UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

June 7, 2018

Docket No. 05000201 License No. CSF-1

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

SUBJECT: U. S. NUCLEAR REGULATORY COMMISSION MONITORING VISIT REPORT NO. 05000201/2018001, WEST VALLEY DEMONSTRATION PROJECT, WEST VALLEY, NEW YORK

Dear Mr. Bower:

On February 13 and April 10 - 12, 2018, the Nuclear Regulatory Commission (NRC) conducted monitoring visits at the U.S. Department of Energy's West Valley Demonstration Project site to review ongoing decommissioning activities. The monitoring visit consisted of observations by the NRC representatives, review of documents, and interviews with personnel. NRC staff also observed a series of presentations provided to Seneca Nation of Indians representatives on April 11, 2018, at their Cattaraugus Territory facility. The results of the monitoring visits were discussed with you during the April 12, 2018 monitoring visit and are provided in the enclosed report. No public health and safety issues were identified.

No reply to this letter is required. Please contact Mark Roberts at (610) 337-5094 if you have any questions regarding this matter.

Sincerely,

Raymond J. Powell, Chief
Decommissioning, ISFSI, and
Reactor HP Branch
Division of Nuclear Materials Safety

Enclosure:
Report No. 05000201/2018001

cc w/enclosure: Craig Rieman, Deputy Director
Moira Maloney, Regulatory Strategy and Environmental Compliance
Janice Williams, Regulatory Affairs
Paul Bembia, Program Director

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Distribution w/encl (via Email)
J. Trapp, RI R. Powell, RI K. Warner, RI
J. Nick, RI M. Roberts, RI A. Snyder DUWP, NMSS
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DATE	06/4/2018		06/4/2018		06/7/2018			

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NAME	KWarner /r/		MRoberts /m/		RPowell			
DATE	06/4/2018		06/4/2018		06/ /2018			

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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

INSPECTION REPORT

Monitoring Visit No.	POOM-032/2018001
Project No.	POOM-032
NRC Docket No.	05000201
NRC License No.	CSF-1
Location:	West Valley Demonstration Project 10282 Rock Springs Road West Valley, New York 14171
Monitoring Visit Dates:	February 13 and April 10 - 12, 2018
Monitoring Visit Exit Date:	April 12, 2018
NRC Staff:	Mark C. Roberts, Senior Health Physicist Decommissioning, ISFSI and Reactor Health Physics Branch Division of Nuclear Materials Safety, Region I Katherine Warner, Health Physicist Decommissioning, ISFSI and Reactor Health Physics Branch Division of Nuclear Materials Safety, Region I
Approved By:	Raymond J. Powell, Chief Decommissioning, ISFSI and Reactor Health Physics Branch Division of Nuclear Materials Safety, Region I

Enclosure

EXECUTIVE SUMMARY

U.S. Department of Energy (DOE)
West Valley Demonstration Project (WVDP)
United States Nuclear Regulatory Commission (NRC) Monitoring Visit Report No. 2018-001

A series of routine, announced monitoring visits were conducted on February 13 and April 10 - 12, 2018, by NRC staff at the DOE WVDP site in West Valley, New York. NRC staff also participated in the DOE quarterly public meeting on February 28, 2018, via telephone and webinar. Additionally, NRC staff attended an NRC educational seminar on radiation basics and a presentation on the NRC's evaluation of sampling data from the vicinity of the Cattaraugus stream that is on and adjacent to Territory of the Seneca Nation of Indians (SNI). The seminar and presentation were provided to SNI representatives at SNI Territory facilities on April 11 and 12, 2018. The program for conducting NRC monitoring visits at the WVDP is described in Inspection Manual Chapter (IMC) 0111, "Region I Monitoring Activities for the DOE West Valley Demonstration Project." The monitoring visits included a review of programs and activities associated with the WVDP site decommissioning project. The monitoring visits consisted of interviews with DOE, DOE contractor, and New York State Energy Research and Development Agency (NYSERDA) personnel; a review of documents; tours of the facility; and observations of prepared work areas and in-progress work activities. Based on the results of these activities, no public health and safety issues were identified.

