Nuclear Decommissioning at the Santa Susana Field Laboratory: 20+ Years of Politics vs. Science

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ABBREVIATIONS

AB	(California) Assembly Bill
AEA	Atomic Energy Act
AEC	(US) Atomic Energy Commission
AIP	Agreement in Principle
ALARA	As Low As Reasonably Achievable
ANL	Argonne National Laboratory
ANPR	Advance Notice of Public Rulemaking
ANS	American Nuclear Society
ANSI	American National Standards Institute
AOC	Administrative Order on Consent (2010)
AOC	Amendment to Order on Consent (2020)
APA	(California) Administrative Procedures Act
BEIR	Biological Effects of Ionizing Radiation
BTV	Background Threshold Value
CalEPA	California Environmental Protection Agency
CBC	(DOE) Cincinnati Business Center
CBG	Committee to Bridge the Gap
CDM	Camp, Dresser & McKee
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
cm	centimeter
CoC	Contaminant of Concern
COVID	Coronavirus Disease
cpm	counts per minute
CPRA	California Public Records Act
CRPE	Center for Race, Poverty, and the Environment

CTL	Component Test Laboratory
cu. ft.	cubic feet
DCGL	Derived Concentration Guideline Level
D&D	Decontamination and Decommissioning
D&D	Decommissioning and Demolition
DECON	(RHB) Decontamination Guide
DHS	(California) Department of Health Services (Now DPH)
DOE	(US) Department of Energy
DOJ	(US) Department of Justice
DPH	(California) Department of Public Health (Formally DHS)
DQO	Data Quality Objective
DTSC	(California) Department of Toxic Substances Control
DWMRC	(Utah) Division of Waste Management and Radiation Control
EA	Environmental Assessment
EE/CA	Engineering Evaluation / Cost Analysis
EIR	Environmental Impact Report (CEQA)
EIS	Environmental Impact Statement (NEPA)
EM	(DOE) Environmental Management
EM-1	Senior Advisor to EM
EMCBC	EM Cincinnati Business Center
EO	Executive Order
EPA	(US) Environmental Protection Agency
EPC	Exposure Point Concentration
ESA	Endangered Species Act
ETEC	Energy Technology Engineering Center
FOIA	Freedom of Information Act
FRC	Federal Radiation Council
FSDF	Former Sodium Disposal Facility (formally Area IV Burn Pit)
GAO	Government Accountability Office (formally General Accounting Office)

GRAMA	(Utah) Government Records Access and Management Act
H&S	Health and Safety
HPS	Health Physics Society
HRS	Hazard Ranking System
HSA	Historical Site Assessment
HWMF	Hazardous Waste Management Facility
IAG	Inter-Agency Agreement
ICRP	International Commission on Radiological Protection
IFB	Indistinguishable from Background
IG	(DOE) Inspector General
IPM	(RHB) Internal Policy Memorandum
LARW	Low-Activity Radioactive Waste
LARWQCB	Los Angeles Regional Water Quality Control Board
LAW	Low-Activity Waste
LLRW	Low-Level Radioactive Waste
LTR	License Termination Rule
LNT	Linear No-Threshold (Model of Radiation Risk)
LUT	Look-Up Table
MARSAME	Multi-Agency Radiation Survey and Assessment of Materials & Equipment
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MLLRW	Mixed Low-Level Radioactive Waste
MQO	Measurement Quality Objective
mrem/y	millirem per year
mSv/y	millisievert per year
NA	National Academies
NAA	North American Aviation
NASA	National Aeronautics and Space Administration
NCP	National Contingency Plan
NCRP	National Council on Radiation Protection and Measurements

NEPA	National Environmental Policy Act
NORM	Naturally Occurring Radioactive Material
NPL	National Priority List
NRC	(US) Nuclear Regulatory Commission
NRC	National Research Council
NRDC	Natural Resources Defense Council
NUREG	(NRC) Nuclear Regulatory Guidance Document Series
OCY	Old Conservation Yard
OIG	(DOE) Office of Inspector General
OMR	Organic Moderator Reactor
OC	Order on Consent
ORISE	Oak Ridge Institute of Science and Education
OSWER	(EPA) Office of Solid Waste and Emergency Response
PA/SI	Preliminary Assessment / Site Inspection
pCi/g	picocuries per gram
PEIR	Program Environmental Impact Report (CEQA)
PDF	Portable Document Format
PRA	(California) Public Records Act
PRG	Preliminary Remediation Goal
PSR-LA	Physicians for Social Responsibility - Los Angeles
R&D	Research & Development
RCRA	Resource Conservation and Recovery Act
RAGS	(EPA) Risk Assessment Guidance for Superfund
R.G.	(NRC) Regulatory Guide
RHB	Radiologic Health Branch
RI	Rockwell International
RME	Reasonable Maximum Exposure
RMDF	Radioactive Materials Disposal Facility
RMHF	Radioactive Materials Handling Facility (formally RMDF)

RML	(RHB) Internal Policy Memorandum
ROD	Record of Decision
RSO	Radiation Safety Officer
SB	(California) Senate Bill
SCFS	Southern California Federation of Scientists
SGR	Sodium Graphite Reactor
SNAP	Systems for Nuclear Auxiliary Power
SNM	Special Nuclear Material
SOP	Standard Operating Procedure
SSFL	Santa Susana Field Laboratory
SPTF	Sodium Pump Test Facility
SRE	Sodium Reactor Experiment
SWLLRWCC	South-Western Low-Level Radioactive Waste Compact Commission
TRU	Transuranic
TSCA	Toxic Substances Control Act
US	United States
USEI	US Ecology, Idaho
USEPA	United States Environmental Protection Agency
USNRC	United States Nuclear Regulatory Commission
VLLW	Very Low-Level Waste
WCS	Waste Control Specialists, Texas
WMP	Waste Management Plan
WRS	Wilcoxon Rank Sum

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DISCLAIMER

Neither my former company, The Boeing Company, nor the Department of Energy, has approved this material, neither has their approval been sought. No classified, confidential, company proprietary, or privileged information has been used or cited in this paper. All information is accessible in the public domain and a matter of public record. The majority of source citations provided as footnotes are on public web sites, including DTSC, DOE, USEPA, USNRC, and the California Legislature. The few relevant citations that are not available on public web sites, are provided on www.philrutherford.com. These citations are public domain in that they are communications to/from State or federal agencies and are subject to the California Public Records Act (CPRA) or the Federal Freedom of Information Act (FOIA). No Boeing internal or external communications or work product, which is not already public domain has been used in this paper. No online source citations originate from Boeing's Santa Susana website, indeed none appear on Boeing's Santa Susana web site. The roadmap linking the material in this paper has benefitted from the knowledge acquired during my twenty-five years as Senior Manager of Radiation Safety at SSFL, intimately involved with each and all events discussed. The views and opinions expressed are mine alone, and do not necessarily reflect views or opinions of Boeing, DOE, or NASA.

A NOTE ON ON-LINE LINKS

Many online citations are provided as footnotes and in Tables 1, 2 and 3. Citations are given as footnotes on each page rather than endnotes or references at the end of the paper. This facilitates a quick look at the citation then a return to the text rather than paging or scrolling back and forth in the paper each time.

If using Microsoft's Edge or Firefox, using the back-arrow will return from on-line web pages or on-line PDFs to the correct page of the paper's PDF. This is a user-friendly action.

Unfortunately, other browsers, including Microsoft's Internet Explorer, Google's Chrome and Apple's Safari will return to the first page of the paper's PDF when returning from the on-line web page or on-line PDF, when using the back-arrow. This can be avoided by using the browser settings/preferences to open new pages and PDFs in a new tab. Returning to the original paper's PDF page can then be accomplished by clicking on the correct tab and not using the back arrow.

ABSTRACT

Area IV of the Santa Susana Field Laboratory (SSFL) conducted nuclear research for the US Atomic Energy Commission (AEC) and the US Department of Energy (DOE) and was operated by The Boeing Company (Boeing) and its predecessor companies, Rockwell International (RI) and North American Aviation (NAA) from 1954 until 2014. North Wind Portage has been DOE's prime contractor since 2014.

As of 2005, twenty-five of twenty-seven nuclear and radiological facilities had gone through the decommissioning process including final status surveys by Boeing and its predecessors; confirmation or verification surveys by variously, the Oak Ridge Institute of Science and Education (ORISE), Argonne National Laboratory (ANL), the US Nuclear Regulatory Commission (USNRC), California Department of Public Health - Radiologic Health Branch (CDPH/RHB) and/or the US Environmental Protection Agency (USEPA); release for unrestricted use by the appropriate regulatory agency (NRC or CDPH/RHB) or DOE; and removal from relevant licenses. Low-level radioactive waste (LLRW) generated during decommissioning was sent to either NRC-licensed or DOE-authorized LLRW disposal facilities. Following release, many of these facilities were subsequently demolished and demolition debris (decommissioned material) sent to landfills or hazardous waste disposal facilities in compliance with laws, regulations and permits in place at the time.

Beginning in 2000, a series of activist-led lawsuits against CDPH/RHB, DOE and the California Department of Toxic Substances Control (DTSC) succeeded in delaying or blocking decommissioning progress. In addition, numerous Senate and Assembly Bills in the California legislature attempted to usurp the decommissioning process, including removing CDPH/RHB's authority for regulating radioactive materials at SSFL and assigning that role to DTSC.

Five Boeing-owned former radiological facilities that have been "released for unrestricted use" were blocked from demolition and disposal, during a 10-year litigation from 2013 to 2023.

In 2020-2021, seven remaining DOE-owned facilities that have either been decommissioned and "released for unrestricted use" or have no history of radiological use, have been demolished. DTSC has mandated that all demolition debris from these facilities be classified as LLRW and disposed of out of the State of California to the Energy*Solutions* LLRW disposal site at Clive, Utah, *"out of an abundance of caution … and irrespective of having characterization data showing no radioactivity."*

On July 20, 2022, the topics of this paper were presented at the 67th Annual Meeting of the Health Physics Society in Spokane, Washington.

- Rutherford, "Nuclear Decommissioning in California: 20+ Years of Politics vs. Science."
  - PowerPoint presentation
  - YouTube video

1.0 INTRODUCTION

With many first-generation commercial nuclear power plants reaching their end of life and continued opposition to nuclear power in the United States, radiological decommissioning is becoming an ever more important part of the nuclear industry. The US Nuclear Regulatory Commission (NRC) provides guidance for decommissioning and license termination for these plants.[1] Decontamination and decommissioning of legacy Manhattan Project and Cold War nuclear facilities continues to be a focus for the Office of Environmental Management of the US Department of Energy (DOE).[2] Finally, the US Environmental Protection Agency (EPA) provides "Risk Assessment Guidance for Superfund" (RAGS)[3] for Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) sites with radiological contamination. Central to all decommissioning projects is the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)[4] and its cousin, Multi-Agency Radiation Survey and Assessment of Materials and Equipment Manual (MARSAME)[5] that were prepared by NRC, EPA, and DOE.

Notwithstanding, the well-established regulations and regulatory guidance from these federal agencies, the decommissioning process has been undermined by the California legislature, a renegade state agency, and anti-nuclear activists. The following paper is a little different from the usual technical/academic material that one reads in the journal, "Health Physics."[6] Nevertheless, it represents real life decommissioning battles that have been, and are being, fought in California that attempt to overthrow decommissioning science and regulation.

[1] USNRC, "Decommissioning Guidance." Available at https://www.nrc.gov/waste/decommissioning/reg-guides-comm/guidance.html. Accessed February 1, 2022.

[2] USDOE, "Decommissioning Handbook - Procedures and Practices for Decommissioning", DOE/EM-0383, January 2000. Available at https://www.osti.gov/servlets/purl/1491121. Accessed February 2000.

[3] USEPA, "Superfund Risk Assessment." Available at https://www.epa.gov/risk/superfund-risk-assessment. Accessed January 8, 2022.

[4] NRC, EPA, DOE. "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)", Revision 2, May 2021. Available at https://www.epa.gov/sites/default/files/2021-06/documents/marssim_manual_rev2_1.pdf. Accessed October 11, 2021

[5] NRC, EPA, DOE, "Multi-Agency Radiation Survey and Assessment of Materials and Equipment (MARSAME", January 2009. Available at https://www.epa.gov/radiation/marsame-manual-and-resources Accessed October 11, 2021.

[6] Health Physics. The Radiation Safety Journal. The Official Journal of the Health Physics Society. Published by Wolters Kluwer. Available at https://journals.lww.com/health-physics/pages/default.aspx. Accessed February 1, 2022.

2.0 SSFL CASE STUDY

Area IV of the Santa Susana Field Laboratory (SSFL) conducted nuclear research for the US Atomic Energy Commission (AEC) and the DOE and was operated by The Boeing Company (Boeing) and its predecessor companies, Rockwell International (RI) and North American Aviation (NAA) from 1954 until 2014 (Figures 1 and 2).[7] North Wind Portage has been DOE's prime contractor since 2014.[8]

As of 2005, twenty-five of twenty-seven nuclear and radiological facilities had completed the decommissioning process[9] including final status surveys by Boeing and its predecessors; confirmation or verification surveys by variously the Oak Ridge Associated Universities / Oak Ridge Institute of Science and Education (ORAU / ORISE), Argonne National Laboratory (ANL), the US Nuclear Regulatory Commission (NRC), the California Department of Public Health - Radiologic Health Branch (CDPH/RHB) and/or the US Environmental Protection Agency (EPA); release for unrestricted use by the appropriate regulatory agency (NRC or CDPH/RHB for Boeing-owned facilities) or DOE for DOE-owned facilities; and removal from relevant licenses.

[7] Subsequent reference to Boeing includes both its predecessor companies, North American Aviation and Rockwell International.

[8] DOE, "Clean-up at the Santa Susana Field Laboratory for DOE's Responsibility at Area IV." Available at https://www.etec.energy.gov/. Accessed October 11, 2021.

[9] Boeing, "Radiological Release Process - Process for the Release of Land and Facilities for (Radiological) Unrestricted Use", September 17, 2007. Available at https://www.energy.gov/sites/default/files/2023-08/Doc._No._29_Radiological_Release_of_Land_and_Facilities_Process_prepared_by_Boeing.pdf . Accessed July 10, 2024.

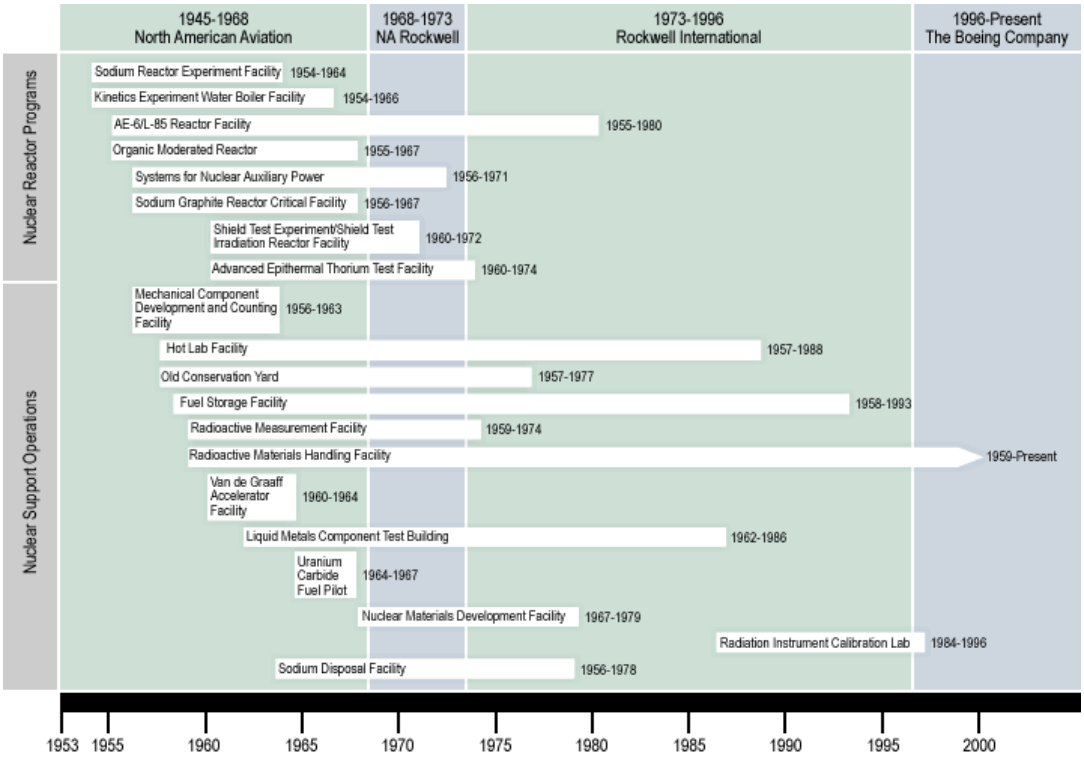

Figure 1. SSFL Nuclear/Radiological Operations Timeline
Courtesy DOE ETEC. https://www.energy.gov/etec/major-radiological-operations-timeline

