



*Past*

# Final Site-Wide Environmental Impact Statement for Continued Operation of Los Alamos National Laboratory, Los Alamos, New Mexico



*Present*

## Volume 1 *Chapters 1 through 11*



*Future*



U.S. Department of Energy



National Nuclear Security Administration



Los Alamos Site Office

AVAILABILITY OF  
THE FINAL SITE-WIDE ENVIRONMENTAL IMPACT  
STATEMENT FOR CONTINUED OPERATION OF  
LOS ALAMOS NATIONAL LABORATORY,  
LOS ALAMOS, NEW MEXICO

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## COVER SHEET

**Responsible Agency:** U.S. Department of Energy (DOE)  
National Nuclear Security Administration (NNSA)

**Title:** *Final Site-Wide Environmental Impact Statement for Continued Operation of Los Alamos National Laboratory, Los Alamos, New Mexico (SWEIS) (DOE/EIS-0380)*

**Location:** Los Alamos, New Mexico

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This document is available on the DOE NEPA website ([www.eh.doe.gov/nepa](http://www.eh.doe.gov/nepa)) and the NNSA Los Alamos Site Office website ([www.doeal.gov/laso/NEPASWEIS.aspx](http://www.doeal.gov/laso/NEPASWEIS.aspx)) for viewing and downloading.

**Abstract:** NNSA proposes to continue operating Los Alamos National Laboratory (LANL), which is located in Los Alamos County in north-central New Mexico. NNSA has identified and assessed three alternatives for continued operation of LANL: (1) No Action, (2) Reduced Operations, and (3) Expanded Operations. Under the No Action Alternative, NNSA would continue the historical mission support activities conducted at LANL at currently approved operational levels. Under the Reduced Operations Alternative, NNSA would eliminate some activities and limit the operations of other activities. Under the Expanded Operations Alternative, NNSA would operate LANL at the highest levels of activity currently foreseeable, including full implementation of mission assignments. Expanded Operations is NNSA's Preferred Alternative. NNSA intends to implement actions necessary to comply with the March 2005 Compliance Order on Consent (Consent Order) to address the investigation and remediation of environmental contamination at LANL, regardless of decisions it makes on other actions analyzed in the SWEIS. Under all of the alternatives, the affected environment is primarily within 50 miles (80 kilometers) of LANL. Analyses indicate little difference in the environmental impacts of the alternatives on many resource areas. The primary discriminators are public risk due to radiation exposure, collective worker risk due to radiation exposure, socioeconomic effects due to LANL employment changes, electrical power and water demand, waste management, and transportation. A classified appendix assesses the potential impacts of terrorist acts.

**Public Comments:** In preparing the Final SWEIS, NNSA considered comments received during the scoping period (January 19 to February 17, 2005) and during the public comment period on the Draft SWEIS (July 7 to September 20, 2006). Public hearings on the Draft SWEIS were held in Los Alamos, Española, and Santa Fe, New Mexico. Comments on the Draft SWEIS were requested during a period of 75 days following publication of the U.S. Environmental Protection Agency's (EPA's) Notice of Availability in the *Federal Register*. All comments, including any late comments, were considered during preparation of the Final SWEIS.

The Final SWEIS contains revisions and new information based in part on comments received on the Draft SWEIS. Vertical change bars in the margins indicate the locations of these revisions and new information. Volume 3 contains the comments received during the public comment period on the Draft SWEIS and NNSA's responses to the comments. NNSA will use the analysis presented in this Final SWEIS, as well as other information, in preparing the Record(s) of Decision (RODs) regarding the level of continued operations at LANL. NNSA will issue ROD(s) no sooner than 30 days after the EPA publishes a Notice of Availability of this Final SWEIS in the *Federal Register*.

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# **ACRONYMS, ABBREVIATIONS, AND CONVERSION CHARTS**

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## ACRONYMS, ABBREVIATIONS, AND CONVERSION CHARTS

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ALARA	as low as reasonably achievable
ATSDR	Agency for Toxic Substances and Disease Registry
BCG	Biota Concentration Guide
CAP-88	Clean Air Act Assessment Package, 1988
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	<i>Code of Federal Regulations</i>
CMR	Chemistry and Metallurgy Research (Building)
CMRR	Chemistry and Metallurgy Research Building Replacement Project
CO	carbon monoxide
DARHT	Dual Axis Radiographic Hydrodynamic Test (Facility)
dB	decibel
dBA	decibel A-weighted
dBC	decibel C-weighted
DCG	derived concentration guideline
DD&D	decontamination, decommissioning, and demolition
DDT	dichlorodiphenyl-trichlorethane
DHS	U.S. Department of Homeland Security
DNA	deoxyribonucleic acid
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EA	environmental assessment
EIS	environmental impact statement
EOC	Emergency Operations Center
EPA	U.S. Environmental Protection Agency
ERPG	Emergency Response Planning Guideline
FFCA	Federal Facility Compliance Agreement
FONSI	Finding of No Significant Impact
FR	<i>Federal Register</i>
FY	fiscal year
HEPA	high-efficiency particulate air (filter)
HSWA	Hazardous and Solid Waste Amendments
ISCST3	Industrial Source Complex Short Term
LANL	Los Alamos National Laboratory
LANL SWEIS	<i>Site-Wide Environmental Impact Statement for the Continued Operation of the Los Alamos National Laboratory, Los Alamos, New Mexico</i>
LANSCE	Los Alamos Neutron Science Center
LASL	Los Alamos Scientific Laboratory (now LANL)

