DOE/EIS-0226-D (Revised)
November 2008

Revised Draft Environmental Impact Statement for

Decommissioning and/or Long-Term Stewardship at the West Valley Demonstration Project and Western New York Nuclear Service Center

The West Valley Site

Volume 2 Book 2

(Appendices G through R)

NYSERDA

AVAILABILITY OF THE
REVISED DRAFT EIS FOR DECOMMISSIONING AND/OR
LONG-TERM STEWARDSHIP AT THE WEST VALLEY
DEMONSTRATION PROJECT AND WESTERN NEW YORK
NUCLEAR SERVICE CENTER

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COVER SHEET

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New York State Energy Research and Development Authority (NYSERDA)

Cooperating Agencies: U.S. Nuclear Regulatory Commission (NRC)
U.S. Environmental Protection Agency (EPA)
New York State Department of Environmental Conservation (NYSDEC)

Involved Agency: New York State Department of Health (NYSDOH)

Title: *Revised Draft Environmental Impact Statement for Decommissioning and/or Long-Term Stewardship at the West Valley Demonstration Project and Western New York Nuclear Service Center* (DOE/EIS-0226-D [Revised])

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Abstract: The Western New York Nuclear Service Center (WNYNSC) is a 1,352-hectare (3,340-acre) site located 48 kilometers (30 miles) south of Buffalo, New York and owned by NYSERDA. In 1982, DOE assumed control but not ownership of the 66.4-hectare (164-acre) Project Premises portion of the site in order to conduct the West Valley Demonstration Project (WVDP), as required under the 1980 West Valley Demonstration Project Act. In 1990, DOE and NYSERDA entered into a supplemental agreement to prepare a

joint EIS to address both the completion of WVDP and closure or long-term management of WNYNSC. A Draft EIS was issued for public comment in 1996: the *Draft Environmental Impact Statement for Completion of the West Valley Demonstration Project and Closure or Long-Term Management of Facilities at the Western New York Nuclear Service Center*, also referred to as the 1996 *Cleanup and Closure Draft EIS*, DOE/EIS-0226D, January 1996. The 1996 Draft EIS did not identify a Preferred Alternative.

Based on decommissioning criteria for the WVDP issued by NRC since the publication of the 1996 Draft EIS and public comments on the Draft EIS, DOE and NYSERDA prepared this *Revised Draft Environmental Impact Statement for Decommissioning and/or Long-Term Stewardship at the West Valley Demonstration Project and Western New York Nuclear Service Center* (also referred to as the *Decommissioning and/or Long-Term Stewardship* EIS), revising the 1996 Draft EIS. This EIS has been prepared in accordance with NEPA and SEQR to examine the potential environmental impacts of the range of reasonable alternatives to decommission and/or maintain long-term stewardship at WNYNSC. The alternatives analyzed in this Draft EIS include the Sitewide Removal Alternative, the Sitewide Close-In-Place Alternative, the Phased Decisionmaking Alternative (Preferred Alternative), and the No Action Alternative. The analysis and information contained in this EIS is intended to assist DOE and NYSERDA with the consideration of environmental impacts prior to making decommissioning or long-term management decisions.

Phased Decisionmaking Alternative (Preferred Alternative): Under the Preferred Alternative, decommissioning would be accomplished in two phases: Phase 1 decisions would include removal of all Waste Management Area (WMA) 1 facilities, the source area of the North Plateau Groundwater Plume, and the lagoons in WMA 2. Phase 1 activities would also include additional characterization of site contamination and studies to provide additional technical information in support of the technical approach to be used to complete site decommissioning. Phase 2 would support the completion of decommissioning actions or long-term management. In general, the Phased Decisionmaking Alternative involves near-term decommissioning and removal actions where there is agency consensus and undertakes characterization work and studies that could facilitate future decisionmaking for the remaining facilities or areas.

Public Comments: On March 13, 2003, DOE issued a Notice of Intent (NOI) in the *Federal Register* soliciting public input on development of this Draft EIS. Public comments received during the scoping period (March 13 through April 28, 2003) and comments received on the 1996 Draft EIS have been considered in the preparation of this Draft EIS. Comments on this Draft EIS will be accepted for a period of 6 months following publication of EPA's Notice of Availability (NOA) in the *Federal Register*, and will be considered in the preparation of the Final EIS. Any comments received after the comment period closes will be considered to the extent practicable. The locations and times of public hearings on the Draft EIS will be identified in the *Federal Register* and through other media such as local press notices. In addition to the public hearings, multiple mechanisms for submitting comments on the Draft EIS are available:

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ACRONYMS, ABBREVIATIONS, AND CONVERSION CHARTS

ACRONYMS, ABBREVIATIONS, AND CONVERSION CHARTS

ALARA	as low as reasonably achievable
AMCG	average member of the critical group
BEIR	Biological Effects of Ionizing Radiation
CDD	Chemical Dispersal Device
CDDL	Construction and Demolition Debris Landfill
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
CH	contact-handled
CMS	Corrective Measures Study
DCGL	Derived Concentration Guideline Levels
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
ECL	Environmental Conservation Law
EID	Environmental Information Document
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ERPG	Emergency Response Planning Guideline
FEHM	Finite Element Heat and Mass Transfer Code
FEMA	Federal Emergency Management Agency
FR	*Federal Register*
GTCC	Greater-Than-Class C waste
HEAST	Health Effects Assessment Summary Table
HEPA	high-efficiency particulate air
HEC	Hydrologic Engineering Center
HIC	high-integrity container
HQ	hazard quotient
ICRP	International Commission on Radiological Protection
IDA	intentional destructive acts
IRIS	Integrated Risk Information System
ISCORS	Interagency Steering Committee on Radiation Standards
LCF	latent cancer fatality
MAR	material at risk
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MCL	maximum contaminant level
MEI	maximally exposed individual
NAAQS	National Ambient Air Quality Standards
NDA	NRC-licensed Disposal Area
NEPA	National Environmental Policy Act