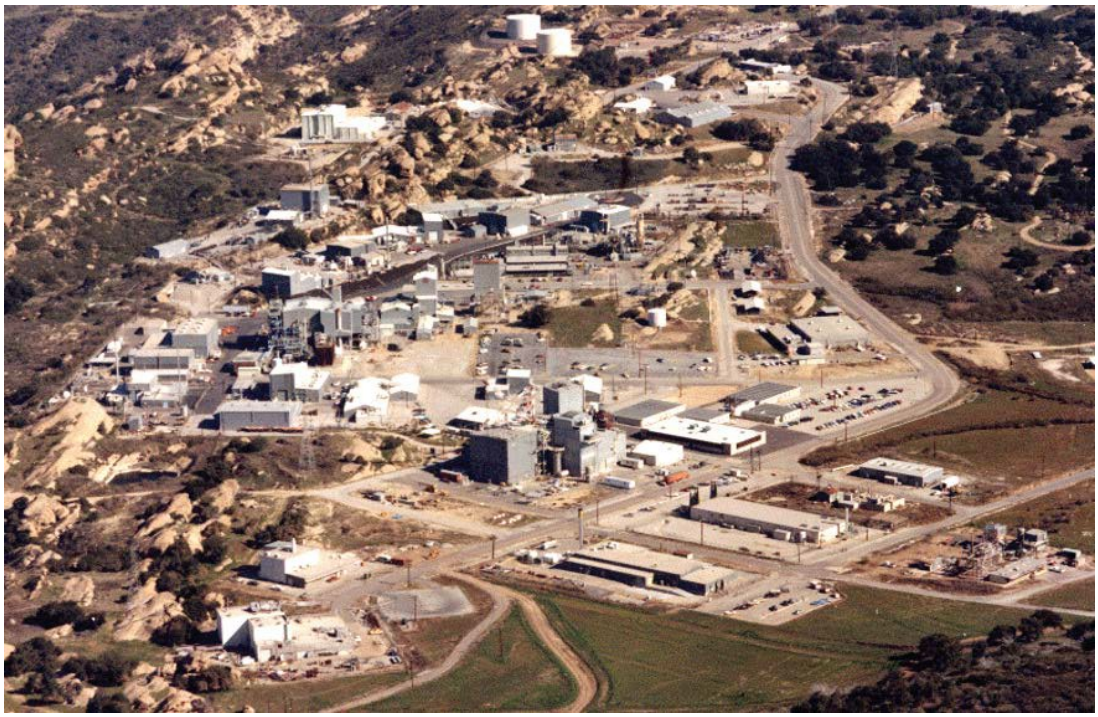

Figure 2. Area IV of the Santa Susana Field Laboratory (circa 1980s)

Cleanup standards were proposed,[10] approved by the DOE[11] and CDHS[12] and issued as final.[13] The soil cleanup goal was based on 15 mrem/y. This was consistent with (and less than) NRC's future 25 mrem/y License Termination Rule,[14] and USEPA's 15 mrem/y dose-based goal for CERCLA remediation sites proposed in the 1990s.[15, 16, 17]

Low-level radioactive waste (LLRW) generated during decommissioning was sent to either NRC-licensed, or DOE-authorized LLRW disposal facilities. Following release, nineteen of these facilities were subsequently demolished and demolition debris (decommissioned material) sent to landfills or hazardous waste disposal facilities in compliance with laws and regulations in place at the time.

Beginning in 1976, Boeing conducted final status surveys for 11 DOE-owned facilities, and ORISE or ANL and CDPH/RHB conducted verification surveys. Beginning in 1980, Boeing conducted final

[10] Rockwell, "Proposed Site-wide Release Criteria for Remediation of Facilities at the SSFL", N001SRR140127, March 11, 1996.

[11] DOE Memorandum from Sally Robison to Roger Liddle, "Sitewide Limits for Release of Facilities Without Radiological Restriction", September 17, 1996. Available at https://www.energy.gov/sites/default/files/2023-08/Doc._No._26_Approved_Release_Criteria_for_Remediation_of_SSFL_RAD_Facilities%20.pdf#page=28. Accessed July 10, 2024.

[12] CDHS Letter to Boeing, "Authorized Sitewide Radiological Guidelines for Release for Unrestricted Use", August 9, 1996. Available at https://www.energy.gov/sites/default/files/2023-08/Doc._No._26_Approved_Release_Criteria_for_Remediation_of_SSFL_RAD_Facilities%20.pdf#page=27. Accessed July 10, 2024.

[13] Boeing, "Approved Sitewide Release Criteria for Remediation of Radiological Facilities at the SSFL", N0001SRR140131, February 18, 1999. Available at https://www.energy.gov/sites/default/files/2023-08/Doc._No._26_Approved_Release_Criteria_for_Remediation_of_SSFL_RAD_Facilities%20.pdf. Accessed July 10, 2024.

[14] US NRC. 10 CFR 20 Subpart E. "Radiological Criteria for License Termination", Section 20.1401, "Radiological Criteria for Unrestricted Use." Available at https://www.nrc.gov/reading-rm/doc-collections/cfr/part020/full-text.html#part020-1402. Accessed December 6, 2021.

[15] USEPA, "Radiation Site Cleanup Regulations: Technical Support Document for the Development of Radionuclide Cleanup Levels for Soil", EPA 402-R-96-011 A, September 1994. Available at https://nepis.epa.gov/Exe/ZyPDF.cgi/P100GU4Y.PDF?Dockey=P100GU4Y.PDF. Accessed December 14, 2021.

[16] USEPA, "Draft Environmental Protection Agency Radiation Site Cleanup Regulation", Draft 40 CFR 196, May 11, 1999. Available at https://www.philrutherford.com/Radiation_Cleanup_Standards/Draft_40_CFR_196.pdf. Accessed December 14, 2021.

[17] USEPA, "Draft Environmental Protection Agency Radiation Site Cleanup Regulation – Notice of Proposed Rulemaking", Draft 40 CFR 196, May 11, 1999. Available at https://www.philrutherford.com/Radiation_Cleanup_Standards/Draft_40_CFR_196_NPRM.pdf. Accessed December 14, 2021.

status surveys for 14 Boeing-owned facilities, and CDPH/RHB or NRC conducted verification surveys. See Tables 1 and 2 for online links to all historical decommissioning documentation. Table 1 provides historical decommissioning documents for buildings and/or structures including,

- DOE Historical Site Assessments (HSA)
- ETEC Web Page
- Ownership (Boeing or DOE)
- Boeing or Contractor Final Status Surveys
- ORAU/ORISE/ANL Confirmation Surveys
- DPH/RHB Verification Surveys
- NRC Surveys
- USEPA Surveys and Document Reviews
- D&D Final Reports
- DOE Certification Dockets
- DOE Release Letters
- NRC Release Letters
- DPH/RHB Release Letters
- Release Date
- Demolition Date

Table 2 provides similar documentation for contaminated land and/or building footprints following building demolition. Also included are USEPA's HSAs. Table 3 provides survey summaries for the 18 DOE-owned buildings that were demolished or partially demolished in 2020-2021.

Between 2000 and 2003, following demands from the public, Region IX of the USEPA conducted additional confirmation surveys and/or reviews of prior survey documentation for six DOE-owned facilities and five Boeing-owned facilities.[18] EPA's conclusions were …

- *"Previous surveys sampled in appropriate and representative locations."*
- *"Measurements made in previous surveys were accurate."*
- *"EPA concurs with the conclusions made by the DOE and Boeing about the locations and levels of residual radioactivity."*
- *"Residual radioactivity does not exceed DOE and NRC established limits for unrestricted use."*

[18] EPA, Letter from Larry Bowerman, "EPA's Independent Assessment of Building Decontamination and Decommissioning (D&D) Program at the Boeing Rocketdyne Propulsion & Power Division Santa Susana Field Laboratory (SSFL)", January 9, 2003. Available at https://www.energy.gov/sites/default/files/2022-12/EPA_Building_Survey_Letter.pdf. Accessed July 10, 2024.

Table 1. Status of SSFL Nuclear Facility Decommissioning Surveys, Release and Demolition

Bldg # (DOE HSA)	Building Name (ETEC Web Page)	Owned	Building Radiological Surveys							EPA Doc. Review	D&D Report	Cert. Docket	DOE Release	DHS/ DPH Release	NRC Release	Date Building Released	Date Building Demolished
			Boeing	Cabrera	ORAU/ ORISE	ANL	DHS/ DPH	NRC	EPA								
OCY	Old Conservation Yard	Boeing	Land only. See Table 2														
RMHF	Radioactive Materials Handling Facility	DOE	X	X												Not Released	2020 (above ground only)
4003	Engineering Test Building	Boeing	X			X					X		DOE			1985	1999
4005	Uranium Carbide Fuel Facility	Boeing	X		X		X				X			DHS		1995	1996 Slab Pending
4009	Organic Moderated Reactor / Sodium Graphite Reactor	Boeing	X				X			X				DHS		1999	Pending
4010	SNAP-8 Experimental Reactor	DOE	X			X					X		DOE			1982	1983
4011	Instrument Calibration Laboratory	Boeing	X				X		X	X				DHS		1998	Pending
4012	SNAP Critical Facility	DOE	X		X		X		X	X	X	X	DOE	DHS		1997	2003
17th St.	17th St. Drainage Area	Boeing	Land only. See Table 2														
4019	SNAP Flight System Critical Assembly	DOE	X		X		X		X	X	X	X	DOE			2005	2021 (above ground only)
4020	Hot Laboratory	Boeing					X				X	X		DHS	NRC	NRC License Terminated 1996	1999
4023	Corrosion Test Loop	DOE	X		X		X			X	X	X	DOE	DHS		1993	1999
4024	SNAP Environmental Test Facility	DOE	AREVA				X									Not Released	2021 (above ground only)
4028	Shield Test Irradiation Facility	DOE	X		X		X			X	X	X	DOE	DHS		1997	1998
4029	Radiation Measurement Facility	DOE	X		X		X		X	X	X	X	DOE	DHS		1997	2021
4030	Van de Graaff Accelerator	DOE	X		X		X				X	X	DOE	DHS		1997	1999
4055	Nuclear Materials Development Facility	Boeing	X		X				X	X	X				NRC	1987	Pending
4059	SNAP Ground Prototype Test Reactor	DOE	X		X		X		X	X			DOE			2003	2004
4064	Fuel Storage Facility	DOE	X		X		X				X	X	DOE	DHS		2005	1997
4073	Kinetic Experiment Water Boiler	DOE	X			X							ERDA			1976	1976
4093	L-85 Reactor	Boeing	X		X			X							NRC	1987	1995 (2013)
4100	Fast Critical Experiment Laboratory	Boeing	X				pages 295-346	X	X	X				pages 348-352	NRC	1980 (2012)	Pending
4143	Sodium Reactor Experiment	Boeing	X			X					X	Env Eval Report	DOE			1985	1999
4363	R&D Laboratory	Boeing	X		X		X		X	X				DHS		1998	2001
4373	SNAP Critical Facility	Boeing	X											DHS		1995	1999
4654	Interim Storage Facility	DOE			X						X	X					Land
4886	Former Sodium Disposal Facility	Boeing	Land only. See Table 2.														

Table 2. Status of SSFL Land Decommissioning Surveys and Release

Bldg # (EPA HSA)	Site (ETEC Web Page)	Owned/ Leased	Land Radiological Surveys							EPA Doc. Review	D&D Report	Cert. Docket	DOE Release	DHS/ DPH Release	NRC Release	Date Land Released	
			Boeing	Cabrera	ORAU/ ORISE	ANL	DHS/ DPH	NRC	EPA								
OCY	Old Conservation Yard	Boeing	X	X	X		X							DHS		1995	
RMHF	Radioactive Materials Handling Facility	DOE	X	X	X						X	Env Eval Report					
4003	Engineering Test Building	Boeing															
4005	Uranium Carbide Fuel Facility	Boeing															
4009	Organic Moderated Reactor / Sodium Graphite Reactor	Boeing	X														
4010	SNAP-8 Experimental Reactor	DOE	X			X					X		DOE			1982	
4011	Instrument Calibration Laboratory	Boeing															
4012	SNAP Critical Facility	DOE															
17th St.	17th St. Drainage Area	Boeing	X		X		X				X	X	DOE	DHS		2005	
4019	SNAP Flight System Critical Assembly	DOE															
4020	Hot Laboratory	Boeing	X		X		X				X	X	DOE	DHS		2005	
4023	Corrosion Test Loop	DOE		X	X												
4024	SNAP Environmental Test Facility	DOE	AREVA														
4028	Shield Test Irradiation Facility	DOE		X	X												
4029	Radiation Measurement Facility	DOE															
4030	Van de Graaff Accelerator	DOE		X	X												
4055	Nuclear Materials Development Facility	Boeing			X												
4059	SNAP Ground Prototype Test Reactor	DOE	X		X		X										
4064	Fuel Storage Facility	DOE	X		X		X				X	X	DOE			2005	
4073	Kinetic Experiment Water Boiler	DOE	X			X							ERDA			1976	
4093	L-85 Reactor	Boeing	X		X			X							NRC	1987	
4100	Fast Critical Experiment Laboratory	Boeing															
4143	Sodium Reactor Experiment	Boeing	X			X	X						X			1985	
4363	R&D Laboratory	Boeing		X	X												
4373	SNAP Critical Facility	Boeing															
4654	Interim Storage Facility	DOE	X		X		X				X	X	DOE			2005	
4886	Former Sodium Disposal Facility	Boeing	X				X				X	X		X		1998	

Table 3. Status of DOE-Owned Buildings Demolished in 2020-2021

Bldg. #	Bldg. Name	Owner	Function	Surveyed by*	Survey Conclusions	Debris Disposal
RMHF	Radioactive Materials Handling Facility	DOE	Fuel & LLRW Storage Facility	Boeing & Cabrera	Portions met standards for unrestricted release. Portions remained contaminated. Underground portions remain in place.	All demolition debris sent to Energy*Solutions* as LLRW
4019	SNAP Flight System Critical Assembly	DOE	Former nuclear reactor facility	Boeing, ORISE, CDPH & EPA	Released for unrestricted use by DOE.	
4024	SNAP Environmental Test Facility	DOE	Former nuclear reactor facility	Boeing, CDPH & AREVA	With exception of cell vaults which are activated, all other portions of the building including, the above ground building, meets standards for unrestricted release. Underground portions remain in place.	
4029	Hazardous Waste Management Facility	DOE	Radioactive source storage & instrument calibration	Boeing, ORISE, CDPH & EPA	Released for unrestricted use by DOE.	
4038	Office Building	DOE	No radiological history	North Wind	Radiologically non-impacted. Indistinguishable from background.	
4057	Liquid Metal Test Loop	DOE	No radiological history	North Wind	Radiologically non-impacted. Indistinguishable from background.	
4133	Hazardous Waste Management Facility	DOE	Former sodium treatment facility	Boeing, ORISE & CDPH	Meets standards for unrestricted release.	
4462	Sodium Pump Test Facility	DOE	No radiological history	North Wind	Radiologically non-impacted. Indistinguishable from background.	
4463	Sodium Pump Test Facility	DOE	No radiological history	North Wind	Radiologically non-impacted. Indistinguishable from background.	

Green shading indicates buildings either released for unrestricted use by DOE, or that met standards for release for unrestricted use.
* Ckick on blue links for North Wind surveys. Go to Tables 1 and 2 for Boeing, ORISE, CDPH, Cabrera, AREVA and EPA surveys.

By the mid-2000s, no Boeing-owned facilities and only two DOE-owned facilities remained to be decommissioned, the Radioactive Materials Handling Facility (RMHF) (comprised of 10 separate structures) and the Space Nuclear Auxiliary Power (SNAP) Environmental Test Facility (Building 4024). In 2007, Boeing and DOE prepared an Engineering Evaluation / Cost Analysis (EE/CA) for each of these remaining two facilities,[19,20] presented the plans in public meetings, prepared a document record,[21,22] and began planning to decommission the facilities with expected completion in a couple of years.

That was when it all fell apart. Jump seventeen years to 2024, and the status was …

- Above ground portions of two former DOE nuclear facilities (RMHF and Building 4024) have been demolished prior to decommissioning. Debris was disposed of as LLRW. Sub-surface vaults that are still contaminated remain for future removal. (See Section 23)
- Two former DOE nuclear/radiological facilities (Buildings 4019 and 4029) that had been surveyed and "released for unrestricted use," were demolished and demolition debris was disposed as LLRW. One subsurface vault in 4019 remains for future removal. (See Section 23)
- Five former DOE non-radiological facilities (4038, 4057, 4133, 4462 and 4463) were surveyed and met conditions for "release for unrestricted use," and demolition debris was disposed as LLRW. (See Section 23)
- Five former Boeing nuclear/radiological facilities that had been surveyed and "released for unrestricted use," are still standing and pending demolition. Demolition and disposal was held up in litigation for 10 years. (see Section 19)

What happened in those fourteen years (2007-2021) to undermine the SSFL decommissioning progress? Anti-nuclear activism, litigation, legislation, radiation paranoia, regulatory abuse, and regulatory inaction.