LCF	latent cancer fatality
LLW	low-level radioactive waste
MCL	maximum contaminant level
MDA	material disposal area
MEI	maximally exposed individual
MPF	modern pit facility
MSL	Materials Science Laboratory
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMSA	New Mexico Statutes Annotated
NMWQCC	New Mexico Water Quality Control Commission
NNSA	National Nuclear Security Administration
NOI	Notice of Intent
NO <sub>x</sub>	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
NRHP	National Register of Historic Places
NTS	Nevada Test Site
PC	performance category
petaflops	one quadrillion floating point operations per second
PM <sub>n</sub>	particulate matter less than or equal to <i>n</i> microns in aerodynamic diameter
PRS	potential release site
R&D	research and development
RCRA	Resource Conservation and Recovery Act
rem	roentgen equivalent man
RLWTF	Radioactive Liquid Waste Treatment Facility
RNA	ribonucleic acid
ROD	Record of Decision
ROI	region of influence
SA	supplement analysis
SHEBA	Solution High-Energy Burst Assembly
SNM	special nuclear material
SO <sub>2</sub>	sulfur dioxide
SST	safe secure transport
SWEIS	Site-Wide Environmental Impact Statement
SWMU	solid waste management unit
TA	technical area
TEDE	total effective dose equivalent
teraflops	one trillion floating point operations per second

TFF	Target Fabrication Facility
TRU	transuranic
TSCA	Toxic Substances Control Act
TSFF	Tritium Science and Fabrication Facility
TSP	total suspended particulate
TSTA	Tritium Systems Test Assembly
UCL	upper confidence limit
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geologic Survey
WETF	Weapons Engineering Tritium Facility
WIPP	Waste Isolation Pilot Plant
°C	degrees Celsius
°F	degrees Fahrenheit

**CONVERSIONS**

METRIC TO ENGLISH			ENGLISH TO METRIC		
Multiply	by	To get	Multiply	by	To get
<b>Area</b>					
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
<b>Concentration</b>					
Kilograms/square meter	0.16667	Tons/acre	Tons/acre	0.5999	Kilograms/square meter
Milligrams/liter	1 <sup>a</sup>	Parts/million	Parts/million	1 <sup>a</sup>	Milligrams/liter
Micrograms/liter	1 <sup>a</sup>	Parts/billion	Parts/billion	1 <sup>a</sup>	Micrograms/liter
Micrograms/cubic meter	1 <sup>a</sup>	Parts/trillion	Parts/trillion	1 <sup>a</sup>	Micrograms/cubic meter
<b>Density</b>					
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
<b>Length</b>					
Centimeters	0.3937	Inches	Inches	2.54	Centimeters
Meters	3.2808	Feet	Feet	0.3048	Meters
Kilometers	0.62137	Miles	Miles	1.6093	Kilometers
<b>Temperature</b>					
<i>Absolute</i>					
Degrees C + 17.78	1.8	Degrees F	Degrees F - 32	0.55556	Degrees C
<i>Relative</i>					
Degrees C	1.8	Degrees F	Degrees F	0.55556	Degrees C
<b>Velocity/Rate</b>					
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
<b>Volume</b>					
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
<b>Weight/Mass</b>					
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
<b>ENGLISH TO ENGLISH</b>					
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 = 10 <sup>18</sup>
peta-	P	1,000,000,000,000,000 = 10 <sup>15</sup>
tera-	T	1,000,000,000,000 = 10 <sup>12</sup>
giga-	G	1,000,000,000 = 10 <sup>9</sup>
mega-	M	1,000,000 = 10 <sup>6</sup>
kilo-	k	1,000 = 10 <sup>3</sup>
deca-	D	10 = 10 <sup>1</sup>
deci-	d	0.1 = 10 <sup>-1</sup>
centi-	c	0.01 = 10 <sup>-2</sup>
milli-	m	0.001 = 10 <sup>-3</sup>
micro-	μ	0.000 001 = 10 <sup>-6</sup>
nano-	n	0.000 000 001 = 10 <sup>-9</sup>
pico-	p	0.000 000 000 001 = 10 <sup>-12</sup>