

CONTENTS

ACRONYMS AND ABBREVIATIONS.....	xii
MEASUREMENTS AND CONVERSIONS	xiii
CHAPTER 1: INTRODUCTION.....	1-1
1.1 BACKGROUND	1-2
1.1.1 Western New York Nuclear Service Center.....	1-2
1.1.2 The West Valley Demonstration Project Act	1-4
1.1.3 Site Facilities	1-4
1.2 NEPA COMPLIANCE STRATEGY	1-8
1.2.1 Litigation and NEPA Compliance History	1-8
1.2.2 WVDP Waste Management EIS	1-9
1.2.3 Decommissioning and/or Long-Term Stewardship EIS	1-9
1.3 PURPOSE AND NEED FOR AGENCY ACTION.....	1-10
1.4 ALTERNATIVES	1-10
1.5 WVDP WASTES AND REGULATORY DEFINITIONS.....	1-11
1.6 OFFSITE ACTIVITIES	1-11
1.7 RELATIONSHIP WITH OTHER NEPA DOCUMENTS	1-12
1.7.1 Environmental Impact Statements	1-12
1.7.2 Environmental Assessments	1-16
1.7.3 Categorical Exclusions.....	1-16
1.8 PUBLIC INVOLVEMENT	1-17
1.9 CONTENTS OF EIS	1-18
1.10 REFERENCES	1-19
CHAPTER 2: DESCRIPTION OF ALTERNATIVES	2-1
2.1 OVERVIEW OF ALTERNATIVES	2-1
2.2 ONSITE WASTE MANAGEMENT FACILITIES	2-4
2.2.1 Process Building.....	2-4
2.2.2 Tank Farm.....	2-6
2.2.3 Waste Storage Areas	2-9
2.2.4 Radwaste Treatment System Drum Cell.....	2-11
2.2.5 Remote-Handled Waste Facility	2-11
2.3 NO ACTION ALTERNATIVE – CONTINUATION OF ONGOING WASTE MANAGEMENT ACTIVITIES	2-12
2.4 ALTERNATIVE A – OFFSITE SHIPMENT OF HLW, LLW, MIXED LLW, AND TRU WASTE TO DISPOSAL	2-13
2.5 ALTERNATIVE B – OFFSITE SHIPMENT OF LLW AND MIXED LLW TO DISPOSAL AND SHIPMENT OF HLW AND TRU WASTE TO INTERIM STORAGE.....	2-15
2.6 ALTERNATIVES CONSIDERED BUT NOT ANALYZED.....	2-17
2.7 COMPARISON OF ALTERNATIVES	2-18
2.8 REFERENCES	2-23

CHAPTER 3: AFFECTED ENVIRONMENT	3-1
3.1 GEOLOGY AND SOILS.....	3-1
3.2 HYDROLOGY	3-2
3.2.1 Surface Water	3-2
3.2.2 Groundwater	3-5
3.3 METEOROLOGY AND AIR QUALITY	3-6
3.3.1 Severe Weather.....	3-10
3.3.2 Ambient Air Quality.....	3-10
3.4 ECOLOGICAL RESOURCES	3-11
3.4.1 Special Status Species	3-12
3.4.2 Wetlands	3-13
3.4.3 Floodplains	3-14
3.5 LAND USE AND VISUAL SETTING	3-14
3.6 SOCIOECONOMICS.....	3-15
3.6.1 Population.....	3-16
3.6.2 Employment	3-16
3.6.3 Public Services	3-19
3.6.4 Transportation.....	3-20
3.7 CULTURAL RESOURCES.....	3-22
3.8 ENVIRONMENTAL JUSTICE.....	3-22
3.9 DESCRIPTION OF OTHER SITES.....	3-23
3.9.1 Envirocare.....	3-23
3.9.2 Hanford Site.....	3-26
3.9.3 Idaho National Engineering and Environmental Laboratory	3-26
3.9.4 Nevada Test Site.....	3-26
3.9.5 Oak Ridge National Laboratory	3-26
3.9.6 Savannah River Site	3-26
3.9.7 Waste Isolation Pilot Plant.....	3-27
3.9.8 Yucca Mountain Repository	3-27
3.10 REFERENCES	3-27
CHAPTER 4: ENVIRONMENTAL CONSEQUENCES.....	4-1
4.1 UNDERSTANDING THE ANALYSIS	4-2
4.1.1 Human Health Impacts.....	4-2
4.1.2 Transportation Impacts.....	4-5
4.2 SUMMARY OF IMPACTS	4-6
4.2.1 Human Health Impacts.....	4-6
4.2.2 Transportation Impacts.....	4-7
4.2.3 Offsite Impacts	4-8
4.3 IMPACTS OF THE NO ACTION ALTERNATIVE – CONTINUATION OF ONGOING WASTE MANAGEMENT ACTIVITIES	4-8
4.3.1 Human Health Impacts (No Action Alternative).....	4-9
4.3.2 Impacts from Facility Accidents (No Action Alternative).....	4-11
4.3.3 Transportation (No Action Alternative)	4-13
4.3.4 Offsite Impacts (No Action Alternative)	4-16
4.4 IMPACTS OF ALTERNATIVE A – OFFSITE SHIPMENT OF HLW, LLW, MIXED LLW, AND TRU WASTE TO DISPOSAL	4-16
4.4.1 Human Health Impacts (Alternative A).....	4-16
4.4.2 Impacts from Facility Accidents (Alternative A)	4-18