[19] Boeing, "Building 4024 Decontamination and Decommissiong Engineering Evaluation / Cost Analysis", May 1, 2007, Available at https://www.energy.gov/sites/default/files/2023-10/BUILDING-4024-DECONTAMINATION-AND-DECOMMISSIONING-ENGINEERING-EVALUATION-COST-ANALYSIS.pdf. Accessed July 10, 2024.

[20] Boeing, "Radioactive Materials Handling Facility Decontamination and Decommissionng Engineering Evaluation / Cost Analysis", June 18, 2007. Available at https://www.energy.gov/sites/default/files/2023-10/Revised_RMHF_DD%20EECA%20_6-14-07.pdf. Accessed July 10, 2024.

[21] DOE, "SNAP Environmental Test Facility EE/CA Document Record", May 2007. Available at https://www.energy.gov/etec/snap-environmental-test-facility-eeca-document-record. Accessed July 16, 2024.

[22] DOE, "Radioactive Materials Handling Facility EE/CA Document Record", June 2007. Available at https://www.energy.gov/etec/radioactive-materials-handling-facility-eeca-document-record. Accessed July 16, 2024.

The following sections describe in a chronological order, litigation, legislation, misguided actions by one state agency, inaction by another state agency and weak response of two federal departments/agencies that contributed to the current situation.

3.0 LEGISLATIVE ACTION (2001)

3.1 Senate Bill 243 - Radiation Safety Act of 2001

SB 243 (2001)[23] was introduced by State Senator Sheila Kuehl. This was the first of many subsequent bills in later years by Senator Kuehl and Senator Romero (and sponsored by the Committee to Bridge the Gap (CBG)). SB 243 attempted to (1) re-define radioactive waste as any residual radioactive contamination above background and (2) require decommissioned sites to meet a 10^{-6} individual risk level using the most restrictive land use scenario and with no area averaging. SB 243 did not apply to traditionally NRC license-exempt, quantities, concentrations, and products. SB 243 failed to pass into law.

[23] Senate Bill 243 (2001), "Radiation Safety Act of 2001", Senator Kuehl. Introduced February 14, 2001. Amended June 4, 2001. Available at http://www.leginfo.ca.gov/pub/01-02/bill/sen/sb_0201-0250/sb_243_bill_20010604_amended_sen.pdf. Accessed December 6, 2021.

4.0 CBG vs. CDHS LITIGATION (2002)

In 2001, the California Department of Health Services Radiologic Health Branch (CDHS/RHB), which later became CDPH/RHB, attempted to incorporate by reference the USNRC's Code of Federal Regulations, 10 CFR 20.1402, Subpart E, known as the License Termination Rule (LTR).[24,25] The LTR established 0.25 mSv/y (25 mrem/y) above background plus ALARA[26] as "acceptable for unrestricted use." As an "Agreement State" since 1967, California typically adopted USNRC regulations pertaining to radioactive material. Indeed, unless an Agreement State chooses to adopt more restrictive regulations than USNRC, it is required to mirror federal USNRC regulations. CDHS conducted public rulemaking hearings.

In March 2002, the Committee to Bridge the Gap (CBG), Southern California Federation of Scientists (SCFS) and Los Angeles Physicians for Social Responsibility (LAPSR) sued CDHS, opposing adoption of 10 CFR 20 Subpart E in California Superior Court.[27] On June 19, 2002, Judge Gail Ohanesian ruled for the plaintiffs and ordered CDHS to conduct a California Environmental Quality Act (CEQA) Environmental Impact Report (EIR) to assess alternate options and select safe dose-based standards for decommissioning.[28, 29]

As of May 2024, after 22 years, no action has occurred to comply with the Judge's Order. It appears that CDHS (now CDPH) had, and has, no intention to comply with the Judge's Order, not wishing to become mired in further, politically driven litigation.

One unfortunate consequence of this event is that CDHS/RHB management not only discontinued its adoption of 10 CFR 20 Subpart E as ordered, but also chose to deactivate internal

[24] US NRC. 10 CFR 20 Subpart E. "Radiological Criteria for License Termination", Section 20.1401, "Radiological Criteria for Unrestricted Use." Available at https://www.nrc.gov/reading-rm/doc-collections/cfr/part020/full-text.html#part020-1402. Accessed December 6, 2021.

[25] CDHS/RHB, RML-00-02, "Radiological Release Criteria for Facilities Undergoing Large-Scale Decommissioning", May 1, 2000. Available at https://www.philrutherford.com/Radiation_Cleanup_Standards/RML-00-02.pdf. Accessed January 1, 2022.

[26] ALARA = as low as reasonably achievable

[27] Case 01CS01445 before the Superior Court of California, Sacramento County. March 29, 2002.

[28] Superior Court of California, County of Sacramento, Case 01CS01445, "Ruling on Submitted Matter", April 10, 2002. Available at https://www.philrutherford.com/SSFL/CBG_vs_DHS/CBG_vs_DHS_Ruling_on_Submitted_Matter.pdf. Accessed January 1, 2022.

[29] Superior Court of California, County of Sacramento, Case 01CS01445, "Peremptory Writ of Mandate", June 19, 2002. Available at https://www.philrutherford.com/SSFL/CBG_vs_DHS/CBG_vs_DHS_Amended_Peremptory_Writ_of_Mandate.pdf. Accessed January 1, 2022.

policies, RML-00-02 and DECON-1, that both referenced USNRC Regulatory Guide 1.86 and other URNRC guidance on surface contamination limits. In so doing, CDHS/RHB effectively removed all written policies, guidance, and standards that its health physics staff could use to verify if licensees' facilities met conditions for release for unrestricted use. This untenable situation continued to exist for another 11 years until 2013 when the matter became public knowledge during another CBG initiated lawsuit against CDPH, DTSC and Boeing (See later Section 19.0 on Boeing Building Demolition litigation).

5.0 LEGISLATIVE ACTION (2002)

During the 2002, 2003 and 2004 California Legislative sessions, CBG was behind a plethora of Senate Bills, aimed at usurping the decommissioning process in general, and SSFL decommissioning specifically.

5.1 Senate Bill 1623 - Radiation Safety Act of 2002

SB 1623 (2002)[30] was introduced by State Senator Gloria Romero. The introduced version nonsensically required all naturally occurring radioactive material (NORM) to be disposed of in Class I or II hazardous waste disposal facilities. Subsequent amended versions also defined radioactive waste as any discarded radioactive material with radioactivity above background.

On June 3, 2002, SB 1623 was placed on the suspense file by the Senate Appropriations Committee because it would have an excessive fiscal impact on the State. All Senate Bills needed to be approved by the various Senate Committees by the end of May and be passed along to the Assembly. SB 1623 failed to meet this deadline and was therefore in limbo, not going anywhere. Romero had another Bill, SB 1970, on "plastic packaging containers" which had passed through to the Assembly. She therefore replaced the original wording of SB 1970 with the wording of the Radiation Safety Act of SB 1623, *et voila* ... SB 1623 is reborn as SB 1970 in the Assembly. Senator Romero had effectively bypassed the required approval of the Senate Appropriations Committee. California Senate sausage making laid bare!

5.2 Senate Bill 1970 - Radiation Safety Act of 2002

The final enrolled version of SB 1970 (2002)[31] sought to require all decommissioned material that had met federal and state cleanup standards, and had been “released for unrestricted use”, to be managed as LLRW and disposed of to a licensed LLRW disposal facility. This Bill imposed "zero tolerance" limits on material that can be sent to landfills. No other environmental law that imposes controls on public exposure to chemical and/or radiological contaminants is based on zero tolerance. All laws are based on low-risk, low-exposure standards, based on sound science and designed to minimize public health impacts. The Bill attempted to overturn established federal and state radiological regulation that defines decommissioned material that can be released for unrestricted use. This bill was written by CBG with Senator Romero as proxy.

[30] Senate Bill 1623 (2002), “Radiation Safety Act of 2002”, Senator Romero, Introduced February 21, 2002. Available at http://www.leginfo.ca.gov/pub/01-02/bill/sen/sb_1601-1650/sb_1623_bill_20020221_introduced.pdf. Accessed December 6, 2021.

[31] Senate Bill 1970 (2002), “Radiation Safety Act of 2002”, Senator Romero, Enrolled September 9, 2002. Available at http://www.leginfo.ca.gov/pub/01-02/bill/sen/sb_1951-2000/sb_1970_bill_20020830_enrolled.pdf. Accessed December 6, 2021.

California Governor Gray Davis vetoed this bill, saying …[32]

> *"This bill redefines the term "radioactive waste" to include any discarded decommissioned material with the slightest trace of detectable radioactivity not attributable to background sources and prohibits all such material from being disposed of at all existing hazardous or solid waste disposal facilities in the State of California. As written, this bill is overly broad, unworkable and would do little to significantly enhance protection of the public health."*[33,34]

5.3 Executive Order D-62-02

In vetoing SB 1970, as a compromise, Governor Davis issued Executive Order D-62-02,[35] prohibiting the disposal of decommissioned material at Class III or unclassified landfills in California. Effectively, D-62-02 required that decommissioned material be disposed of to Class I hazardous waste or Class II non-hazardous waste disposal facilities in California and was generally known as the "Governor's Moratorium." D-62-02 was silent on restrictions for recycling and reuse of decommissioned material and disposal of decommissioned material out of California. D-62-02 also reminded CDHS of its obligation to adopt dose-based cleanup standards following an EIR. Subsequently, the State Water Resources Control Board issued a letter to all California Radioactive Materials Licensees implementing D-62-02.[36] Since 2002, Boeing has complied with the disposal restrictions of D-62-02 and sent decommissioned material to Class I facilities.

5.4 Senate Bill 1444 - Radiation: Contamination

SB 1444 (2002)[37] was introduced by State Senator Sheila Kuehl. The bill sought to overturn existing federal and state regulation and policy that prescribes low-dose, low-risk cleanup

[32] Note that all direct quotes from other sources will be shown in quotation marks and in italics.

[33] Press Release, "Governor Davis Vetoes Low-level Radioactive Waste Bill", September 30, 2002. Available at https://www.philrutherford.com/SSFL/D-62-02/9-30-02_SB_1970_Press_Release.pdf. Accessed December 6, 2021.

[34] Veto Message, "To Members of the California State Senate", September 30, 2002. Available at https://www.philrutherford.com/SSFL/D-62-02/9-30-02_SB_1970_Veto_Message.pdf. Accessed December 6, 2021.

[35] "Executive Order D-62-02 by the Governor of the State of California", September 30, 2002. Available at https://www.philrutherford.com/SSFL/D-62-02/GovDavisEOD-62-02.pdf. Accessed December 6, 2021.

[36] State Water Resources Control Board to Radioactive Materials Licensees, October 11, 2002. Available at https://www.philrutherford.com/SSFL/D-62-02/SWRCBMoratoriumonDecommWastes(10-11-02).pdf. Accessed December 2021.

[37] Senate Bill 1444 (2002), "Radiation: Contamination", Introduced February 15, 2002. Available at http://www.leginfo.ca.gov/pub/01-02/bill/sen/sb_1401-1450/sb_1444_bill_20020215_introduced.pdf. Accessed December 9, 2021.

standards for contaminated sites that are fully protective of public health and safety. The bill was aimed specifically at SSFL and required "cleanup-to-background" and disposal of any wastes with residual radioactivity above background to be sent to an NRC-licensed or DOE-authorized LLRW disposal facility. This bill was written by CBG with Senator Kuehl as proxy. SB 1444 was amended numerous times and the final version[38] was ultimately defeated in the Assembly.

5.5 Senate Bill 2065 - Radioactive Waste

SB 2065 (2002)[39] was introduced by State Senator Sheila Kuehl. The original bill attempted to overturn established federal and state radiological regulation that defined material that could be released for unrestricted use, by re-defining "radioactive waste" as any waste with residual radioactivity "above background." It also sought to impose additional CDHS tracking requirements on LLRW generators. This bill was written by CBG with Senator Kuehl as proxy. SB 2065 passed into law after numerous amendments[40] and only after the re-definition of radioactive waste was removed.

5.6 Assembly Bill 2214 - Low-level Radioactive Waste Facility

AB 2214 (2002)[41] was introduced by Assemblyperson Fred Keeley. It effectively killed the establishment of Ward Valley, which would have been California's first and only licensed LLRW disposal facility. After numerous amendments, SB 2214 was eventually passed into law.[42] After 22 years, California LLRW generators are still required to export LLRW out of state.

[38] Senate Bill 1444 (2002), "Radiation: Contamination", Amended August 29, 2002. Available at http://www.leginfo.ca.gov/pub/01-02/bill/sen/sb_1401-1450/sb_1444_bill_20020829_amended_asm.pdf. Accessed December 9, 2021.

[39] Senate Bill 2065 (2002), "Radioactive Waste", Introduced February 22, 2002. Available at http://www.leginfo.ca.gov/pub/01-02/bill/sen/sb_2051-2100/sb_2065_bill_20020222_introduced.pdf. Accessed December 9, 2021.

[40] Senate Bill 2065 (2002), "Radioactive Waste", Chaptered September 26, 2002. Available at http://www.leginfo.ca.gov/pub/01-02/bill/sen/sb_2051-2100/sb_2065_bill_20020926_chaptered.pdf. Accessed December 9, 2021.

[41] Assembly Bill 2214 (2002), "Low Level Radioactive Waste Facility", Introduced February 20, 2002. Available at http://www.leginfo.ca.gov/pub/01-02/bill/asm/ab_2201-2250/ab_2214_bill_20020220_introduced.pdf. Accessed December 9, 2021.

[42] Assembly Bill 2214 (2002), :Low Level Radioactive Waste Facility", Chaptered September 12, 2002. Available at http://www.leginfo.ca.gov/pub/01-02/bill/asm/ab_2201-2250/ab_2214_bill_20020912_chaptered.pdf. Accessed December 9, 2021.

6.0 DOE ENVIRONMENTAL ASSESSMENT (2003)

On March 31, 2003, DOE issued an Environmental Assessment (EA).[43] The EA provided the regulatory justification and basis for use of 0.15 mSv/y (15 mrem/y) plus ALARA as a soil cleanup goal, which had been approved for SSFL by CDHS[44] and DOE[45] in 1996 and proposed by USEPA in the mid-1990s for CERCLA sites.[46,47]

Region IX of USEPA criticized the 2003 DOE EA, because it did not follow the CERCLA process which requires an "a posteriori" selection of risk-based remedial alternatives following complete characterization of the nature and extent of radiological and chemical contamination. However, that does not invalidate the fact that 15 mrem/y was (and is) a safe and protective "a priori" dose-based radiological soil cleanup goal, which is confirmed by the USEPA in OSWER Memo 9200.4-18[48] and shown to be ALARA by USNRC in Appendix D of NUREG-1727.[49]

[43] DOE, "Environmental Assessment for Cleanup and Closure of the Energy Technology Engineering Center", March 2003. Available at https://www.energy.gov/sites/default/files/2023-10/ETECEA.pdf. Accessed July 10, 2024.

[44] CDHS Letter to Boeing, "Authorized Sitewide Radiological Guidelines for Release for Unrestricted Use", August 9, 1996. Available at https://www.energy.gov/sites/default/files/2023-08/Doc._No._26_Approved_Release_Criteria_for_Remediation_of_SSFL_RAD_Facilities%20.pdf#page=27. Accessed July 10, 2024..

[45] DOE Memorandum from Sally Robison to Roger Liddle, "Sitewide Limits for Release of Facilities Without Radiological Restriction", September 17, 1996. Available at https://www.energy.gov/sites/default/files/2023-08/Doc._No._26_Approved_Release_Criteria_for_Remediation_of_SSFL_RAD_Facilities%20.pdf#page=28. Accessed July 10, 2024.

[46] USEPA, "Draft Environmental Protection Agency Radiation Site Cleanup Regulation", Draft 40 CFR 196, May 11, 1999. Available at https://www.philrutherford.com/Radiation_Cleanup_Standards/Draft_40_CFR_196.pdf. Accessed December 14, 2021.

[47] USEPA, "Draft Environmental Protection Agency Radiation Site Cleanup Regulation – Notice of Proposed Rulemaking", Draft 40 CFR 196, May 11, 1999. Available at https://www.philrutherford.com/Radiation_Cleanup_Standards/Draft_40_CFR_196_NPRM.pdf. Accessed December 14, 2021.

[48] USEPA OSWER Memo 9200-4-18, "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination", August 22, 1997. Available at https://semspub.epa.gov/work/HQ/176331.pdf. Accessed December 29, 2021.

[49] USNRC NUREG-1727, "NMSS Decommissioning Standard Review Plan - Appendix D ALARA Analysis", September 2000. Available at https://www.nrc.gov/docs/ML0037/ML003761169.pdf#page=682. Accessed December 29, 2021.

7.0 LEGISLATIVE ACTION (2003)

7.1 Senate Bill 13 - Radiation Safety Act of 2003

SB 13 (2003)[50] was introduced by State Senator Gloria Romero and co-authored by State Senator Sheila Kuehl. It sought to re-introduce SB 1970 which had been vetoed the previous year. It imposed zero threshold residual radioactivity limits on waste sent to landfills. The final amendment was issued May 8, 2003.[51] This bill was written by CBG with Senators Romero and Kuehl as proxies.

