

Contents

Acronyms and Terms	v
Executive Summary	vii
1.0 Purpose and Need	1
1.1 Introduction	1
1.2 Background.....	3
1.3 Purpose and Need for Agency Action	8
1.4 Scope of This EA.....	8
1.5 Public Involvement.....	9
2.0 Description of Proposed Action and Alternatives	11
2.1 Site Description and Characteristics of MDA H	12
2.1.1 Site Investigation and Characterization.....	13
2.1.2 Estimated Inventory.....	14
2.2 Long-Term Environmental Stewardship Program.....	15
2.3 No Action Alternative	17
2.4 Proposed Action	17
2.4.1 Containment Corrective Measure Options	20
2.4.1.1 Corrective Measure Option 1: Upgrade Existing Surface	21
2.4.1.2 Corrective Measure Option 2: Replacement of the Existing Surface with an Engineered ET Cover	21
2.4.1.3 Corrective Measure Option 3: Partial or Complete Encapsulation and Use of Engineered Caps and an Engineered ET Cover.....	22
2.4.2 Excavation and Removal Corrective Measure Options.....	27
2.4.2.1 Corrective Measure Option 4: Complete Excavation with Maximal Offsite Disposal	37
2.4.2.2 Corrective Measure Option 5: Complete Excavation with Maximal Onsite Disposal	38
2.5 Alternatives Considered but Dismissed.....	39
2.6 Related Actions	43
2.6.1 Final Site-Wide Environmental Impact Statement for the Continued Operation of the Los Alamos National Laboratory (SWEIS).....	43
2.6.2 Final Waste Management Programmatic Environmental Impact Statement (WM PEIS)....	43
3.0 Affected Environment	45
3.1 Regional Setting	45
3.2 Environmental Restoration and Waste Management	46
3.3 Water Resources (Surface and Ground)	47
3.4 Climatology and Air Quality	49
3.5 Geology	52
3.6 Human Health.....	56
3.7 Transportation and Utilities	57
3.8 Noise.....	57
3.9 Environmental Justice	58
3.10 Socioeconomics.....	59
4.0 Environmental Consequences of Implementing the Proposed Action and the No Action Alternative	61
4.1 Environmental Restoration and Waste Management	61
4.1.1 No Action Alternative	61
4.1.2 Proposed Action	61
4.2 Water Resources (Surface and Ground)	63
4.2.1 No Action Alternative	63
4.2.2 Proposed Action	64
4.3 Air Quality Effects	65

4.3.1	No Action Alternative	65
4.3.2	Proposed Action	65
4.4	Geology – Environmental Consequences.....	67
4.4.1	No Action Alternative	67
4.4.2	Proposed Action	67
4.5	Human Health.....	68
4.5.1	No Action Alternative	68
4.5.2	Proposed Action	68
4.6	Transportation and Utilities	71
4.6.1	No Action Alternative	71
4.6.2	Proposed Action	71
4.7	Noise.....	73
4.7.1	No Action Alternative	73
4.7.2	Proposed Action	73
4.8	Environmental Justice	75
4.8.1	No Action Alternative	75
4.8.2	Proposed Action	75
4.9	Socioeconomics.....	76
4.9.1	No Action Alternative	76
4.9.2	Proposed Action	76
5.0	Accident Analysis.....	77
5.1	Risk to the Public.....	77
5.2	Worker Risks	78
5.3	Containment Corrective Measure Options (1, 2, and 3).....	78
5.4	Excavation Corrective Measure Options (4 and 5).....	79
6.0	Cumulative Effects	81
7.0	Agencies Consulted.....	83
References		85

Figures

Figure 1.	Location of Los Alamos National Laboratory	2
Figure 2.	Location of MDA H within TA-54	4
Figure 3.	Locations of inactive disposal shafts at MDA H	6
Figure 4.	Material Disposal Area H at TA-54.....	12
Figure 5.	Breakdown of identified waste material disposed in shafts.....	15
Figure 6.	Engineered ET cover	23
Figure 7.	Partial encapsulation with engineered caps and an engineered ET cover.....	26
Figure 8.	Complete encapsulation with engineered caps and an engineered ET cover	27
Figure 9.	Conceptual design for structures and site changes to facilitate complete excavation and removal corrective measure Options 4 and 5.....	29
Figure 10.	Close up view of MDA H conceptual site changes to facilitate complete excavation and removal corrective measure Options 4 and 5.....	30
Figure 11.	Example of a remotely operated dismantling system and inspection station	31
Figure 12.	Screening of Corrective Measures Technologies.	40 through 42
Figure 13.	Mean monthly precipitation and air temperature in Los Alamos and White Rock.	50
Figure 14.	Generalized geologic map of the Rio Grande Rift in northern New Mexico	53
Figure 15.	Stratigraphy of the Bandelier Tuff.....	54