4.4.3	Transportation (Alternative A).....	4-22
4.4.4	Offsite Impacts (Alternative A)	4-25
4.5	IMPACTS OF ALTERATIVE B – OFFSITE SHIPMENT OF LLW AND MIXED LLW TO DISPOSAL AND SHIPMENT OF HLW AND TRU WASTE TO INTERIM STORAGE.....	4-26
4.5.1	Human Health Impacts (Alternative B).....	4-26
4.5.2	Impacts from Facility Accidents (Alternative B)	4-27
4.5.3	Transportation (Alternative B).....	4-28
4.5.4	Offsite Impacts (Alternative B)	4-31
4.6	ENVIRONMENTAL JUSTICE IMPACTS.....	4-32
4.7	REFERENCES	4-33
CHAPTER 5:	CUMULATIVE IMPACTS	5-1
CHAPTER 6:	UNAVOIDABLE IMPACTS, SHORT-TERM USES AND LONG-TERM PRODUCTIVITY, AND IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES.....	6-1
6.1	UNAVOIDABLE ADVERSE IMPACTS.....	6-1
6.2	RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY	6-1
6.3	IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES	6-1
6.4	REFERENCES	6-2
CHAPTER 7:	LIST OF PREPARERS AND DISCLOSURE STATEMENT	7-1
CHAPTER 8:	LIST OF AGENCIES, ORGANIZATIONS AND INDIVIDUALS RECEIVING COPIES OF THIS EIS	8-1
CHAPTER 9:	GLOSSARY	9-1
CHAPTER 10:	INDEX	10-1
APPENDIX A:	SPECIFIC LEGAL REQUIREMENTS THAT APPLY TO WEST VALLEY WASTE MANAGEMENT ACTIVITIES	A-1
APPENDIX B:	RESPONSES TO SCOPING COMMENTS	B-1
B.1	INTRODUCTION	B-1
B.2	SUMMARY OF COMMENTS	B-1
B.3	DOE RESPONSE	B-1
B.4	REFERENCES	B-17
APPENDIX C:	HUMAN HEALTH IMPACTS	C-1
C.1	RADIATION AND HUMAN HEALTH.....	C-1
C.2	RADIOLOGICAL ASSESSMENT	C-3
C.2.1	Normal Operations	C-4
C.2.2	Facility Accidents.....	C-4
C.3	RADIONUCLIDE RELEASES FOR NORMAL OPERATIONS	C-6