7.2 Senate Bill 201 - Radioactive Materials: Transfer of Authority

SB 201 (2003)[52] was introduced by State Senator Gloria Romero. It attempted to remove the regulatory authority for radioactive materials in California from the CDHS to the DTSC. It attempted to transfer records, licenses, and personnel responsible for administering California's radioactive materials and radiation generating device regulatory program from CDHS to DTSC. The final amendment was issued April 29, 2003.[53] SB 201 attempted to undermine the US NRC Agreement State Program. This bill was written by CBG with Senator Romero as proxy.

7.3 Senate Bill 208 - Radiation: Contamination

SB 208 (2003)[54] was introduced by State Senator Sheila Kuehl. It was aimed specifically at SSFL and no other site in California. SB 208 assigns DTSC responsibility for implementing its provisions, not CDHS. It required that SSFL (that was not a CERCLA site) be nevertheless remediated to CERCLA risk-based standards and not dose-based standards that were being employed by DOE

[50] Senate Bill 13 (2003), "Radiation Control Act of 2003", Introduced December 2, 2002. Available at http://www.leginfo.ca.gov/pub/03-04/bill/sen/sb_0001-0050/sb_13_bill_20021202_introduced.pdf. Accessed December 9, 2021.

[51] Senate Bill 13 (2003), "Radiation Control Act of 2003", Amended May 8, 2003. Available at http://www.leginfo.ca.gov/pub/03-04/bill/sen/sb_0001-0050/sb_13_bill_20030508_amended_sen.pdf. Accessed December 9, 2021.

[52] Senate Bill 201 (2003), "Radioactive Materials: Transfer of Authority", Introduced February 13, 2003. Available at http://www.leginfo.ca.gov/pub/03-04/bill/sen/sb_0201-0250/sb_201_bill_20030213_introduced.pdf. Accessed December 2021.

[53] Senate Bill 201 (2003), "Radioactive Materials: Transfer of Authority", Amended April 29, 2003. Available at http://www.leginfo.ca.gov/pub/03-04/bill/sen/sb_0201-0250/sb_201_bill_20030429_amended_sen.pdf. Accessed December 2021.

[54] Senate Bill 208 (2003), "Radiation: Contamination", Introduced February 13, 2003. Available at http://www.leginfo.ca.gov/pub/03-04/bill/sen/sb_0201-0250/sb_208_bill_20030213_introduced.pdf. Accessed December 9, 2021.

and NRC. It required that all wastes removed from the site with residual contamination above background be sent to either an NRC-licensed or DOE-approved LLRW disposal facility. The Legislature declared that a special law was necessary because of the unique circumstances regarding radioactivity at SSFL. SB 208 is essentially a re-introduction of SB 1444 (2002) which was previously defeated in the Assembly. The final amendment of SB 208 was issued May 8, 2003.[55] This bill was written by CBG with Senator Kuehl as proxy.

7.4 Senate Bill 415 - Real Property: Radioactive Contamination: Disclosure

SB 415 (2003)[56] was introduced by State Senator Sheila Kuehl. This bill would require a written disclosure prior to the transfer of ownership that would describe the increased risk of cancer to which occupants of the property are expected to be exposed. This bill was written by CBG with Senator Kuehl as proxy.

Due to the budget crisis in California in 2003, none of the above 2003 bills made it out of the Senate. They therefore died in Senate and were not held over to 2004.

[55] Senate Bill 208 (2003), "Radiation: Contamination", Amended May 8, 2003. Available at http://www.leginfo.ca.gov/pub/03-04/bill/sen/sb_0201-0250/sb_208_bill_20030508_amended_sen.pdf. Accessed December 9, 2021.

[56] Senate Bill 415 (2003), "Real Property: Radioactive Contamination: Disclosure", Introduced February 20, 2003. Available at http://www.leginfo.ca.gov/pub/03-04/bill/sen/sb_0401-0450/sb_415_bill_20030220_introduced.pdf. Accessed December 2021.

8.0 LEGISLATIVE ACTION (2004)

8.1 Senate Bill 1456 - Radiation: Contamination

SB 1456 (2004) was introduced by State Senator Sheila Kuehl.[57] It was similar to SB 208 (2003) that failed to become law in 2003 and was again aimed specifically at SSFL and no other site in California. SB 1456 prohibited the sale, transfer, or lease of any part of SSFL, unless the USEPA agrees, in writing, that remediation and surveys have been performed in accordance with CERCLA. There were numerous arguments against this bill. The state legislature cannot dictate to a federal agency, actions that are neither required by federal law, nor which the federal agency is prepared to implement. State bills cannot commit federal resources, manpower or budget expenditures. USEPA has no regulatory jurisdiction over radiological remediation in Area IV of SSFL. SSFL was, and is still not, a Superfund National Priorities List (NPL) site, and as such, is not subject to CERCLA. This bill was written by CBG with Senator Kuehl as proxy.

In contemporaneous communications, USEPA Administrator Michael O. Leavitt sent identical letters to US Senator Dianne Feinstein and US Congressman Elton Gallegly who had both called for continued involvement of USEPA in SSFL cleanup. Administrator Leavitt stated,

> *"From the beginning of our involvement at SSFL, EPA has been clear that DOE, not EPA, has the legal authority for making cleanup decisions at SSFL, Area IV. DOE is using its authority under the Atomic Energy Act to clean up the radiological contamination at SSFL. The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and Executive Order 12580 assign lead agency responsibilities for non-NPL sites to federal agencies, such as the DOE, for sites under their respective jurisdiction. Since SSFL is not a Superfund NPL site, EPA does not have the authority to dictate cleanup decisions at the site. EPA had evaluated the site [Area IV] for possible inclusion on the NPL, however the site did not rank high enough using the Agency's Hazard Ranking System for NPL listing."*[58,59]

[57] Senate Bill 1456 (2004), "Radiation: Contamination", Introduced February 19, 2004. Available at http://www.leginfo.ca.gov/pub/03-04/bill/sen/sb_1451-1500/sb_1456_bill_20040219_introduced.pdf. Accessed December 14, 2021.

[58] USEPA Letter to Senator Feinstein, "No title", February 24, 2004. Available at https://www.philrutherford.com/SSFL/Superfund/USEPA_Response_to_Sen_Feinstein_2-24-04.pdf. Accessed December 14, 2021.

[59] USEPA Letter to Congressman Gallegly, "No title", February 24, 2004. Available at https://www.philrutherford.com/SSFL/Superfund/USEPA_Response_to_Cong_Gallegly_2-24-04.pdf. Accessed December 14, 2021.

State Senator Kuehl recognized the error of her ways and withdrew SB 1456 as written. She later amended the bill to Self-Governance of Hospital Physicians and Surgeons![60]

Four years later, in 2008, California explicitly declined to make SSFL a Superfund Site (see later Section 12.0), or utilize CERCLA risk assessment guidance, preferring to make DTSC the lead remediation agency and utilize a no risk assessment, cleanup-to-background process (see Section 17.0 on the 2010 AOC).

[60] Senate Bill 1456 (2004), "Hospitals: Physicians and Surgeons: Self-governance", Amended August 23, 2004. Available at http://www.leginfo.ca.gov/pub/03-04/bill/sen/sb_1451-1500/sb_1456_bill_20040823_amended_asm.pdf. Accessed December 14, 2021.

9.0 NRDC / CBG vs. DOE LITIGATION (2004 - 2007)

On July 19, 2004, attorneys for the Natural Resources Defense Council (NRDC) and CBG wrote to Spenser Abraham, Secretary of Energy, claiming that the 2003 EA had violated the National Environmental Policy Act (NEPA), the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Endangered Species Act (ESA).[61] The letter claimed that a full Environmental Impact Statement (EIS) should have been performed prior to selecting a soil cleanup remedy. In September 2004, NRDC, CBG and the City of Los Angeles sued DOE in US District Court.

On May 2, 2007, US District Court Judge Samuel Conti issued a Summary Judgement ruling for the plaintiffs and ordered DOE to complete an EIS and Record of Decision (ROD), compliant with NEPA.[62] On June 26, 2007, DTSC's SSFL Project Director, Norm Riley, subsequently ordered DOE to halt all D&D activities immediately for the remaining RMHF and SNAP facility 4024, pending preparation of an EIS.[63] It is arguable that Judge Conti's order expressly implied that building D&D should be halted pending completion of an EIS, especially since the 15 mrem/y approved cleanup standard was related to the establishment of soil concentration cleanup goals, not building cleanup goals. Building structures, in contrast, would continue to be remediated to meet long established surface contamination standards. Although DOE had initially opposed DTSC's demands, it eventually agreed to halt all D&D activities.

[61] Meyer & Glitzenstein Letter to Secretary of Energy, "Clean-up of the Santa Susana Field Laboratory in Simi Valley, California", July 19, 2004. Available at https://www.philrutherford.com/SSFL/NRDC_CBG_vs_DOE/NRDC_Lawsuit_Threat_2004-07-19.pdf. Accessed December 16, 2021.

[62] US District Court, Northern District of California, Case C-04-04448 SC, "Order Granting Plaintiffs' Motion for Summary Judgement", May 2, 2007. Available at https://www.energy.gov/sites/default/files/2023-10/MSJ_ORDER.pdf. Accessed July 10, 2024.

[63] DTSC, "Discontinuation of DOE Activities at the Santa Susana Field Laboratory, Simi Valley, California", June 26, 2007. Available at https://www.philrutherford.com/SSFL/doe_building_demolition/SSFL_Ltr_Tho_062607.pdf. Accessed January 10, 2022.

DOE subsequently took 11 ½ years to issue a final EIS in November 2018.[64] RODs have been issued for building demolition in September 2019[65] and groundwater in November 2020.[66] As of March 2022, no ROD has yet been issued for soil remediation which was the primary focus of the EA and EIS.

[64] DOE, "Final Environmental Statement for Remediation of Area IV and the Northern Buffer Zone of the Santa Susana Field Laboratory", DOE/EIS-0402, November 2018. Available at http://www.ssflareaiveis.com/final_documentation.aspx. Accessed December 16, 2021.

[65] DOE, "Record of Decision for Final Environmental Impact Statement for Remediation of Area IV and the Northern Buffer Zone of the Santa Susana Field Laboratory, California - Building Demolition", Federal Register, Vol. 84. No. 188, Page 51149, September 27, 2019. Available at http://www.ssflareaiveis.com/fr-rod-eis-0402-ssfl-area-iv-buildings-2019-09-27.pdf. Accessed December 16, 2021.

[66] DOE, "Record of Decision for Final Environmental Impact Statement for Remediation of Area IV and the Northern Buffer Zone of the Santa Susana Field Laboratory, California - Groundwater Remediation", November 2020. Available at http://www.ssflareaiveis.com/FINALSIGNEDDOC-Federal%20Register%20Notice%20for%20ETEC%20Groundwater%20ROD%20Issuance%20Signed%20(11-2-20).pdf. Accessed December 16, 2021.

10.0 SHIPMENTS OF DECOMMISSIONED MATERIALS TO KETTLEMAN HILLS (2004 - 2006)

Since the Governor's Moratorium of 2002 (Executive Order D-62-02), Boeing had complied with the order by shipping decommissioned material to Class I hazardous waste facilities, including Kettleman Hills in California's Central Valley. This included decommissioned material from building 4059 (SNAP Ground Prototype Test Reactor) and Building 4024 (SNAP Environmental Test Facility) during the period 2004 to 2006. A paper written in 2006 documented the extensive surveys by Boeing, ORISE and DHS/RHB, and communications between Boeing and CDHS/RHB documenting the findings that demolition waste and remaining standing above-ground structures of Building 4024 met federal and State criteria for release for unrestricted use.[67]

The final section of the paper stated,

- *"There have been unfounded allegations made in the past that Boeing is sending radioactive waste to the Kettleman Hills Hazardous Waste Disposal Facility. These allegations have been made by Dan Hirsch of the Committee to Bridge the Gap. This occurred in 1992, again in 2000, and now again in 2006. In the last two instances, elected officials such as State Senator Sheila Kuehl, and U.S. Senator Barbara Boxer were provided with misinformation regarding Boeing's waste disposal activities. In the 1992 case, the DHS/RHB determined that Mr. Hirsch was incorrect, and that Boeing was complying with the law. In the 2000 case, both the DHS/RHB and the Department of Toxic Substances Control (DTSC) determined that Mr. Hirsch was incorrect, and that Boeing was complying with the law. In the present case the survey process described above demonstrates that Mr. Hirsch is again incorrect, and that Boeing is complying with the law."*

- *"This is a blatant attempt to use politics to block access to legal disposal options for Boeing remediation operations in Area IV. It is a blatant attempt to force all material leaving Area IV to be managed [as] radioactive waste."* [Brackets added to correct grammar]

- *"In the larger context, agency, DOE, and Boeing reaction to these increasingly frequent and unfounded allegations by Mr. Hirsch and associates result in an enormous wasted, expenditure of time and resources by all parties. As a result, the serious work of cleanup is neglected, and its schedule suffers. This, of course, is Mr. Hirsch's objective. It is time that all parties recognize these harassing tactics for what they are and respond in a more appropriate manner."*

[67] Boeing, "Shipments of Decommissioned Material to Kettleman Hills", November 11, 2006. Available at https://www.energy.gov/sites/default/files/2023-10/Shipments_of_Decommissioned_Material_to_Kettleman_Hills_Rev_3.pdf. Accessed July 10, 2024.

In 2006, DTSC had been questioned by Senator Sheila Kuehl and Dan Hirsch with their usual allegations. On November 2, 2006, Jim Pappas of DTSC requested CDHS/RHB to review the shipment of demolition materials from SSFL to Kettleman Hills and determine if the shipments complied with the landfill's permit conditions. CDHS/RHB prepared a draft response, confirming Boeing's position that the shipments were lawful. The review was sent to DTSC. However, the review report never saw the light of day, presumably because it did not support the Kuehl/Hirsch propaganda. In the following months, numerous inquiries by the author to DTSC management failed to elicit acknowledgement of the existence of CDHS/RHB's draft report. Given the extended time period since this was an "issue du jour," the draft inter-agency communication can now see the light of day.[68]

[68] CDHS/RHB, "Analysis of Boeing Demolition Materials' Conformance to Kettleman Hills Landfill Permit." Redacted. November 20, 2006. Available at https://philrutherford.com/SSFL/Offsite_Disposal/2006_Kettleman/Kettleman-Kuehl_Ltr_2_Redacted.pdf. Accessed May 19, 2024

11.0 LEGISLATIVE ACTION (2007)

11.1 Senate Bill 990 - Cleanup of Santa Susana Field Laboratory

After several years of calm in Sacramento, SB 990 (2007) was introduced by State Senator Sheila Kuehl.[69] SB 990 was aimed specifically at SSFL, and no other sites in California. It required chemical and radiological risk assessments at SSFL to utilize the most conservative land use scenario (rural agricultural) in its soil remediation program, as opposed to the, then used, conservative residential scenario, or the future realistically anticipated open-space, recreational land use scenario.

SB 990 also gave regulatory authority over radiological remediation at SSFL to the DTSC, undermining CDPH/RHB's authority as ceded by USAEC in the "Agreement State" Program.[70] Although the "Agreement" does not identify a specific agency responsible for implementing the program, the CDPH/RHB has been, and is, the responsible agency, as evidenced by the most recent communication between USNRC and the Radiologic Health Branch.[71]

Coincidentally, the following month, California Governor, Arnold Schwarzenegger wrote to the USNRC confirming that California continued to license byproduct material as defined in Section 11e(1), (3) and (4) of the Atomic Energy Act under the Agreement Program.[72] The letter however was silent on which State agency administered the program. It is doubtful whether the Schwarzenegger Administration was aware of the potential impact of the impending SB 990 legislation.

Specific language in SB 990 included …

- *"In calculating the risk, the cumulative risk from radiological and chemical contaminants at the site shall be summed, and the land use assumption shall be either suburban residential or rural residential (agricultural), whichever produces the lower permissible residual concentration for each contaminant. In the case of radioactive contamination, the department shall use as its risk range point of departure the concentrations in the*

[69] Senate Bill 990 (2007), "Land Use: Santa Susanna Field Laboratory", Introduced February 23, 2007. Available at http://www.leginfo.ca.gov/pub/07-08/bill/sen/sb_0951-1000/sb_990_bill_20070223_introduced.pdf. Accessed December 19, 2021. Note the misspelling of "Susana" throughout the bill.

[70] USAEC, "Notice of Agreement with the State of California", April 18, 1962. Available at https://scp.nrc.gov/special/regs/caagreements.pdf. Accessed December 19, 2021.

[71] Letter from Brian Anderson (USNRC) to Gonzalo Perez (CDPH-RHB), "No Title", November 3, 2021. Available at https://scp.nrc.gov/special/regs/caregs211103.pdf. Accessed December 19, 20211.

[72] Schwarzenegger Letter to Dale Klein (USNRC), "No Title", March 29, 2007. Available at https://scp.nrc.gov/special/regs/cacertificationltr.pdf. Accessed December 19, 2021.