REPORT DETAILS

1.0 Introduction

In accordance with the WVDP Act of 1980 and as implemented by a Memorandum of Understanding between the DOE and the NRC, routine, announced monitoring visits were conducted on February 13 and April 10-12, 2018 by NRC staff at the DOE WVDP site in West Valley, New York. NRC staff participated in the DOE quarterly public meeting on February 28, 2018, via telephone and webinar. NRC also observed a series of presentations provided to SNI representatives on April 11, 2018, at their Cattaraugus Territory facility. The program for conducting NRC monitoring visits at the WVDP is described in IMC 0111. The monitoring visits included a review of programs and activities associated with the WVDP site decommissioning project.

2.0 Vitrification Facility Demolition Project

a. Inspection Scope

The NRC reviewed DOE's progress for the open-air demolition of the vitrification facility at the WVDP site. The monitoring visit consisted of interviews with DOE and DOE contractor personnel including discussions on the overall status of the vitrification facility demolition, weather challenges, radiological control status, and waste packaging and shipping issues. NRC staff also discussed the air monitoring system components, dust control measures for demolition activities; and discussed how these measures may be considered for the Main Plant Processing Building (MPPB) demolition project.

b. Observations and Findings

The vitrification facility housed the major equipment that was used for mixing liquid high level radioactive waste with molten glass for stabilizing and solidifying the waste in high integrity stainless steel canisters. These canisters are now stored in shielded concrete casks on the high level waste interim storage pad at the south end of the site. The vitrification facility was later used for a number of waste processing operations that included size reduction and repackaging. The vitrification facility is a structural steel and reinforced concrete building approximately 145 feet long, 91 feet wide, and 50 feet high (with a 26-foot vertical extension for the crane house). The vitrification cell within the facility is a robust structure with concrete floors and walls from two to four feet thick and a 3/8-inch thick stainless steel liner. Nearly all of the remaining radioactivity is located within the vitrification cell. The primary radionuclides in the cell include strontium-90, cesium-137, americium-241, and isotopes of plutonium and uranium.

Building demolition is being performed using heavy construction equipment that use large impact hammers to bring down the concrete walls and shears and claws to bring down less robust features and size-reduce debris to fit into the 30 yd^3 intermodal shipping containers. Water sprays are directed onto demolition areas and waste piles for dust control and to limit the potential for airborne activity releases. DOE has incorporated lessons learned from prior decommissioning activities through the use of water spray equipment that uses more focused spray equipment that uses less water, but is still effective in dust control. Residual water is collected in bermed areas and

pumped as needed into collection tanks for subsequent analysis. Debris piles are also coated and mixed with a fixative agent for additional dust control.
DOE and contractor staff indicated that during the very cold and inclement winter months, demolition activities have been adversely impacted by freezing of water sprays and equipment issues due to the cold temperatures. The NRC representatives noted that potassium acetate, an aircraft deicing agent, has been added to water sprays to control freezing and electric heaters used to maintain equipment operability in the lower temperatures. WVDP staff indicated that an evaluation of the effects of potassium acetate was completed and no adverse effects were expected.

Demolition waste from the project is shipped either to a licensed commercial waste facility in Utah or to the DOE Nevada National Security Site (NNSS) in Nevada. Intermodal containers are initially prepared for shipment by lining the container with a durable bag and adding a water absorbent agent to prevent free-standing water due to the wetted waste. Intermodal containers destined for the Utah facility are typically trucked to a trans-loading facility in Wampum, Pennsylvania, where the contents are emptied into gondola railcars for train shipment to the disposal site. Loaded intermodal containers destined for the NNSS site are trucked to a trans-loading facility near Buffalo, New York, where they are loaded onto flatbed railcars (typically eight intermodal containers per railcar) and shipped via train to a trans-loading facility in Kingman, Arizona. Because direct shipment via train to the NNSS is not available, intermodal containers are loaded onto trucks at the Arizona facility and driven to the NNSS facility for unloading and disposal of the waste.