C.4	RADIONUCLIDE RELEASES FOR ACCIDENTS	C-7
C.4.1	Class A LLW Drum Puncture.....	C-8
C.4.2	Class A LLW Pallet Drop	C-8
C.4.3	Class A LLW Box Puncture.....	C-9
C.4.4	Collapse of Tank 8D-2 Vault (Wet)	C-9
C.4.5	Collapse of Tank 8D-2 Vault (Dry).....	C-10
C.4.6	Drum Cell Drop.....	C-11
C.4.7	Class C LLW Drum Puncture	C-12
C.4.8	Class C LLW Pallet Drop	C-12
C.4.9	Class C LLW Box Puncture.....	C-13
C.4.10	High-Integrity Container Drop.....	C-13
C.4.11	CH-TRU Drum Puncture.....	C-14
C.4.12	Fire in Loadout Bay	C-15
C.5	ATMOSPHERIC DATA.....	C-15
C.6	LOCATIONS OF RECEPTORS	C-15
C.7	POPULATION DATA	C-22
C.8	RADIATION DOSES FROM CONTINUED MANAGEMENT FOR WVDP WORKERS AND THE PUBLIC	C-23
C.9	AIR QUALITY.....	C-24
C.10	OFFSITE IMPACTS	C-26
C.11	BIOTA SCREENING PROCEDURE	C-28
C.12	REFERENCES	C-30
	APPENDIX D: TRANSPORTATION	D-1
D.1	INTRODUCTION	D-1
D.2	TRANSPORTATION REGULATIONS	D-1
D.3	TRANSPORTATION ROUTES.....	D-3
D.4	SHIPMENTS	D-6
D.5	INCIDENT-FREE TRANSPORTATION	D-7
D.6	TRANSPORTATION ACCIDENTS.....	D-11
D.6.1	Transportation Accident Rates.....	D-11
D.6.2	Conditional Probabilities and Release Fractions	D-11
D.6.3	Shipment Inventories.....	D-16
D.6.4	Atmospheric Conditions.....	D-16
D.6.5	Population Density Zones	D-17
D.6.6	Exposure Pathways.....	D-20
D.6.7	Health Risk Conversion Factors	D-20
D.7	RESULTS	D-20
D.7.1	Transportation Impacts	D-20
D.7.2	Incident-Free Radiation Doses to Maximally Exposed Individuals ...	D-21
D.7.3	Impacts from Severe Transportation Accidents	D-26
D.8	REFERENCES	D-29

APPENDIX E: RESPONSES TO PUBLIC COMMENTS	E-1
Tim S. Waddell	E-5
James L. Pickering, LLB, JD, PhD	E-6
Dr. Paul Piciulo, NYSERDA.....	E-9
Kathy McGoldrick, Coalition on West Valley Nuclear Wastes	E-11
W. Lee Poe, Jr.....	E-13
W. Lee Poe, Jr.....	E-18
Andrew L. Raddant, Regional Environmental Officer U.S. Department of the Interior, Office of Environmental Policy and Compliance.....	E-22
Michael A. Wilson, Program Manager Nuclear Waste Program, State of Washington, Department of Ecology	E-24
Barbara Youngberg, Chief, Radiation Section NYSDEC Division of Solid and Hazardous Materials Bureau of Hazardous Waste and Radiation Management	E-36
John A. Owsley, Director Tennessee Department of Environment and Conservation DOE Oversight Division.....	E-38
Robert E. Knoer on behalf of the Coalition on West Valley Nuclear Wastes	E-39
Lee Lambert on behalf of the West Valley Citizen Task Force	E-43
Laura McDade, President and Leonore Lambert, RW Monitor League of Women Voters	E-45
Norman A. Mulvenon, Chair Local Oversight Committee (LOC) Citizens' Advisory Panel Oak Ridge Reservation	E-47
Michael Raab, Deputy Commissioner Erie County Department of Environment and Planning	E-50
Ken Niles, Assistant Director Oregon Office of Energy	E-52
Dr. Paul Piciulo, Director West Valley Site Management Program NYSERDA	E-56

Robert W. Hargrove, Chief Strategic Planning and Multi-Media Programs Branch U.S. Environmental Protection Agency, Region 2	E-63
David R. Bradshaw, Mayor City of Oak Ridge	E-66
Rickey L. Armstrong, Sr., President The Seneca Nation of Indians.....	E-67
Wade Waters, Chair Savannah River Site Citizens Advisory Board	E-73
Dr. Paul Piciulo NYSERDA (public hearing transcript)	E-77
Kathy McGoldrick, Coalition on West Valley Nuclear Wastes (public hearing transcript)	E-89
James L. Pickering, LLB, JD, PhD (public hearing transcript)	E-99
Jeremy Olmsted (public hearing transcript)	E-103
REFERENCES.....	E-105