Preliminary Remediation Goals issued by the Superfund Office of the United States Environmental Protection Agency in effect as of January 1, 2007."

- *"As a condition for a sale, lease, sublease, or transfer of land presently or formerly occupied by the Santa Susana Field Laboratory, the Director of the Department of Toxic Substances Control or his or her designee shall certify that the land has undergone complete remediation pursuant to the most protective standards above."*

Boeing opposed SB 990 in the Sacramento legislature conducting an intense lobbying effort to overturn the technically impractical requirement to achieve a 10^{-6} risk goal using an agricultural land use scenario. The technical argument against SB 990 is summarized in a white paper.[73]

It is worth noting that neither DOE nor NASA, the two federal responsible parties (RP) who shared remediation responsibilities at SSFL, chose to openly oppose SB 990 during the hearing process in the California Senate or Assembly. Both DOE and NASA would live to regret their inaction as they became embroiled in the future 2010 AOC (See Section 17.0) .

SB 990 was amended on April 9, 2007, principally to correct the misspelling of "Susanna" to "Susana" and to further explain why SSFL was "unique" among all other remedial sites in California and the US.[74]

As with previous bills introduced into the California legislature by Senators Kuehl and Romero, SB 990 was authored by Dan Hirsch of the Committee to Bridge the Gap. This became comically clear when Senator Kuehl, during one of her speeches on the floor of the Senate, summarizing the bill, kept referring to the Sodium Reactor Experiment (SRE), a sodium-cooled reactor, as the "Sulphur Reactor." Dan Hirsch would have never made that mistake.

[73] Boeing, "Technical Feasibility of Detecting Radionuclide Contamination in Soil at a 10^{-6} Risk Level for Agricultural Land Use", March 6, 2007. Available at https://philrutherford.com/SSFL/Cleanup_Standards/Technical_Feasibility_Rev_A.pdf. Accessed July 10, 2024.

[74] Senate Bill 990 (2007), "Hazardous Waste: Santa Susana Field Laboratory", Amended April 9, 2007. Available at http://www.leginfo.ca.gov/pub/07-08/bill/sen/sb_0951-1000/sb_990_bill_20070409_amended_sen_v98.pdf. Accessed December 19, 2021.

SB 990 was ultimately approved (enrolled) by the legislature on September 5, 2007,[75] was signed by Governor Schwarzenegger (chaptered) on October 14, 2007,[76] and became law effective January 1, 2008.[77]

At this stage, CDPH effectively bowed out of the political and operational aspects of SSFL radiological cleanup, limiting its involvement, to licensing actions only.

[75] Senate Bill 990 (2007), "Hazardous Waste: Santa Susana Field Laboratory", Enrolled September 5, 2007. Available at http://www.leginfo.ca.gov/pub/07-08/bill/sen/sb_0951-1000/sb_990_bill_20070906_enrolled.pdf. Accessed December 19, 2021.

[76] Senate Bill 990 (2007), "Hazardous Waste: Santa Susana Field Laboratory", October 14, 2007. Available at http://www.leginfo.ca.gov/pub/07-08/bill/sen/sb_0951-1000/sb_990_bill_20071014_chaptered.pdf. Accessed December 19, 2021.

[77] California Health & Safety Code 25359.20, "Article 5.5 Cleanup of Santa Susana Field Laboratory", Effective January 1, 2008. Available at https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=HSC&division=20.&title=&part=&chapter=6.8.&article=5.5.. Accessed December 19, 2021.

12.0 TO SUPERFUND OR NOT TO SUPERFUND?[78] (2007-2008)

USEPA Region IX has assessed the SSFL site (or Area IV) numerous times to determine if it is eligible for listing on the National Priorities List (NPL) as a Superfund site. The following provides citations to those assessments.

On July 19, 1989, Ecology & Environment Inc. issued a report documenting its site-wide Preliminary Assessment / Site Inspection (PA/SI) of SSFL, including EPA ID# CAD093365435 (Rockwell), CA1800090010 (NASA) and CA3890090001 (DOE).[79] The report's conclusion was,

> *"A Hazard Ranking System [HRS] evaluation for the Rockwell International Santa Susana Field Laboratory indicates that the facility will probably not qualify for inclusion on the National Priorities List. This conclusion is based on the low number of drinking water targets that may potentially be affected by groundwater or surface water contamination from the facility."* The report also concluded that, *"The radionuclide emissions released from the facility appear to be within the guidelines established by the Department of Energy."*

Based on these conclusions, USEPA did not add SSFL to the NPL.

On August 18, 1989, Ecology and Environment Inc. issued a report documenting a Preliminary Assessment (PA) on the Former Sodium Burn Pit, EPA ID# CAD982399719.[80] The final PA report neither provides a numerical HRS analysis, nor provides a final HRS numerical score. The report does however conclude,

> *"Based on a preliminary Hazard Ranking System estimate, it does not appear as though the Former Sodium Burn Pit at the Rockwell International Santa Susana Field Lab will be eligible for inclusion on the National Priorities List."*

On September 21, 1993, PRC Environmental Management Inc. issued a final report on a PA/SI it conducted of the Energy Technology Engineering Center (ETEC), EPA ID# CA3890090001 (DOE)

[78] With apologies to William Shakespeare's Hamlet. "To be or not to be … that is the question?" and with apologies to the Oxford English Dictionary for using Superfund as a verb.

[79] Energy and Environment Inc. for USEPA, Region 9, "Summary Review of Preliminary Assessments / Site Inspections of Rockwell International Santa Susana Field Laboratory", July 19, 1989. Available at https://www.epa.gov/sites/default/files/documents/ref-15.pdf. Accessed December 11, 2021.

[80] Energy and Environment Inc. for USEPA, Region 9, "Preliminary Assessment", August 18, 1989. Available at https://www.epa.gov/sites/default/files/documents/ref-6.pdf. Accessed December 11, 2021.

and CAD00629972 (Building 4133).[81] The final PA/SI report neither provides a numerical HRS analysis, nor provides a final HRS numerical score. The report makes no recommendations regarding listing ETEC on the NPL.

In 2003, Weston Solutions Inc. conducted a further PA/SI, on behalf of USEPA Region 9, on Area IV of SSFL (aka Energy Technology Engineering Center (ETEC), EPA ID# CA3830090001.[82] The report did not provide numerical HRS analysis, numerical HRS results or make any recommendations regarding listing on NPL. However, in December 2003, the USEPA Region 9 issued a factsheet to the public,[83] stating that,

> *"The U.S. Environmental Protection Agency (EPA) Region 9 Superfund Program has determined that the Energy Technology Engineering Center / Area IV (ETEC) site is not eligible for inclusion on Superfund's National Priorities List (NPL), and no further response action by the Federal Superfund program is warranted at this time. This decision is based on EPA's evaluation of radionuclide data for ETEC Area IV."*

In this factsheet, USEPA further stated,

> *"DOE, not EPA, has the principal legal authority for making decisions and performing cleanup at ETEC. The legal explanations for this are very complex. Different laws, regulations and policies dictate when and how EPA will be involved in environmental cleanups. For the SSFL site, DOE has responsibility for the cleanup of ETEC, and final decisions about the cleanup will be made by DOE."*

This statement was made only nine months after USEPA had criticized DOE's Environmental Assessment (EA) in which it had provided the basis for a protective cleanup standard of 15 mrem/y (See Section 6.0).

[81] PRC Environmental Management Inc. for USEPA, Region 9, "Energy Technology Engineering Center, Simi Hills, California – Federal Facility Review - Preliminary Assessment / Site Inspection Final Report", September 21, 1993. Available at https://www.epa.gov/sites/default/files/documents/ref-22.pdf. Accessed December 11, 2021.

[82] Weston Solutions Inc. for USEPA, Region 9, "Site Inspection Report - Energy Technology Engineering Center / Area IV, Simi Hills, California", September 2003. Available at https://www.epa.gov/sites/default/files/documents/ref-21.pdf. Accessed December 11. 2021.

[83] USEPA, "EPA Concludes Superfund Evaluation of ETEC Area IV", December 2003, Available at https://www.philrutherford.com/SSFL/Superfund/EPA_2003-12_Area_IV_Superfund_Factsheet.pdf. Accessed December 12, 2021.

The HRS score was considerably less than the >25 score required for Area IV to be listed on the NPL as a Superfund Site.[84] ETEC is still not a Superfund site.[85]

Clearly, CBG, the California legislature, and DTSC did not like USEPA's regulatory position on NPL inclusion, as further events that unfolded in 2007 attested.

In July 2007, USEPA Region 9 initiated a site-wide Preliminary Assessment / Site Inspection (PA/SI) of SSFL to be performed by Weston Solutions Inc.[86] USEPA issued the final PA/SI report on November 30, 2007.[87] Interestingly, the Weston Solutions report neither provided the HRS analysis, the HRS numerical result, nor recommended that SSFL be listed on the NPL. The author was unable to locate the HRS analysis on the USEPA Region 9 website, therefore a FOIA request (EPA-R9-2022-003246) was submitted to USEPA on March 22, 2022. [88] USEPA Region 9 provided the requested material on April 18, 2022. The HRS analysis[89] focused exclusively on the TCE contamination of groundwater from rocket testing operations. The HRS scoresheet[90] quantified only pathways from TCE contaminated groundwater and surface water. The HRS scoresheet's only mention of radioactivity, states,

[84] Western Solutions Inc., for USEPA, Region 9, "Summary Scoresheet for Computing Projected HRS Score", August 9, 2003. Confidential.

[85] USEPA, "Superfund Site Information: Energy Technology Engineering Center", Available at https://cumulis.epa.gov/supercpad/CurSites/csitinfo.cfm?id=0903426. Accessed December 11, 2021.

[86] USEPA Factsheet, "U.S. Environmental Protection Agency (EPA) Superfund Evaluation", July 2007. Available at https://www.philrutherford.com/SSFL/Superfund/EPA_2007-07_SSFL_Superfund_Factsheet.pdf. Accessed December 12, 2021.

[87] Weston Solutions Inc., Prepared for USEPA Region IX, "Preliminary Assessment / Site Inspection Report - Santa Susana Field Laboratory, Simi Valley, California", November 30, 2007. Available at https://www.epa.gov/sites/default/files/documents/SSFL-PASI-report-r2-complete.pdf. Accessed December 11, 2021.

[88] EPA, "FOIA request (EPA-R9-2022-003246)", March 22, 2022. Available at https://www.philrutherford.com/SSFL/EPA/EPA-R9-2022-003246.pdf. Accessed March 26, 2022.

[89] EPA, "HRS Rationale. Santa Susana Field Laboratory. CERCLIS ID No. CAN000908498", 2007. Available at https://foiaonline.gov/foiaonline/api/request/downloadFile/SSFL%20HRS%20Rationale.pdf/b485188e-d6ae-4cc8-b909-85ffba9cbfc1. Accessed May 3, 2022.

[90] EPA, "Summary Scoresheet for Computing Projected HRS Score. Santa Susana Field Laboratory. EPA ID #: CAN000908498", October 1, 2007. Available at https://foiaonline.gov/foiaonline/api/request/downloadFile/SSFL%20HRS%20Scoresheets%20r1.pdf/bee7fa42-9369-4319-8df3-1b166d950137. Accessed May 3, 2022.

> *"Continuous outdoor air sampling for radioactivity is conducted along the perimeter of Area IV, however, annual exposures measured on, and off site, are below the Nuclear Regulatory Commission's annual dose limit of 100 millirem above natural background."*

Radioactivity contributed zero to the SSFL HRS score of 50.2.

On December 6, 2007, less than a week after the Weston Solutions PA/SI, USEPA recommended to Arnold Schwarzenegger, Governor of California, that SSFL be put on the Superfund National Priorities List (NPL).[91] USEPA requested a 30-day concurrence from the State of California.

Activists, legislators, and the public initially rejoiced in the anticipation of SSFL becoming a Superfund Site.[92] Dan Hirsch, of GBG, is quoted in the Daily News article above as saying,

> *"The community has been praying for a decade that this site would be added to the Superfund list. If the governor blocks Superfund listing, he would be doing a favor to the polluter and a grave injustice to the people who live near the site."*

Only twenty-five days later, Dan Hirsch, along with a multitude of other activist organizations changed their tune, and demanded that the State defer supporting Superfund listing, preferring instead the more restrictive "agricultural land use" requirements of SB 990 to the "reasonably anticipated future land use" requirements of CERCLA guidance, and ultimately the "cleanup-to-background" and no risk assessment requirements of the 2010 AOC (See later Sections 17.0).

On January 4, 2008, the Los Angeles Regional Water Quality Control Board (LARWQCB) wrote to CalEPA supporting listing SSFL on the NPL.[93]

On January 15, 2008, CalEPA sent a letter to USEPA requesting a six-month deferment on Superfund listing.[94]

[91] EPA Letter to Governor of California, "Santa Susana Field Laboratory, Ventura County, California", December 6, 2007. Available at https://philrutherford.com/SSFL/Superfund/dec6letterepassfl.pdf. Accessed July 10, 2024.

[92] Daily News, "Arnold Holds Key to Site's Superfund Listing", December 21, 2007. Available at https://www.philrutherford.com/SSFL/Superfund/DailyNews_2007-12-21.pdf. Accessed December 2021.

[93] LARWQCB Letter to Cal EPA, "Superfund National Priorities List Placement - Santa Susana Field Laboratory (NPDES No. CA0001309)", January 4, 2008. Available at https://www.philrutherford.com/SSFL/Superfund/LARWCB_12-12-2008.pdf. Accessed December 9, 2021.

[94] CalEPA Letter to USEPA, "Santa Susana Field Laboratory, Ventura County", January 15, 2008. Available at https://www.philrutherford.com/SSFL/Superfund/Nastri_SSFL_011508.pdf. Accessed December 11, 2021.

In March 2008, USEPA issued a factsheet to the public, confirming that SSFL qualified to be a Superfund site.[95] It is noteworthy however that USEPA still did not provide the numerical results of the hazard ranking system (HRS) used to determine eligibility.

In July 2008, the California Environmental Protection Agency (CalEPA) sent a second request to USEPA requesting a further delay in listing SSFL as a Superfund site.[96]

On October 10, 2008, DOE wrote to USEPA supporting listing SSFL on the NPL,[97] noting that oversight by USEPA, together with an established risk-based CERCLA remediation was appropriate.

The author is unaware of any final written decision by USEPA to not list SSFL on the NPL. As of the publication date of this paper, SSFL has still not been listed on the NPL.[98]

[95] EPA, "Superfund Eligibility Evaluation of Santa Susana Field Laboratory has been Completed", March 2008. Available at https://www.epa.gov/sites/default/files/documents/SSFL3_08Legal.pdf. Accessed December 9, 2021.

[96] Cal EPA Letter to EPA, "Santa Susana Field Laboratory, Ventura County", July 11, 2008. Available at https://www.philrutherford.com/SSFL/Superfund/CalEPA_2nd_Extension_Request.pdf. Accessed December 9, 2021.

[97] DOE Letter to EPA, October 10, 2008. https://philrutherford.com/SSFL/Superfund/Signed-Response_letters_to_2008-1611%5b1%5d.pdf. Accessed July 10, 2024.

[98] USEPA, "Superfund Site Information: Santa Susana Field Laboratory", Available at https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0908498. Accessed May 3, 2022.

13.0 BOEING - STATE SB 990 NEGOTIATIONS (2007 - 2008)

For the previous decade, radiological soil cleanup goals at SSFL had been based on a residential land use scenario.[99] The choice of residential land use was intentionally chosen as a conservative scenario, and it was never Boeing's intent to sell SSFL for housing development. It is however believed that Senator Kuehl was under the mistaken assumption that Boeing did intend to sell SSFL for residential development following completion of cleanup. Although Boeing had never had that intent, or stated that intent, it is probably fair to say that it had never "officially" denied it in writing. It was therefore likely that this led to the impetus of the agricultural land use requirement of SB 990 and the land transfer requirement.

This changed on October 12, 2007. Boeing announced that it had reached agreement with the State of California to transfer its portion of SSFL to the State as parkland, following site cleanup, on condition that SB 990 would be amended to replace agricultural land use with residential land use.[100] Governor Schwarzenegger[101] confirmed this agreement, as did Senator Kuehl.[102] A non-binding Letter of Intent (LOI) was signed by Boeing, CalEPA and the California Resources Agency documenting this agreement. All this communication occurred on October 12, 2007. Two days later Governor Schwarzenegger signed SB 990 on October 14, 2007.[103] It would become law on January 1, 2008.

Immediately, the activist cohort gathered to overturn this agreement. On January 15, 2008 a letter was issued documenting a counter LOI describing an agreement between CalEPA, the California Resources Agency and the activist organizations, Sierra Club, Committee to Bridge the Gap, California League of Conservation Voters, Natural Resources Defense Council, Heal the Bay,

[99] Boeing, "Approved Sitewide Release Criteria for Remediation of Radiological Facilities at the SSFL", December 18, 1998. Available at https://www.energy.gov/sites/default/files/2023-08/Doc._No._26_Approved_Release_Criteria_for_Remediation_of_SSFL_RAD_Facilities%20.pdf. Accessed July 11, 2024.

