans to put in place are clearly written and staff are trained to ensure that debris piles will be loaded and containerized within a reasonable timeframe.

- Conduct radiological surveys to ensure that residual radioactivity levels are as expected and to minimize the potential for risk-significant residual radioactivity levels in the environment to accumulate or go undetected.

- Develop a process or procedures to delay or stop work under actual or forecasted weather conditions which would invalidate air and dose modeling results (e.g., extreme wind or meteorological conditions).

- Ensure that monitoring is adequate to detect any potential discrete radioactive particles and have controls in place to minimize the creation of discrete radioactive particles during demolition activities.

- Consider collection of monitoring data sufficient to evaluate the predictive capability of the air dispersion modeling, to calculate expected worker and member of the public dose, and to inform future DOE activities.

The NRC understands that an updated schedule for the MPPB decommissioning and demolition activities will be provided to the NRC in order to better inform us on field activities and help plan for future site monitoring visits.

The NRC requests an opportunity to conduct a monitoring visit to the site before demolition commences. This site visit will be coordinated with your staff.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter is available for inspection at the Public Document Room Monday-Friday by appointment or electronically from the Publicly Available Records component of ADAMS. ADAMS is accessible from the NRC Web site at https://www.nrc.gov/reading-rm/adams.html. To schedule an appointment to visit the Public Document Room, please email PDR.Resource@nrc.gov or call 1-800-397-4209.

If you have questions or need additional information regarding this topic, please contact me at 301-415-6822 or via email at amy.snyder@nrc.gov.

Sincerely,


Signed by Snyder, Amy
on 12/17/21

Amy M. Snyder, Senior Project Manager
Reactor Decommissioning Branch
Division of Decommissioning, Uranium Recovery
and Waste Programs
Office of Nuclear Material Safety and Safeguards

cc: P. J. Bembia, NYSERDA

U.S. Department of Energy West Valley Demonstration Project - Demolition Readiness of the Main Plant Process Building Decommissioning and Demolition Plan DATE December 17, 2021

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