LIST OF FIGURES

Figure 1-1. Location of the West Valley Demonstration Project.....	1-3
Figure 1-2. Project Premises, NDA, and SDA	1-6
Figure 1-3. WVDP Waste Disposal and/or Interim Storage Sites	1-12
Figure 2-1. Waste Destinations Under the No Action Alternative	2-3
Figure 2-2. Waste Destinations Under Alternative A.....	2-3
Figure 2-3. Waste Destinations Under Alternative B	2-4
Figure 2-4. Aerial View of WVDP Site Facing Southeast.....	2-5
Figure 2-5. Schematic of WVDP Site Facing Southeast.....	2-5
Figure 2-6. Tank Farm Area.....	2-6
Figure 2-7. Lag Storage Building, Lag Storage Additions, Chemical Process Cell Waste Storage Area, and Remote Handled Waste Facility	2-7
Figure 2-8. Radwaste Treatment System Drum Cell.....	2-8
Figure 3-1. Watersheds on WVDP Premises.....	3-3
Figure 3-2. Surface Water on WVDP Premises	3-4
Figure 3-3. 10-Meter Wind Frequency Rose	3-8
Figure 3-4. 60-Meter Wind Frequency Rose	3-9
Figure 3-5. 2000 Population Density by Compass Direction (80-Kilometer Radius).....	3-17
Figure 3-6. 2000 Population Density by Compass Direction (5-Kilometer Radius).....	3-18
Figure 3-7. Transportation Routes in the Vicinity of the Center.....	3-21
Figure 3-8. 2000 Minority Population Distribution.....	3-24
Figure 3-9. Low-income Population Distribution Within 80 Kilometers of the Center.....	3-25
Figure 4-1. Waste Destinations Under the No Action Alternative	4-14
Figure 4-2. Waste Destinations Under Alternative A.....	4-22
Figure 4-3. Waste Destinations Under Alternative B	4-29

LIST OF TABLES

Table 1-1.	Definitions Used in this EIS for Wastes Present at WVDP	1-13
Table 2-1.	Alternatives Matrix	2-2
Table 2-2.	Waste Shipped Under the No Action Alternative	2-13
Table 2-3.	Waste Volumes, Containers, and Shipments Under Alternatives A and B	2-14
Table 2-4.	Summary of Normal Operational Impacts at West Valley	2-19
Table 2-5.	Summary of Accident Impacts	2-20
Table 2-6.	Summary of Offsite Human Health Impacts	2-21
Table 3-1.	Criteria Pollutant Concentrations from WVDP Boiler Emissions and Regional Background.....	3-11
Table 3-2.	Socioeconomic Conditions in the 12 Counties Surrounding West Valley, New York	3-16
Table 4-1.	Radiation Doses for Involved and Noninvolved Workers Under the No Action Alternative	4-9
Table 4-2.	Radiation Doses to the Public Under the No Action Alternative	4-10
Table 4-3.	Radiological Consequences of Accidents Using 50-Percent Atmospheric Conditions under the No Action Alternative.....	4-12
Table 4-4.	Radiological Consequences of Accidents Using 95-Percent Atmospheric Conditions under the No Action Alternative.....	4-12
Table 4-5.	LLW Shipped Under the No Action Alternative.....	4-14
Table 4-6.	Transportation Impacts Under the No Action Alternative	4-15
Table 4-7.	Radiation Doses for Involved and Noninvolved Workers Under Alternative A.....	4-17
Table 4-8.	Radiation Doses to the Public Under Alternative A.....	4-18
Table 4-9.	Radiological Consequences of Accidents Using 50-Percent Atmospheric Conditions under Alternative A	4-19
Table 4-10.	Radiological Consequences of Accidents Using 95-Percent Atmospheric Conditions under Alternative A	4-19
Table 4-11.	Waste Shipped Under Alternative A or B	4-23
Table 4-12.	Transportation Impacts Under Alternative A	4-24
Table 4-13.	Radiation Doses for Involved and Noninvolved Workers Under Alternative B	4-27
Table 4-14.	Radiation Doses to the Public Under Alternative B	4-28
Table 4-15.	Transportation Impacts Under Alternative B	4-30
Table C-1.	Risk of Latent Cancer Fatalities and Other Health Effects from Exposure to Radiation...	C-3
Table C-2.	Parameters Used in GENII Radiological Assessments	C-5
Table C-3.	Stack Parameters for Normal Operations Releases	C-7
Table C-4.	Source Term for Class A LLW Drum Puncture	C-8
Table C-5.	Source Term for Class A LLW Pallet Drop	C-9
Table C-6.	Source Term for Class A LLW Box Puncture.....	C-9
Table C-7.	Source Term for Tank 8D-2 Collapse (Wet)	C-10
Table C-8.	Source Term for Tank 8D-2 Collapse (Dry)	C-11
Table C-9.	Source Term for Drum Cell Drop	C-12
Table C-10.	Source Term for Class C LLW Drum Puncture	C-12
Table C-11.	Source Term for Class C LLW Pallet Drop	C-13
Table C-12.	Source Term for Class C LLW Box Puncture	C-13
Table C-13.	Source Term for High-Integrity Container Drop.....	C-14
Table C-14.	Source Term for CH-TRU Drum Puncture	C-14
Table C-15.	Source Term for Fire in Loadout Bay.....	C-15
Table C-16.	Hours for Combinations of Direction, Stability Class, and Wind Speed Range at 10-meter (33-foot) Height for 1994-1998 at the WVDP Site	C-16