[100] Boeing Press Release, "Boeing Commits Historic Santa Susana Site to Open Space", October 12, 2007. Available at https://www.philrutherford.com/SSFL/SB-990/10-12-07_Boeing_Santa_Susana.pdf. Accessed December 10, 2021.

[101] Governor Schwarzenegger Press Release, "Governor Schwarzenegger to Sign Measure to Accelerate Cleanup at Santa Susana Field Laboratory in Ventura County", October 12, 2007. Available at https://www.philrutherford.com/SSFL/SB-990/10-12-07_Schwarzenegger_Press_Release_on_SB_990.pdf. Accessed December 10, 2021.

[102] Senator Kuehl Letter to Governor Schwarzenegger, "SB 990- (Kuehl): Cleanup of Santa Susana Field Laboratory Property", October 12, 2021. Available at https://www.philrutherford.com/SSFL/SB-990/10-12-07_SenatorKuehlLetter.pdf. Accessed December 10, 2021.

[103] SB 990 (2007), "Hazardous Waste: Santa Susana Field Laboratory", Chaptered October 14 , 2007. Available at http://www.leginfo.ca.gov/pub/07-08/bill/sen/sb_0951-1000/sb_990_bill_20071014_chaptered.pdf. Accessed December 13, 2021.

Los Angeles Physicians for Social Responsibility, GREEN LA, Rocketdynewatch.org, Childhood Cancer Awareness, cleanuprocketdyne.org, Coastal Law Enforcement Action Network, Southern California Federation of Scientists, Pacoima Beautiful, Rocketdyne Cleanup Coalition, etc., etc.[104] The LOI stated that SB 990 be maintained and not amended, and that the USEPA be asked to defer listing SSFL on the NPL for a further 6-months.

The same day of the activist LOI, January 15, 2008, Linda Adams, Secretary of CalEPA sent out two letters. The first letter to Senator Kuehl, reneging on its 3-month agreement with Boeing and releasing Senator Kuehl from her commitment to amend SB 990.[105] The second letter to USEPA requesting deferment of listing of SSFL as a Superfund site.[106] Clearly, these same day coordinated communications indicated a prior extended period of collusion between activists and State officials to de-road the prior Boeing-State agreement. Clearly, the activists desired to maintain control over the SSFL cleanup and maintain the more draconian cleanup requirements that SB 990 mandated rather than the more rational USEPA CERCLA requirements for Superfund sites. Clearly, State agencies were beholden to, and at the behest of, activists.

[104] Sierra Club, et. al. Letter to CalEPA, "Letter of Intent regarding Remediation of the Santa Susana Field Laboratory Property", Draft, January 15, 2008. Available at https://www.dtsc-ssfl.com/files/lib_correspond/letters/3081_LETTER%20OF%20INTENT%20FINAL_1_14_08.pdf. Accessed December 11, 2021.

[105] CalEPA Letter to Senator Kuehl, "No Title", January 15, 2008. Available at https://www.philrutherford.com/SSFL/SB-990/2008-01-15_CalEPA_to_Kuehl.pdf. Accessed December 13, 2021.

[106] CalEPA Letter to USEPA, "Santa Susana Field Laboratory, Ventura County", January 15, 2008. Available at https://www.philrutherford.com/SSFL/Superfund/Nastri_SSFL_011508.pdf. Accessed December 11, 2021.

14.0 EPA RADIOLOGICAL SURVEY OF AREA IV (2008 - 2012)

In July 2008, DOE and USEPA signed an Inter-Agency Agreement (IAG) that called upon USEPA to conduct (1) a radiological background study, and (2) a radiological characterization study of Area IV and the northern buffer zone.[107] DOE would ultimately pay $42 million to USEPA for the studies but did not direct the study. This agreement concluded an almost decade of discussions for such a USEPA survey.

At the time, the goal was to compare soil sample radionuclide concentrations to the USEPA's agricultural preliminary remediation goals (PRG) (as of January 1, 2007), as mandated by SB 990. Ultimately, following the signing of the 2010 AOC (see Section 17.0 on 2010 AOC), sample radionuclide concentrations would be compared to background.

Another original intent was that EPA would follow MARSSIM guidelines. USEPA was, after all, a co-author of MARSSIM. USEPA did classify all buildings and sites as Class 1, 2 or 3 as required by MARSSIM, but that is as far as it went. The rational for choosing Class 1 was based on physical proximity to former nuclear facilities, not based on MARSSIM guidelines of actual, or probability of exceeding DCGLs.[108] Building 4038 served as the DOE/Boeing administrative offices, for 40 years, from 1964 to 2005. The author had his office in 4038 for seven years from 1998 to 2005. Building 4038 and its proximate area, were classified as Class 1, based on the following rationale.

> *"The preliminary MARSSIM Classification for the Building 4038 area is Class 1, due to its location within ETEC, and because the open storage area held activation products from Building 4059."*[109]

The open storage area at 4059 refers to temporary storage during 2004 removal of saw-cut, sub-surface, activated concrete reactor cell walls.[110] Area air monitoring at the time did not detect airborne contamination exceeding environmental standards.

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[107] DOE Press Release, "DOE and EPA Sign Interagency Agreement to Study Area IV of Santa Susana Field Laboratory", July 24, 2008. Available at https://www.philrutherford.com/SSFL/EPA/DOE_EPA_AGREE_2008-07-24.pdf. Accessed January 19, 2022.

[108] DCGL = derived concentration guideline level (exceeding background)

[109] EPA, "Final Technical Memorandum, Subarea HSA-5C, Historical Site Assessment, SSFL, Area IV Radiological Study", October 2012. Available at https://www.energy.gov/sites/default/files/2023-09/Volume%20IV%20HSA-5C.pdf#page=38. Accessed July 11, 2024.

[110] Boeing, "Radiological Remediation at the Department of Energy's Energy Technology Engineering Center", HPS Conference Paper, Spokane Washington, July 10-14, 2005. Available at https://www.energy.gov/sites/default/files/2023-10/HPS_Radiological_Briefing_07-14-2005_Rev2.pdf. Accessed July 11, 2024.

MARSSIM recommends statistical methods of selecting the number of samples per survey unit to be taken, in order to be able to reject the null hypothesis that a survey unit remains contaminated (if appropriate). EPA did not do this.

MARSSIM further recommends several non-parametric statistical tests to compare survey units to referenced background, including the Wilcoxon Rank Sum test and the Sign Test. Both these tests compare the survey unit distribution to the referenced background distribution, to determine if the survey unit exceeds background, or not. EPA did not do this. Indeed the 2010 AOC requirement to compare each individual sample to a parametrically derived background metric (look-up table value (LUT)) violated the whole MARSSIM protocol and foundation.

Therefore, EPA did not follow MARSSIM protocols.

EPA contracted with Hydrogeologic Inc. and the Palladino Company. Detailed plans and final reports are provided on the DOE ETEC web site.[111] A summary factsheet of results was published by the EPA in December 2012.[112]

The EPA stated in its published reports …

- *"EPA received $41.5 million of DOE and Recovery Act Funds from the Federal government to conduct one of the most robust technical investigations ever undertaken for low-level radioactive contamination."*[113] [Underline added for emphasis]
- *"In general, EPA found elevated radiation levels in the areas where we expected to find them, isolated to a number of former process or disposal areas."*[114]
- *"… level of gamma radiation throughout most of the Area IV Study Area was lower than that of the RBRAs [Radiological Background Reference Areas]."*[115]

[111] DOE. "Clean-up at the Santa Susana Field Laboratory for DOE's Responsibility in Area IV - EPA Characterization." Available at https://www.energy.gov/etec/epa-characterization-1. Accessed July 11, 2024.

[112] EPA. "Santa Susana Field Laboratory - EPA Radiological Characterization Study Results", November 2012. Available at http://www.boeing.com/resources/boeingdotcom/principles/environment/pdf/EPA_November_2012_Factsheet.pdf. Accessed January 19, 2022.

[113] Ibid. Page 1

[114] EPA Factsheet, "EPA Radiation Investigation Update", page 3, May 2012. Available at https://www.philrutherford.com/SSFL/EPA/EPA_May_2012_Factsheet.pdf#page=3. Accessed January 19, 2022.

[115] EPA, Final Gamma Radiation Scanning Report, Area IV Radiological Study, SSFL", page 7.1, October 17, 2012. Available at https://www.energy.gov/sites/default/files/2023-09/2_Final%20Gamma%20Radiation%20Scanning%20Report%20101712.pdf#page=78. Accessed July 11, 2024.

- *"This survey resulted in the discovery of several areas of elevated radiation levels, but none of the levels recorded posed a health and safety danger to personnel as defined in the project Safety and Health Plan."*[116] [Underline added for emphasis]

Out of 3,735 soil and sediment samples and over 128,000 separate radiological analyses …

- 423 (11%) samples exceeded the EPA background levels for man-made radionuclides.
- Only 8 (0.2%) samples exceed the former DOE and State approved dose-based cleanup standard for conservative residential land use (only cesium-137).
- No results exceed the EPA acceptable risk range for open space, recreational land use.

Prior radiological remediation had been based on meeting DOE and State approved cleanup standards discussed earlier. The small handful of samples exceeding the DOE and State approved cleanup standards demonstrate that prior remediation has been very effective in eliminating widespread contamination.

[116] EPA, Final Gamma Radiation Scanning Report, Area IV Radiological Study, SSFL", page 6.1, October 17, 2012. Available at https://www.energy.gov/sites/default/files/2023-09/2_Final%20Gamma%20Radiation%20Scanning%20Report%20101712.pdf#page=70. Accessed July 11, 2024.

15.0 BOEING, DOE, NASA AND DTSC NEGATIATIONS (2009)

During 2009, Boeing, DOE, NASA and DTSC attempted to incorporate the requirements of SB 990 into a prior 2007 Consent Order for Corrective Action[117] that had focused exclusively on chemical remediation and was silent on radiological remediation. The parties incorporated USEPA's CERCLA risk assessment guidance into a revised Consent Order. After numerous meetings, a final draft revision (DRAFT 2.0), dated August 10, 2009, was acceptable to all parties.[118]

The draft was intended to be released for public review and comment. However, before DRAFT 2.0 of the revised Consent Order could be issued, a change in DTSC leadership occurred when SSFL Project Director, Norm Reilly, was summarily fired and replaced by Rick Brausch. Brausch subsequently issued, a draft revision for public comment on August 19, 2009, which significantly differed from the August 10, 2009, version. The Brausch version was issued for public comment as a draft agreement between DTSC, DOE and NASA.[119,120] Boeing had declined to be party to this changed version.

Subsequently, the Brausch version would morph into the Brausch/Hirsch version a year later and become the 2010 Administrative Orders on Consent (2010 AOC).[121,122] The 2010 AOCs eliminated all reference to USEPA CERCLA risk assessment guidance, replacing it with a cleanup-to-background mandate (See Section 17.0).

Therefore, the 2010 AOCs made SB 990 irrelevant for DOE and NASA. SB 990's future defeat in federal court made it irrelevant to Boeing, DOE, and NASA (Section 16.0). Boeing's refusal to sign up to a 2010 AOC made it irrelevant to Boeing.

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[117] DTSC, "Consent Order for Corrective Action", August 16, 2007. Available at https://www.dtsc-ssfl.com/files/lib_correspond/orders/188_AR-M620N_20070820_104426.pdf. Accessed December 13, 2021.

[118] DRAFT 2.0 of the revised Consent Order was not issued for public comment, is not in the public domain, and therefore it cannot be provided here.

[119] DTSC, "Public Notice - Draft Consent Order with DOE and NASA for the Santa Susana Field Laboratory, Simi Hills, Ventura County", August 19, 2009. Available at https://www.philrutherford.com/SSFL/Consent_Order_Draft_2009/Public_Notice.pdf. Accessed March 13, 2022.

[120] DTSC, "Consent Order for Response Action (Draft for Discussion Purposes Only)", August 19, 2009. Available at https://www.philrutherford.com/SSFL/Consent_Order_Draft_2009/DRAFT_Consent_Order_DOE_NASA.pdf. Accessed March 13, 2022.

[121] DTSC, DOE, "Administrative Order on Consent for Remedial Action", December 6, 2010. Available at https://www.dtsc-ssfl.com/files/lib_ceqa/ref_draft_peir/Chap3_ProjDesc/68904_DTSC_2010a_AOC_DOE.pdf. Accessed December 29, 2021.

[122] DTSC, NASA, "Administrative Order on Consent for Remedial Action", December 6, 2010. Available at https://www.dtsc-ssfl.com/files/lib_ceqa/ref_draft_peir/Chap2_Intro/67877_DTSC_2010b_AOC_NASA.pdf. Accessed December 2021.

16.0 BOEING vs. DTSC - SB 990 LITIGATION (2009 - 2014)

On November 13, 2009, Boeing sued Maziar Movassaghi, Acting Director of the DTSC, an agency of the State of California, over SB 990, in United States District Court (Eastern District of California).[123]

Following 18 months of legal proceedings, on April 26, 2011, Judge John Walter of the United States District Court (Central District of California) issued an order[124] granting plaintiff, The Boeing Company's motion for summary judgement.

On May 5, 2011, Judge John Walter issued a judgement[125] in which he stated,

- *"Judgment is entered in favor of Plaintiff, The Boeing Company, as to Counts One, Two, and Three of the Amended Complaint."*
- *"California Senate Bill 990 ("SB 990"), codified at Cal. Health & Safety Code § 25359.20, is declared invalid and unconstitutional in its entirety under the Supremacy Clause of the United States Constitution."*
- *"Defendant in his official capacity as Acting Director of the California Department of Toxic Substances Control ("DTSC") and any successors, as well as any officers, agents, servants, employees, or attorneys acting for or on behalf of DTSC, or persons in active concert or participation with any such person or DTSC, are hereby enjoined from enforcing or implementing SB 990."*

On June 3, 2011, defendants appealed. On September 19, 2014, the United States Court of Appeals (Ninth Circuit) affirmed the judgement of the United States District Court.[126]

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[123] Boeing, "Complaint of The Boeing Company", United States District Court - Eastern District of California, Case 2:09-at-01832, November 13, 2009. Available at https://www.dtsc-ssfl.com/files/lib_boeinglawsuit/legaldocs/64509_BoeingComplaint11-13-2009.pdf. Accessed December 21, 2021.

[124] Honorable John F. Walter, "Order Granting Plaintiff The Boeing Company's Motion for Summary Judgement", United States District Court (Central District of California), Case 2:10-cv-04839-JFW-MAN, April 26, 2011. Available at https://www.dtsc-ssfl.com/files/lib_boeinglawsuit/legaldocs/64928_show_tempCA4R335S.pdf. Accessed December 21, 2021.

[125] Honorable John F. Walter, "Judgement Pursuant to Fed. R Civ. P. 54(b)", United States District Court (Central District of California), Case 2:10-cv-04839-JFW-MAN, May 5, 2011. Available at https://www.dtsc-ssfl.com/files/lib_boeinglawsuit/legaldocs/64933_DTSCvTheBoeingCoJudgement05-05-2011.pdf. Accessed December 21, 2021.

[126] United States Court of Appeals for the Ninth Circuit, "Opinion", Case 2:10-cv-04839-JFW-MAN, September 19, 2014. Available at https://www.dtsc-ssfl.com/files/lib_boeinglawsuit/legaldocs/66462_11-55903.pdf. Accessed December 2021.

DOE chose not to join Boeing as a co-plaintiff in this lawsuit, as doing so would have been inconsistent with its subsequent acquiescence to the 2010 AOC (See Section 17.0). However. during the appeal process, the US Department of Justice (USDOJ) did file an "amicus curiae" on March 18, 2013, supporting Boeing's position and affirming Judge Walter's Order.[127]

A partial, incomplete compilation of court documents in this complaint, for both plaintiff and defendant, is provided on the DTSC SSFL web site.[128] Several court documents written/originated by the author include,

- Rutherford, Declaration of Philip D. Rutherford in Support of Plaintiff The Boeing Company's Motion for Summary Judgement. January 22, 2010
- Rutherford, Supplemental Declaration of Philip D. Rutherford in Support of Plaintiff The Boeing Company's Motion for Summary Judgement. May 6, 2020
- Certified by Rutherford, Plaintiff The Boeing Company's Response to Defendant's First Set of Interrogatories. November 2, 2020
- Rutherford, Deposition of Philip Rutherford (Non-Confidential Portion). December 13, 2010
- Rutherford, Initial Expert Report of Philip D. Rutherford Regarding the Santa Susana Field Laboratory Site. January 21, 2011
- Rutherford, Supplemental Declaration of Philip D. Rutherford in Support of Plaintiff The Boeing Company's Motion for Summary Judgement. March 28, 2011

16.1 Postscript

Inexplicably, after over eleven years, the California Health & Safety Code still includes the SB 990 verbiage.[129] Personal communications during 2020 by the author, with California

[127] US Department of Justice, "Brief for the United States as Amicus Curiae Supporting Affirmance", Case 11-55903, March 18, 2013. Available at https://www.dtsc-ssfl.com/files/lib_boeinglawsuit/legaldocs/66440_2013-0318_CA9_Brief_by_US_as_Amicus_Curiae_Supporting_Affirmance.pdf. Accessed December 21, 2021.