Tables

Table 1.	Corrective Measure Options for the Proposed Action.....	18
Table 2.	Potential Environmental Issues Applicable to this EA	45

Acronyms and Terms

°C	degrees Centigrade	kph	kilometers per hour
°F	degrees Fahrenheit	LANL	Los Alamos National Laboratory
ac	acres	lb	pounds
ALARA	as-low-as-reasonably-achievable	LLW	low-level waste
ASR	Alkali-Silica Reaction	m	meters
BMPs	best management practices	m ²	square meters
CAA	<i>Clean Air Act</i>	m ³	cubic meters
CFR	Code of Federal Regulations	MDA	Material Disposal Area
cm	centimeter	MEI	maximally exposed individual
CMI	Corrective Measures Implementation	mi	miles
CMS	Corrective Measures Study	mi ²	square miles
dB	decibels	mm	millimeters
dBA	A-weighted frequency scale	mph	miles per hour
DOE	(U.S.) Department of Energy	mrem	millirems
DOT	(U.S.) Department of Transportation	NAAQS	National Ambient Air Quality Standards
DSA	documented safety analysis	NEPA	<i>National Environmental Policy Act of 1969</i>
DU	depleted uranium	NESHAP	National Emission Standards for Hazardous Air Pollutants
EA	environmental assessment	NMAC	New Mexico Administrative Code
EM	Environmental Management	NMED	New Mexico Environment Department
EPA	(U.S.) Environmental Protection Agency	NNSA	National Nuclear Security Administration
ET	evapotranspiration	NPDES	National Pollutant Discharge Elimination System
ft	feet	NTS	Nevada Test Site
ft ²	square feet	OSHA	Occupational Safety and Health Administration
FY	fiscal year	PM	particulate matter
ha	hectares	PPE	personal protective equipment
HAPs	hazardous air pollutants	PRSS	potential release sites
HE	high explosives	RCRA	<i>Resource Conservation and Recovery Act</i>
HEPA	high-efficiency particulate air (filter)	RFI	RCRA facility investigation
HSWA	Hazardous and Solid Waste Amendments	ROD	Record of Decision
in.	inch	SIP	State Implementation Plan
JMVF	Jemez Mountains volcanic field	SR	State Road
kg	kilograms		
km	kilometers		
km ²	square kilometers		

SWEIS	Site-Wide Environmental Impact Statement for Continued Operation of Los Alamos National Laboratory	U.S.	United States
SWMUs	solid waste management units	USC	United States Code
TA	Technical Area	VOCs	volatile organic compounds
TLV	threshold limit value	WIPP	Waste Isolation Pilot Plant
TRU	transuranic	WM PEIS	Waste Management Programmatic Environmental Impact Statement
TSD	treatment, storage, and disposal	yd ³	cubic yards
UC	University of California		

EXPONENTIAL NOTATION: Many values in the text and tables of this document are expressed in exponential notation. An exponent is the power to which the expression, or number, is raised. This form of notation is used to conserve space and to focus attention on comparisons of the order of magnitude of the numbers (see examples):

1×10^4	=	10,000
1×10^2	=	100
1×10^0	=	1
1×10^{-2}	=	0.01
1×10^{-4}	=	0.0001

Metric Conversions Used in this Document

Multiply	By	To Obtain
Length		
inch (in.)	2.54	centimeters (cm)
feet (ft)	0.30	meters (m)
yards (yd)	0.91	meters (m)
miles (mi)	1.61	kilometers (km)
Area		
acres (ac)	0.40	hectares (ha)
square feet (ft ²)	0.09	square meters (m ²)
square yards (yd ²)	0.84	square meters (m ²)
square miles (mi ²)	2.59	square kilometers (km ²)
Volume		
gallons (gal.)	3.79	liters (L)
cubic feet (ft ³)	0.03	cubic meters (m ³)
cubic yards (yd ³)	0.76	cubic meters (m ³)
Weight		
ounces (oz)	28.35	grams (g)
pounds (lb)	0.45	kilograms (kg)
short ton (ton)	0.91	metric ton (t)