Table C-17.	Hours for Combinations of Direction, Stability Class, and Wind Speed Range at 60-meter (197-foot) Height for 1994-1998 at the WVDP Site	C-19
Table C-18.	Locations of Receptors at WVDP Site (in meters).....	C-22
Table C-19.	2000 Population Distribution Around the WVDP Site	C-23
Table C-20.	Radiation Doses to WVDP Workers from Continued Management Activities	C-23
Table C-21.	Radiation Doses to WVDP Members of the Public from Continued Management Activities.....	C-24
Table C-22.	Annual Criteria Pollutant Emissions from WVDP Boilers (in tons)	C-25
Table C-23.	Data Used to Model Criteria Pollutant Emissions.....	C-26
Table C-24.	Criteria Pollutant Concentrations from WVDP Boiler Emissions and Regional Background	C-27
Table D-1.	Truck and Rail Route Distances and Population Densities.....	D-4
Table D-2.	Waste Types and Containers.....	D-7
Table D-3.	Waste Volumes, Containers, and Shipments By Alternative.....	D-8
Table D-4.	Unit Risk Factors for Incident-Free Transportation	D-9
Table D-5.	Conditional Probabilities and Release Fractions for CH-TRU Waste Shipments.....	D-13
Table D-6.	Conditional Probabilities and Release Fractions for RH-TRU Waste Shipments.....	D-13
Table D-7.	Conditional Probabilities and Release Fractions for HLW Shipments.....	D-13
Table D-8.	Conditional Probabilities and Release Fractions for Class C LLW Drum Cell Waste Shipments	D-14
Table D-9.	Conditional Probabilities and Release Fractions for Class A Drum and Box and Class B LLW Drum Waste Shipments	D-14
Table D-10.	Conditional Probabilities and Release Fractions for Class B LLW High-Integrity Containers and Class C LLW Drum and High-Integrity Container Shipments	D-14
Table D-11.	Class A, B, and C Container Inventories	D-17
Table D-12.	Drum Cell Waste Container Inventory	D-18
Table D-13.	TRU Waste Container Inventories.....	D-18
Table D-14.	HLW Canister Inventory	D-19
Table D-15.	Transportation Impacts Under the No Action Alternative.....	D-20
Table D-16.	Transportation Impacts Under Alternative A	D-22
Table D-17.	Transportation Impacts Under Alternative B	D-23
Table D-18.	Incident-Free Radiation Doses for the Maximally Exposed Individual Scenarios	D-25
Table D-19.	Number of Containers Involved in the Maximum Reasonably Foreseeable Transportation Accident.....	D-27
Table D-20.	Consequences of Severe Transportation Accidents	D-28
Table E-1.	WVDP Waste Management EIS Commenters	E-1