[128] A partial, incomplete compilation of legal briefs, from both plaintiff and defendant, is provided on the DTSC SSFL document library. https://dtsc.ca.gov/santa_susana_field_lab/ssfl_document_library/. Click "Boeing Lawsuit" in the left navigation bar. Then click "Legal Documents."

[129] California Legislative Information. California Health & Safety Code § 25359.20, "Cleanup of Santa Susana Field Laboratory", Effective January 1, 2008. Available at https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=25359.20.&lawCode=HSC. Accessed December 21, 2021.

legislators, the California Attorney General, Judge John Walter, and SB 990's author, Sheila Kuehl, has been met with deafening silence.[130,131]

Removing a California law from the books is not an easy matter. It is apparently insufficient for a federal judge to strike down a California law … as might be expected. A lengthy process is involved in getting a law removed, almost as onerous as getting the law passed in the first place. Of course, the same legislature that passed the bill into law would be petitioned to remove the law. Apparently, Boeing had no appetite to initiate such a legislative dog fight. Boeing is satisfied that DTSC is enjoined from enforcing or implementing the law … and DTSC is apparently complying.

Until 2021, the DTSC website devoted to SSFL still claimed that SB 990 is law and that SSFL remediation is still subject to SB 990.[132] Several personal communications with DTSC have resulted in references to SB 990 being removed.[133,134]

[130] Rutherford Letter to State Senator Henry Stern, "SB 990 (2007) and Health and Safety Code 25359.20", November 16, 2020. Available at https://www.philrutherford.com/Personal_Communication/SB_990_Letter_to_Stern_2020-11-16.pdf. Accessed December 21, 2021.

[131] Rutherford Letter to Attorney General Becerra, "Senate Bill 990 (2007) and Health and Safety Code § 25359.20", December 4, 2020. Available at https://www.philrutherford.com/Personal_Communication/SB_990_Letter_to_AG_Office_2020-12-04_plus_enclosures.pdf. Accessed December 21, 2021.

[132] DTSC Web Page," SSFL Facility Investigation." Available at https://dtsc.ca.gov/santa_susana_field_lab/ssfl_site_activities_rcra/. Accessed December 21, 2021.

[133] Rutherford Letter to DTSC, "SB 990 (2007) and Health and Safety Code 25359.20", November 16, 2020. Available at https://www.philrutherford.com/Personal_Communication/SB_990_Letter_to_Cope_2020-11-16.pdf. Accessed December 21, 2021.

[134] Rutherford Email to DTSC, "Obsolete References to SB 990 on DTSC's Website", June 17, 2021. Available at https://www.philrutherford.com/Personal_Communication/SB-990_Email_to_Grant_Cope_2021-06-17.pdf. Accessed December 21, 2021.

17.0 ADMINISTRATIVE ORDER ON CONSENT (2010 AOC)

Following DTSC's and RPs' negotiations during 2009 and Boeing's SB 990 lawsuit in November 2009, DTSC, DOE and NASA spent most of 2010 negotiating what would eventually become the 2010 Administrative Orders on Consent (AOC). DTSC, DOE and NASA signed two separate AOCs on December 6, 2010.[135,136] By that time the AOCs had changed considerably from the August 2009 Brausch draft. It is likely that during this period, DTSC foresaw that SB 990 was destined for ultimate defeat by Boeing. For this reason, DTSC pushed for a "signed agreement" rather than a "law," with the belief that signed agreement between parties was less likely to be challenged in court. That may have appeared to be a smart move at the time for DTSC. However, both DOE and NASA have subsequently recognized the error of their ways. More about that later. Signatories of the 2010 AOCs were,

- Maziar Movassaghi, Acting Director, DTSC
- Cynthia V. Anderson, Chief Operations Officer, DOE
- Olga M. Dominguez, Assistant Administrative, Officer of Strategic Infrastructure, NASA

The 2010 AOCs mandated the following requirements that deviated from established USEPA CERCLA risk assessment guidance …

- Forbade the use of risk assessment and USEPA risk assessment guidance.
- Eliminated the use of any risk-based or dose-based soil concentration cleanup standards.
- Required "cleanup-to-background" or zero tolerance for any residual contamination, radiological or chemical.
- Required single-sample comparison to a parametric background level for each measured chemical and radionuclide. Dismissed the use of "exposure point concentrations" (EPC) to calculate "reasonable maximum exposures" (RME).
- Defined soil to include "debris, structures and other anthropogenic materials."
- Specified DQOs and MQOs related to comparison of single sample soil data to soil "look-up-table" (LUT) background values.

[135] DTSC, DOE, "Administrative Order on Consent for Remedial Action", December 6, 2010. Available at https://www.dtsc-ssfl.com/files/lib_ceqa/ref_draft_peir/Chap3_ProjDesc/68904_DTSC_2010a_AOC_DOE.pdf. Accessed December 29, 2021.

[136] DTSC, NASA, "Administrative Order on Consent for Remedial Action", December 6, 2010. Available at https://www.dtsc-ssfl.com/files/lib_ceqa/ref_draft_peir/Chap2_Intro/67877_DTSC_2010b_AOC_NASA.pdf. Accessed December 2021.

- Failed to specify any DQOs or MQOs related to "debris, structures and other anthropogenic materials" measurements.

- Specified process to establish soil background for chemicals and radionuclides.

- Failed to specify process to establish chemical or radionuclide background for "debris, structures and other anthropogenic materials."

- Required all soil and structural debris that "exceeds radiological background" be sent to an NRC-licensed LLRW disposal facility or an authorized LLRW disposal facility at a DOE site.

- Required all soil and structural debris that "exceeds chemical background" be sent to a Class 1 hazardous waste facility if classified as hazardous waste, or to a Class 2 or subtitle D compliant Class 3 disposal facility if classified as non-hazardous waste.

Clearly DTSC, relaxed its disposal requirements for trace chemical contamination (non-hazardous) but not for trace radionuclide contamination (non-LLRW). The 2010 AOC effectively implemented all prior failed and challenged legislation … and then some. Boeing declined to negotiate or sign such a draconian AOC.

18.0 BOEING BUILDING DEMOLITION (2010 - 2013)

Boeing demolished approximately 40 remaining Boeing-owned, non-radiological buildings in Areas I, III and IV, between February 2010 and July 2013.

DTSC had required that radiation surveys be conducted prior to demolition of all non-radiological facilities in Areas I and III. Boeing prepared a Demolition Standard Operating Procedure (SOP) that included procedures to perform radiation surveys.[137] Boeing radiation survey reports were reviewed by DTSC, CDPH/RHB and, in some cases USEPA, prior to demolition and debris disposal.

Following successful completion of building demolition in Areas I and III, Boeing submitted plans to DTSC to demolish six non-radiological Boeing-owned facilities in Area IV. Because Area IV was the location of past nuclear operations that generated heightened public interest, Boeing conducted a public tour and walk-through in February 2012 of various Area IV buildings scheduled for demolition. DTSC also requested that Boeing amend the SOP to include Area IV non-radiological buildings, which it did on November 1, 2012, as Amendment 1.[138] DTSC requested that Boeing also perform post-demo surveys on the undersides of concrete slabs, foundations, asphalt roadbed, and any other previously inaccessible structural surfaces. The surveys, demolition, and debris disposal of this phase of the program was also successfully completed.

In early 2013, Boeing submitted to DTSC plans to demolish the final six Boeing-owned former nuclear/radiological facilities in Area IV, that had been variously surveyed by Boeing, USNRC (ANL), CDPH/RHB and USEPA and had been "released for unrestricted use."[139]

DTSC requested that Boeing make a second amendment to the SOP, including further documentation and procedures to assure that building debris from these facilities was not

[137] Boeing, "SSFL - Standard Operating Procedures: Building Demolition Debris Characterization and Management", February 24, 2010. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/66029_Boeing_Standard_Operating_Procedures_for_SSFL_Building_Demolition,_April_2013_Revision.pdf#page=4. Accessed December 29, 2021.

[138] Boeing, "Standard Operation Procedures: Boeing Demolition Debris Characterization and Management: Amendment 1", November 1, 2012. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/66029_Boeing_Standard_Operating_Procedures_for_SSFL_Building_Demolition,_April_2013_Revision.pdf#page=23. Accessed December 29, 2021.

[139] Boeing, "Radiological Status of Boeing Buildings in Area IV", February 13, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/65975_B4005-A.pdf#page11-14. PDF pages 11-14. Accessed December 31, 2021.

contaminated in excess of State and federal standards. Boeing issued Amendment 2 on April 19, 2013.[140]

Boeing also provided all prior survey reports, release criteria used and proximate soil data from the USEPA Radiological Survey of Area IV. These reports were all reviewed by DTSC, CDPH/RHB and USEPA.

Boeing submitted to DTSC the following notifications for planned removal of the former radiological facilities.

- Building 4005 Slab, "Uranium Carbide Manufacturing Facility
  - Regulatory Release[141]
  - USEPA Data from Proximate Surrounds[142]
- Building 4009, OMR/SGR Facility
  - Regulatory Release[143]
  - USEPA Data from Proximate Surrounds[144]
- Building 4011, Radiation Instrument Calibration Facility
  - Regulatory Release[145]

[140] Boeing, "Standard Operation Procedures: Boeing Demolition Debris Characterization and Management: Amendment 2", April 19, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/66029_Boeing_Standard_Operating_Procedures_for_SSFL_Building_Demolition,_April_2013_Revision.pdf#page=25. Accessed December 29, 2021.

[141] Boeing, "Regulatory Release of Building 4005 and Disposal of Decommissioned Material", February 13, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/65975_B4005-A.pdf#page=16-206. PDF pages 16-206. https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/65976_B4005-B.pdf#page=4-83. PDF pages 4-83. Accessed December 31, 2021.

[142] Boeing, "USEPA Data from the Surrounds of the 4005 Sab and Lot", February 13, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/65976_B4005-B.pdf#page=85-91. PDF pages 85-91. Accessed December 31, 2021.

[143] Boeing, "Regulatory Release of Building 4009 and Disposal of Decommissioned Material", March 5, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/attachmentsB4009demonotice.pdf#page=48-449. PDF pages 48-449. Accessed December 31, 2021.

[144] Boeing, "USEPA Data from the Surrounds of Building 4009", February 11, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/attachmentsB4009demonotice.pdf#page=451-457. PDF pages 451-457. Accessed December 31, 2021.

[145] Boeing, "Regulatory Release of Building 4011 (Low Bay) and Disposal of Decommissioned Material", February 25, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/65980_SSFL_Area_4_Bldg__4011_Lowbay_demo_notice.pdf#page=24-288. PDF pages 24-288. Accessed December 31, 2021.

  - USEPA Data from Proximate Surrounds[146]
- Building 4055, Nuclear Materials Development Facility (NMDF)
  - Regulatory Release[147]
  - USEPA Data from Proximate Surrounds[148]
- Building 4093, L-85 Reactor
  - Regulatory Release[149]
  - USEPA Data from Proximate Surrounds[150]
- Building 4100, Fast Critical Experiment Laboratory
  - Regulatory Release[151]
  - USEPA Data from Proximate Surrounds[152]

Boeing planned to demolish the remnant foundations and one standing wall of the L-85 reactor building. Boeing, DTSC, CDPH/RHB and USEPA reached consensus on additional pre-, coincident,

[146] Boeing, "USEPA Data from the Surrounds of Building 4011", September 18, 2012. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/65980_SSFL_Area_4_Bldg__4011_Lowbay_demo_notice.pdf#page=290-298. PDF pages 290-298. Accessed December 31, 2021.

[147] Boeing, "Regulatory Release of Building 4055 and Disposal of Decommissioned Material", February 25, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/66093_B4055DemoNotificationPart-1B.pdf#page=50-156. PDF pages 50-156. https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/66094_B4055DemoNotificationPart-2B.pdf#page=1-292. PDF pages 1-292. Accessed December 31, 2021.

[148] Boeing, "USEPA Data from the Proximate Surrounds of Building 4055", February 11, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/66094_B4055DemoNotificationPart-2B.pdf#page=294-301. PDF pages 294-301. Accessed December 31, 2021.

[149] Boeing, "Regulatory Release of L-85 and Disposal of Decommissioned Material", February 1, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/66162_113161-Notification_of_Planned_Removal,_L85_Area.pdf#page=12-172. PDF pages 12-172. Accessed December 31, 2021.

[150] Boeing, "USEPA Data from the Surrounds of the L-85 & 11th Street", November 20, 2012. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/66162_113161-Notification_of_Planned_Removal,_L85_Area.pdf#page=199-206. PDF pages 199-206. Accessed December 31, 2021.

[151] Boeing, "Regulatory Release of Building 4100 and Disposal of Decommissioned Material", August 5, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/DTSC_demo_workplan_B4100.pdf#page=54-357. PDF pages 54-357. Accessed December 31, 2021.

[152] Boeing, "USEPA Data from the Surrounds of Building 4100", February 11, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/DTSC_demo_workplan_B4100.pdf#page=364-372. PDF pages 364-372. Accessed December 31, 2021.

and post-demolition surveys of the remaining structures.[153,154] Boeing completed and documented these additional surveys/sampling and provided results to DTSC.[155] Following review by DTSC, CDPH/RHB and USEPA, DTSC stated,

> *"The surveys were conducted at the request of DTSC and the California Department of Public Health (CDPH), as a condition of approval for the demolition of the remnant features at the L-85 site and Class I Hazardous Waste Landfill disposal of the resulting debris … Based on reviews of the Boeing surveys performed by the DTSC senior health physicist, CDPH staff, and US EPA staff (see the attached technical memoranda), DTSC concurs that the surveys were performed to applicable standards, and that measured activity and calculated exposure levels for the former L-85 segregated concrete and piping debris meet all acceptable regulatory limits for disposal at a Class I Hazardous Waste Landfill."*[156]

Following this blessing by DTSC, the debris from the L-85 demolition was shipped offsite to a Class 1 hazardous waste disposal facility in compliance with Executive Order E-62-02.

Radiation surveys for 38 non-radiological facilities in Areas I, II, III and IV and the L-85 released former nuclear facility in Area IV, were conducted by Earl Sorrels, Ning Liu, Ryan Ford, and Dave Hickman from mid-2009 through mid-2013.

[153] DTSC, "DTSC Review of Notification Package for Planned Removal of Concrete and Asphalt at Former L-85 Area (Area IV), Boeing, Santa Susana Field Laboratory, Ventura County, California", May 1, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/66031_L85-DTSC-REVIEW-01MAY2013.pdf. Accessed December 31, 2021.

[154] Boeing, "Amendment to L-85 Demolition Notification", April 19, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/66031_L85-DTSC-REVIEW-01MAY2013.pdf#page=12-14. PDF pages 12-14. Accessed December 31, 2021.

[155] DTSC has not provided these surveys on its web site therefore the author is unable to provide here.

[156] DTSC, "DTSC Review of Supplemental Radiological Survey Data from Concrete and Piping Debris, Former L-85 Area (Area IV), Boeing - Santa Susana Field Laboratory, Ventura County, California", July 22, 2013. Available at https://www.philrutherford.com/SSFL/boeing_building_demolition/L85-SUPPLEMENTAL-22JUL2013-mm.pdf. Accessed December 31, 2021.

19.0 PSR-LA, SCFS, CBG & CW vs. DTSC, CDPH & BOEING LITIGATION (2013 - 2023)

On August 5, 2013, two weeks following DTSC's blessing to ship L-85 debris to a Class 1 hazardous waste facility, and before operations could be initiated on the remaining five facilities, the Physicians for Social Responsibility - Los Angeles (PSR-LA), the Southern California Federation of Scientists (SCFS), the CBG, and Consumer Watchdog sued DTSC and CDPH as Respondents, and Boeing as Real Party of Interest. [157] Petitioners' allegations were …

1. The demolition program was a "project" as defined by CEQA, and as such, required DTSC to perform an EIR before "approving" the demolition.

2. Criteria that DTSC and CDPH used to confirm that former radiological facilities had been appropriately decommissioned and released for unrestricted use, were "underground regulations" that had not gone through the public notice and hearing process required by the California Administrative Procedures Act (APA).

3. The demolition debris from the subject buildings was LLRW and would be a hazard to the public and environment if not disposed of to a licensed LLRW disposal facility.

A report, prepared by CBG, provided the alleged basis for the complaint.[158]

A detailed point-by-point rebuttal of the complaint's allegations and the CBG report was prepared supporting respondents' position that the demolition program complied with federal and state decommissioning standards and was fully protective of public health and the environment.[159]

[157] Superior Court of California, County of Sacramento, Case No. 34-2013-80001589. "Verified Petition for Writ of Mandate and Complaint for Injunctive and Declaratory Relief", Petitioners, Physicians for Social Responsibility - Los Angeles, Southern California Federation of Scientists, Committee to Bridge the Gap and Consumer Watchdog. Respondents, Department of Toxic Substances Control and Department of Public Health. Real Party In Interest, The Boeing Company. August 6, 2013. https://www.philrutherford.com/SSFL/boeing_building_demolition/Consumer_Watchdog_Complaint_8-6-13.pdf. Accessed February 5, 2022

[158] Hirsch, Daniel & Miska, Ethan, CBG, "Demolition of Radioactive Structures and the Disposal and Recycling of the Debris from the Santa Susana Field Laboratory Nuclear Area and the Role Played by the California Department of Toxic Substances Control and The California Department of Public Health", August 5, 2013. Available at https://www.philrutherford.com/SSFL/boeing_building_demolition/SSFLDemolitionAndDisposalStudy.pdf. Accessed February 5, 2022.