NFS	Nuclear Fuel Services, Inc.
NOI	Notice of Intent
NRC	U.S. Nuclear Regulatory Commission
NTS	Nevada Test Site
NYCRR	New York Code of Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSERDA	New York State Energy Research and Development Authority
OSL	optically stimulated luminescence
PCB	polychlorinated biphenyl
PM	particulate matter
PMF	probable maximum flood
RCRA	Resource Conservation and Recovery Act
RDD	Radiological Dispersal Device
rem	roentgen equivalent man
RMSE	root-mean-square-error
ROD	Record of Decision
SDA	State-licensed Disposal Area
SEQR	State Environmental Quality Review Act
SPDES	State Pollutant Discharge Elimination System
SSR	sum of the square of the residuals
STOMP	Subsurface Transport Over Multiple Phases
STS	Supernatant Treatment System
SWMU	Solid Waste Management Unit
TEDE	total effective dose equivalent
TRAGIS	Transportation Routing Analysis Geographic Information System
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
USLE	Universal Soil Loss Equation
WEPP	Waste Erosion Prediction Project
WIPP	Waste Isolation Pilot Plant
WMA	Waste Management Area
WNYNSC	Western New York Nuclear Service Center
WVDP	West Valley Demonstration Project
WVNS	West Valley Nuclear Services Company, Inc.
° C	degrees Celsius
° F	degrees Fahrenheit

CONVERSIONS

METRIC TO ENGLISH			ENGLISH TO METRIC		
Multiply	**by**	**To get**	**Multiply**	**by**	**To get**
Area					
Square meters	10.764	Square feet	Square feet	0.092903	Square meters
Square kilometers	247.1	Acres	Acres	0.0040469	Square kilometers
Square kilometers	0.3861	Square miles	Square miles	2.59	Square kilometers
Hectares	2.471	Acres	Acres	0.40469	Hectares
Concentration					
Kilograms/square meter	0.16667	Tons/acre	Tons/acre	0.5999	Kilograms/square meter
Milligrams/liter	1 [a]	Parts/million	Parts/million	1 [a]	Milligrams/liter
Micrograms/liter	1 [a]	Parts/billion	Parts/billion	1 [a]	Micrograms/liter
Micrograms/cubic meter	1 [a]	Parts/trillion	Parts/trillion	1 [a]	Micrograms/cubic meter
Density					
Grams/cubic centimeter	62.428	Pounds/cubic feet	Pounds/cubic feet	0.016018	Grams/cubic centimeter
Grams/cubic meter	0.0000624	Pounds/cubic feet	Pounds/cubic feet	16,025.6	Grams/cubic meter
Length					
Centimeters	0.3937	Inches	Inches	2.54	Centimeters
Meters	3.2808	Feet	Feet	0.3048	Meters
Kilometers	0.62137	Miles	Miles	1.6093	Kilometers
Temperature					
Absolute					
Degrees C + 17.78	1.8	Degrees F	Degrees F - 32	0.55556	Degrees C
Relative					
Degrees C	1.8	Degrees F	Degrees F	0.55556	Degrees C
Velocity/Rate					
Cubic meters/second	2118.9	Cubic feet/minute	Cubic feet/minute	0.00047195	Cubic meters/second
Grams/second	7.9366	Pounds/hour	Pounds/hour	0.126	Grams/second
Meters/second	2.237	Miles/hour	Miles/hour	0.44704	Meters/second
Volume					
Liters	0.26418	Gallons	Gallons	3.78533	Liters
Liters	0.035316	Cubic feet	Cubic feet	28.316	Liters
Liters	0.001308	Cubic yards	Cubic yards	764.54	Liters
Cubic meters	264.17	Gallons	Gallons	0.0037854	Cubic meters
Cubic meters	35.314	Cubic feet	Cubic feet	0.028317	Cubic meters
Cubic meters	1.3079	Cubic yards	Cubic yards	0.76456	Cubic meters
Cubic meters	0.0008107	Acre-feet	Acre-feet	1233.49	Cubic meters
Weight/Mass					
Grams	0.035274	Ounces	Ounces	28.35	Grams
Kilograms	2.2046	Pounds	Pounds	0.45359	Kilograms
Kilograms	0.0011023	Tons (short)	Tons (short)	907.18	Kilograms
Metric tons	1.1023	Tons (short)	Tons (short)	0.90718	Metric tons

ENGLISH TO ENGLISH

Acre-feet	325,850.7	Gallons	Gallons	0.000003046	Acre-feet
Acres	43,560	Square feet	Square feet	0.000022957	Acres
Square miles	640	Acres	Acres	0.0015625	Square miles

a. This conversion is only valid for concentrations of contaminants (or other materials) in water.

METRIC PREFIXES

Prefix	Symbol	Multiplication factor
exa-	E	1,000,000,000,000,000,000 = 10^{18}
peta-	P	1,000,000,000,000,000 = 10^{15}
tera-	T	1,000,000,000,000 = 10^{12}
giga-	G	1,000,000,000 = 10^{9}
mega-	M	1,000,000 = 10^{6}
kilo-	k	1,000 = 10^{3}
deca-	D	10 = 10^{1}
deci-	d	0.1 = 10^{-1}
centi-	c	0.01 = 10^{-2}
milli-	m	0.001 = 10^{-3}
micro-	μ	0.000 001 = 10^{-6}
nano-	n	0.000 000 001 = 10^{-9}
pico-	p	0.000 000 000 001 = 10^{-12}