Inspections performed by staff at the Kingman, AZ facility identified damage to some of the intermodal containers arriving at the facility. The damage, apparently caused by shifting debris during transit, consisted of punctures of the containers and damage to door closures. DOE staff developed immediate corrective measures for subsequent shipments that included armoring the floor and walls of the container with plywood sheets and re-orienting the loaded waste to limit movement within the containers. No new shipments employing the corrective measures had been made during this reporting period.

The NRC representatives observed the loading process on several intermodal containers. The NRC representatives noted that radiological control technicians were actively monitoring the process and performed exposure rate and contamination measurements on the filled, sealed containers as they were removed from the controlled area. Radiation protection staff were also monitoring an array of air monitors and air samplers used for evaluation of airborne concentrations in the demolition area. Four air sampling monitors are arranged within the work area and real-time data from the monitors are sent to display devices in a nearby trailer. Data are evaluated on a real-time basis by a radiation control technician. Pre-designated alarm levels have been established along with response actions, ranging from stopping work and evaluating results to shelter or evacuate as appropriate. Radiation control staff indicated that only the lower tier alarms have been tripped and evaluations determined that the alarms were caused by fluctuations in naturally-occurring radon decay products.

A separate set of air samples are also being used to evaluate the airborne control measures for consideration of offsite impact. The USEPA approved the use of alternative methodology pursuant to 40 CFR Part 61.96(b), for radionuclide source-term calculations for air emissions from the vitrification facility demolition. NRC and WVDP

staff discussed the emissions study being conducted during demolition of the vitrification facility. Data from this study are intended to be used as part of the approval process to validate the alternative calculation methods for consideration for the MPPB demolition. Air sample information is gathered along with descriptions of the demolition and waste handling activities as well as dust suppression and control measures being employed. These data are being combined to develop a "proof of concept" document. The WVDP project continues to use an established set of sixteen offsite air samplers for compliance purposes. The data from these samplers are reported in the Annual Site Environmental Report.

WVDP staff continue to work on plans for MPPB demolition. Pre-demolition activities similar to that of the vitrification facility are being conducted including asbestos removal; filling piping and electrical conduits with grout or foam; placing grout on floors to reduce the gamma exposure rate and stabilize the radioactive source term; and removing and disposing major contaminated systems, structures, and components to reduce the radioactive source term for the future demolition. Work continues on characterization and modeling of the ninety-eight survey units that the MPBB has been divided into. In these characterization and modeling efforts for each area, WVDP staff consider the inventory of the radionuclides of concern and the degree of stabilization of the radioactive material inventory in order to determine the appropriate demolition techniques.

c. Conclusions

No public health and safety issues were identified. The demolition activities appear to be controlling air and water effluents as intended and planning work continues towards MPPB demolition.

3.0 Public Meetings

DOE WVDP Quarterly Public Meeting

NRC staff participated in the DOE quarterly public meeting on February 28, 2018, via telephone conference and webinar. During the public meeting, DOE, DOE contractor, and NYSERDA representatives provided updates on the progress of various project milestones.

Presentations to the Seneca Nation of Indians

On April 11, 2018 (and again on April 12, 2018), NRC staff gave two presentations regarding the NYSERDA's offsite sampling and dose assessment evaluation to representatives from the SNI at their facilities on the Cattaraugus and Allegheny Territories, respectively. In the morning session, Henry Lynn from the NRC's Technical Training Center, with support from Dr. Shannon Seneca of the SNI, provided an educational seminar on Radiation Basics.

In an afternoon session, representatives from the NRC's Office of Nuclear Materials Safety and Safeguards (NMSS) presented a summary of its review of NYSERDA's evaluation of the soil sampling data and dose assessment. Five areas off the Western New York Nuclear Service Center (WNYNSC) were sampled and evaluated by NYSERDA, two of which were on the SNI Cattaraugus Territory. Soil sampling and

analyses was performed by NYSERDA staff and contractors to determine the presence of radioactivity above background that was identified from the DOE/NYSERDA aerial radiation survey performed in 2014. NMSS staff's conclusion is consistent with NYSERDA's conclusion that the expected risk from offsite residual radioactivity in the areas of interest is low. The resulting dose in each area of interest sampled is expected to be less than unrestricted use limits found in Title 10 of the Code of *Federal Regulations* (10 CFR) 20.1402.

5.0 Exit Meeting Summary

The NRC Region I representatives discussed the monitoring visit results with Bryan Bower, DOE Project Director, during the April 12, 2018, monitoring visit. Mr. Bower acknowledged the monitoring visit results.

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Department of Energy

B. Bower, Project Director
J. Dundas, Physical Scientist
J. Forti, DOE Health Physics Support Contractor
J. Grice, General Engineer
M. Maloney, Regulatory Strategy and Environmental Compliance Team Leader
D. Sullivan, Project Manager

NYSERDA

P. Bembia, Program Director
L. Gordon, Project Manager
A. Mellon, Project Manager

CH2MHILL-B&W West Valley, LLC and Contractors

C. Biedermann, Senior Consulting Engineer
D. Biela, Radiological Engineering Manager
S. Chase, Facilities Disposition Operations Manager
W. Connors, Principal Engineer, Waste Shipping
T. Dogal, Facilities Disposition Manager
J. Ebert, High Level Waste Project Manager
J. Fox, Regulatory Specialist
B. Henderson, Radiation Safety Manager
W. Kean, Regulatory Specialist
D. Klenk, Regulatory Strategy
D. Lobdell, Waste Management
P. Loop, Waste Planning and Disposition
J. Rizzo, Manager, Waste Planning and Disposition
A. Steiner, Senior Environmental Regulatory Strategist
R. Steiner, Regulatory Specialist
D. Stevens, Engineering Manager
J. Williams, Regulatory Strategy

USNRC (SNI Presentations)

C. Barr, Senior Risk Analyst
G. Chapman, CHP, Health Physicist
S. Koenick, Chief, Materials Decommissioning Branch
S. Lopas, Facilitator
H. Lynn, CHP, Senior Health Physicist
A. Snyder, Project Manager
S. Talley, State/Tribal Liaison

PARTIAL LIST OF DOCUMENTS REVIEWED

Monthly WVDP Project Performance Reports (various)
Weekly WVDP Project Status Reports (various)
U.S. Department of Energy, WVDP Vitrification Facility Demolition Project, Readiness Assessment Plan of Action, June 2017
U.S. Department of Energy, WVDP Vitrification Facility Demolition Project, Readiness Assessment Implementation Plan, July 2017
Presentations from the February 28, 2018, Regulatory Roundtable Meeting, Ashford, New York
WVDP Vitrification Facility Decommissioning & Demolition Plan, CHBWV, May, 2017
Letter dated January 30, 2017 from the U.S. Department of Energy West Valley Demonstration Project (DOE-WVDP) -Responses to the U.S. Nuclear Regulatory Commission Comments on DOE WVDP Vitrification Facility Decommissioning & Demolition Plan, WVDP-575, ML17039B033
Transmittal of U.S. Department Of Energy West Valley Demonstration Project Vitrification Facility Decommissioning Work Plan, Rev. 4, May 9, 2017. (Cover Letter and Plan), ML17152A330
Radioactive waste shipping records for the EnergySolutions facility destination
Radioactive waste shipping records for the Nevada National Security Site facility destination

LIST OF ACRONYMS USED

DOE	Department of Energy
IMC	Inspection Manual Chapter
MPPB	Main Plant Processing Building
NMSS	NRC's Office of Nuclear Materials Safety and Safeguards
NNSS	Nevada National Security Site
NRC	Nuclear Regulatory Commission
NYSERDA	New York State Energy Research and Development Authority
SNI	Seneca Nation of Indians
USEPA	U. S. Environmental Protection Agency
WVDP	West Valley Demonstration Project