[159] Rutherford, Phil, "Response to PSR-LA Petition & Complaint - Superior Court of California, Case No. 34-2013-80001589", February 8, 2022. Available at https://www.philrutherford.com/SSFL/boeing_building_demolition/Response_to_PSR-LA_Petition.pdf. Accessed February 18, 2022.

A partial, incomplete compilation of court documents for the petition is provided on the DTSC SSFL website.[160]

19.1 CDPH/RHB Response

Documents submitted to the court included a declaration by Gonzalo Perez, Chief of the CDPH/RHB which deserves further discussion. In it, Mr. Perez discusses the status of internal policies, DECON-1,[161] IPM-88-2[162] and RML-00-02,[163] used in the past, to guide the actions of RHB staff health physicists in their own confirmation surveys and their reviews of licensees' survey data to determine if a facility has met federal and state conditions for release for unrestricted use. Mr. Perez stated,

- *"The Radiologic Health Branch's Policy No. IPM-88-2 was superseded by Policy No. RML-00-02, effective as of May 1, 2000. Therefore, since May 1, 2000, Policy No. IPM-88-2 has not been in effect as Branch policy. Additionally, Policy No. RML-00-02 has not been followed as Branch policy since issuance of the 2002 Amended Peremptory Writ of Mandate requiring that DPH set aside its regulatory adoption of dose-based radiological criteria for license termination. Policy No. RML-00-02 was formally rescinded on January 1, 2013."*

- *"DECON-1 is not Branch policy and has not been Branch policy since at least 2002."*

- *"Decommissioning and termination of radioactive material licenses issued by DPH is governed by California Code of Regulations, Title 17, section 30256, subdivision (k). DPH's Health Physicists are responsible for making the determinations required by that regulation, including determining whether radioactive material has been properly disposed, determining whether the licensee has made a reasonable effort to eliminate any residual contamination, and determining whether the premises are suitable for release for*

[160] DTSC, "Physicians for Social Responsibility et. al. v. DTSC." Available at https://dtsc.ca.gov/santa_susana_field_lab/ssfl_document_library/. Click on Physicians for Social Responsibility et. al. v. DTSC. Accessed February 5, 2022.

[161] CDHS/RHB, DECON-1, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use", June 1977. Available at https://www.philrutherford.com/Radiation_Cleanup_Standards/DECON-1.pdf. Accessed January 1, 2022.

[162] CDHS/RHB, IPM-88-2, "Clearance Inspection and Survey", December 1, 1997. Available at https://www.philrutherford.com/Radiation_Cleanup_Standards/IPM-88-2.pdf. Accessed January 1, 2022.

[163] CDHS/RHB, RML-00-02, "Radiological Release Criteria for Facilities Undergoing Large-Scale Decommissioning", May 1, 2000. Available at https://www.philrutherford.com/Radiation_Cleanup_Standards/RML-00-02.pdf. Accessed January 1, 2022.

unrestricted use. Those determinations are made on a case-by-case basis and are not governed by any set policy or required standard." [Underlines added for emphasis]

- *"Since 2002, DPH's Health Physicists and their supervisors have had complete discretion to exercise their professional judgment as to which standards and/or criteria to apply in making the determinations required by Section 30256. DPH's Health Physicists are never, under any circumstances, required to apply or follow, for example, IPM-88-2, DECON-1, Regulatory Guide 1.86, or U.S. Department of Energy Order 5400.5, nor are they required to apply or follow any other particular standard, criteria, or formula. DPH's Health Physicists are, likewise, not forbidden from applying whatever standards or criteria that they, in their professional judgment, conclude will assist them in making the determinations required by Section 30256. Similarly, DPH's Health Physicists have complete discretion to exercise their professional judgment as to which standards and/or criteria to apply in any other circumstance where they are called upon to evaluate the existence of radioactive contamination, or whether radioactive contamination constitutes a hazard to the public health*." [Underline added for emphasis]

- *"Since issuance of the 2002 Amended Peremptory Writ of Mandate, DPH has not adopted or re-adopted the radiological criteria for license termination set forth in 10 Code of Federal Regulations parts 20.1401-1406, or any similar provisions relating to the establishment of clean-up standards for license termination*." [Underline added for emphasis]

It is unconscionable that RHB should openly admit to a garbled, vague, imprecise policy. Mr. Perez's statement can be summarized as follows …

- RHB has withdrawn former numerical standards used to assist its own health physicists in determining if a facility can be released for unrestricted use. Our health physicists are not required to use any specific standards, but they can use their own professional judgement and use any standards that they wish.

It appears that RHB lawyers are hanging its health physicists out to dry. Of course, RHB health physicists are smarter than their lawyers, and continued to do what they have always done and continued to use the DECON-1 / IPM-88-2 / Regulatory Guide 1.86 surface contamination standards for radiological surveys. RHB health physicists did just that in the June 2013 verification survey for building 4100,[164] that preceded Mr. Perez's comments by a little more than three months.

[164] CDPH/RHB, "Radiological Assessment Unit, Confirmation Survey, Santa Susana Field Laboratory, Area IV, Building 4100, Rooms 112, 113, 114 and Annex", June 27, 2013, Appendix A. Release Criteria, Table 9. USAEC Regulatory Guide 1.86 - Acceptable Surface Contamination Levels. https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/DTSC_demo_workplan_B4100.pdf#page=319-320. Accessed February 5, 2022.

Notwithstanding RHB's attempts to eliminate its own standards, Boeing's Radioactive Materials License 0015-19 Amendment 112, License Condition 13(o) [165] referenced SSFL's Sitewide Release Criteria[166] which included the same surface contamination levels as DECON-1, IPM-88-2 and Regulatory Guide 1.86 that were explicitly approved by the RHB.[167]

19.2 DTSC Response

Two declarations by members of DTSC management included key statements addressing and refuting petitioners' allegations.

Paul Carpenter, Project Manager for DTSC's oversight of Boeing's building demolition program, submitted a declaration to the Court on October 25, 2013.[168,169] Mr. Carpenter stated,

- *"In general, Boeing does not require DTSC's permission before demolishing non-permitted or non-regulated buildings at SSFL."* [Extract from paragraph 7, underline added for emphasis]

- *"I also consider if Boeing intends to dispose of the building wastes in an appropriate manner, based on waste characterization data. As appropriate I also seek reviews of the notifications by support staff within DTSC, and staff of the California Department of Public*

[165] CDPH/RHB, "Radioactive Materials License 0015-19, Amendment 112, License Condition 13(o)", July 9, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/DTSC_demo_workplan_B4100.pdf#page=350. Accessed February 5, 2022.

[166] Boeing, N001SRR140131, "Approved Site-wide Release Criteria for Remediation of Radiological Facilities at the SSFL", Page 14, Section 4, Table 5. "Surface Contamination Guidelines for SSFL Facilities", February 18, 1999. Available at https://www.energy.gov/sites/default/files/2023-08/Doc._No._26_Approved_Release_Criteria_for_Remediation_of_SSFL_RAD_Facilities%20.pdf#page=14. Accessed July 11, 2024.

[167] CDHS/RHB, "Authorized Sitewide Radiological Guidelines for Release of Unrestricted Use", August 9, 1996. Available at https://www.energy.gov/sites/default/files/2023-08/Doc._No._26_Approved_Release_Criteria_for_Remediation_of_SSFL_RAD_Facilities%20.pdf#page=27. Accessed January 1, 2022.

[168] DTSC, "Declaration of Paul Carpenter in Support of Respondent Department of Toxic Substances Control opposition to Petitioners' Motion for Preliminary Injunction", Superior Court of California, Case No. 34-2013-80001589, October 25, 2013. Available at https://www.dtsc-ssfl.com/files/lib_pub_involve/other_docs/66255_Carpenter_FINAL_Declaration_08OCT2013.pdf. Accessed February 25, 2022.

[169] DTSC, "Exhibits to Paul Carpenter's Declaration." Available at https://www.dtsc-ssfl.com/files/lib_pub_involve/other_docs/66256_CarpenterDeclExhibit_pages08OCT2013.pdf. Accessed February 25, 2022.

Health (DPH) and the US Environmental Protection Agency (US EPA).” [Extract from paragraph 18, underline added for emphasis]

- *“The radiological reports included in Boeing’s demolition notifications are reviewed by a DTSC health physicist, who provides comments and conclusions for inclusion in my review letter.”* [Extract from paragraph 19, underline added for emphasis]

- *“I was involved in extensive discussion and consultation with DTSC staff and management, and staff from DPH and US EPA, with regard to the adequacy of Boeing’s radiological methods, surveys, and conclusions for Area IV non-radiological buildings. I was also involved in technical conferences with Boeing staff to receive clarification on Boeing’s screening methods and proposals. At the end of this evaluation process, DTSC concluded that only minor adjustments to the radiological surveys and waste disposal options used by Boeing in SSFL Areas I and III were needed to extend the process to the non-radiological buildings in Area IV.”* [Extract from paragraph 27, underline added for emphasis]

- *“As of September 2012, all but one of the six former Boeing Area IV buildings had been decommissioned and released for unrestricted use by the licensing authorities (CDPH and the US NRC). I have reviewed reports and submissions the licensing agencies indicating that the releasing agency and release dates for these buildings are as follow: Building 4055 (released by the US NRC in 1987); Building 4005 (released by CDPH in 1995); Building 4009 (released by CDPH in 1999); Building 4011 Low Bay (released by CDPH in 1998); L-85 Area (released by US NRC in 1987). It was my understanding that the sixth building, Building 4100, required additional clearance from CDPH to close out a limited active license amendment. I have reviewed documentation which states that CDPH completed this work and released Building 4100 for unrestricted use in July 2013.”* [Extract from paragraph 34, underline added for emphasis]

- *“I was involved in discussion and consultation with DTSC and CDPH staff and management on issues related to Boeing’s intended demolition of the SSFL Area IV former radiological buildings ….. DTSC subsequently developed and entered into a contract with CDPH and an inter-governmental agreement with US EPA to provide reviews of release survey documents for each the six Boeing former radiological buildings.”* [Extract from paragraph 35, underline added for emphasis]

- *“In DTSC’s subsequent Monthly Status Reports, I continued to reference each new Boeing Area IV former radiological building demolition notification received, and I also reference to the involvement of both CDPH and US EPA in these projects.”* [Extract from paragraph 38, underline added for emphasis]

- *“As of April 30, 2013, DPH had provided DTSC with comments on all six of Boeing’s former radiological Area IV sites. At of the time of this declaration, US EPA has provided DTSC*

with comments on the L-85 Area, Buildings 4005, 4011 Low Bay, and 4055." [Paragraph 39, underlines added for emphasis]

- *"DTSC does not regulate radioactive wastes. However, it is my understanding of the applicable law is that material from decommissioned and released radiological buildings is not regulated as low-level radioactive waste (LLRW)"* [Extract from paragraph 41, underline added for emphasis]

These statements clearly state DTSC's positions in 2013, summarized below.

- Boeing does not need DTSC's approval to demolish its non-regulated buildings in Area IV.
- DTSC does not regulate radioactive wastes.
- Decommissioned material from released radiological buildings is not regulated as LLRW.
- DTSC coordinated with CDPH and USEPA to review all radiological survey data for both non-radiological and former radiological Boeing-owned buildings in Area IV.

The conclusions of the CDPH and USEPA reviews, at DTSC's request, of prior radiation surveys conducted on the six subject buildings are summarized in Table 4 below.

Table 4. CDPH and USEPA Reviews of Prior Radiation Release Surveys of Boeing Buildings

Building	CDPH	USEPA
4005 Slab	*"There appears to be no evidence to contradict the conclusions made by DHS in 1995, when the building was removed from Rockwell's radioactive materials license. No further radiological surveys for Building 4005 seem warranted."*[170]	*"This appears to form part of the basis for DTSC's confidence that it's unlikely that there is any radioactive contamination in the remaining building foundations and pads that has not already been discovered."*[171]
4009	*"Recommend no further radiological surveys for Building 4009."*[172]	No review performed.
4011	*"There appears to be no evidence to contradict the conclusions made by DHS in 1998, when the building was removed from Rockwell's radioactive materials license. No further radiological surveys for Building 4011 seem warranted."*[173]	*This appears to form part of the basis for DTSC's confidence that it's unlikely that there is any radioactive contamination in the remaining Building 4011 Low Bay that has not already been discovered."*[174]
4055	*"Recommend no further radiological surveys for Building 4055."*[175]	No review performed.

[170] CDPH, "Review of Documents for SSFL Area IV Building 4005", April 30, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/69582_Boeing_SSFL_Documents_2013.pdf#page=2-3. PDF pages 2-3. Accessed March 10, 2022.

[171] USEPA, "Comments on DTSC/CDPH Reviews of Radiologic Screening Conducted at Boeing Santa Susana Field Laboratory Sites: (1) B4005 and (2) B4011 Low Bay", July 30, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/69582_Boeing_SSFL_Documents_2013.pdf#page=4-7. PDF pages 4-7. Accessed March 26, 2022.

[172] CDPH, "Review of Documents for SSFL Area IV Building 4009", May 30, 2013. Provided by CDPH/RHB on 03/05/2022 in response to a PRA request. Available at https://www.philrutherford.com/SSFL/boeing_building_demolition/Review_of_Documents_for_SSFL_Area_IV_Building_4009.pdf. Accessed March 6, 2022.

[173] CDPH, "Review of Documents for SSFL Area IV Building 4011", April 30, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/69582_Boeing_SSFL_Documents_2013.pdf#page=8-9. PDF pages 8-9. Accessed March 10, 2022.

[174] USEPA, ""Comments on DTSC/CDPH Reviews of Radiologic Screening Conducted at Boeing Santa Susana Field Laboratory Sites: (1) B4005 and (2) B4011 Low Bay", July 30, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/69582_Boeing_SSFL_Documents_2013.pdf#page=4-7. PDF pages 4-7. Accessed March 26, 2022.

[175] CDPH, "Review of Documents for SSFL Area IV Building 4055", May 30, 2013. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/69582_Boeing_SSFL_Documents_2013.pdf#page=10-11. Accessed March 10, 2022.

Table 4. CDPH and USEPA Reviews of Prior Radiation Release Surveys of Boeing Buildings (Continued)

Building	CDPH	USEPA
4093, L-85	*"With the data provided [following additional recommended surveys], I concur with Boeing's conclusion that the survey results support the prior USNRC release of L-85 area for unrestricted use."*[176,177]	*"Having read all of the documents that DTSC requested that we review in this matter, I am impressed by the care that the State of California has exercised in considering its decision regarding final disposition of debris from the L-85 reactor site."* [178] *"Having read all of the documents that DTSC requested that we review in this matter, I believe that CDPH and DTSC have correctly concluded that all of the debris from the L-85 reactor site that has been described by these documents is suitable for release."*[179]
4100	*"Recommend no further radiological surveys for Building 4100."*[180]	No review performed.

[176] CDPH, "Boeing Demolition Proposal for Former Radiological Site L-85", April 8, 2013. Provided by CDPH/RHB on 03/05/2022 in response to a PRA request. Available at https://www.philrutherford.com/SSFL/boeing_building_demolition/SSFL_L85_signed_review_20130408_released_to_DTSC.pdf. Accessed March 6, 2022.

[177] CDPH, "Review of Documents for SSFL Area IV L-85 Slab Demo Material", June 11, 2013. Provided by CDPH/RHB on 03/05/2022 in response to a PRA request. Available at https://www.philrutherford.com/SSFL/boeing_building_demolition/SSFL_Area_IV_L-85_slab_demo_Material-TW_2013-0611.pdf.pdf. Accessed March 6, 2022.

[178] USEPA, "USEPA Comments on DTSC/CDPH Reviews of Post-Demolition Radiologic Screening Conducted at Boeing Santa Susana Field Laboratory Site L-85", May 29, 2013. Available at https://www.philrutherford.com/SSFL/boeing_building_demolition/L85-SUPPLEMENTAL-22JUL2013-mm.pdf#page=12-13. PDF pages 12-13. Accessed March 10, 2022.

[179] USEPA, "USEPA Comments on DTSC/CDPH Reviews of Post-Demolition Radiologic Screening Conducted at Boeing Santa Susana Field Laboratory Site L-85", June 21, 2013. Available at https://www.philrutherford.com/SSFL/boeing_building_demolition/L85-SUPPLEMENTAL-22JUL2013-mm.pdf#page=14-16. PDF pages 14-16. Accessed March 10, 2022.

[180] CDPH, "Review of Documents for SSFL Area IV Building 4100", May 30, 2013. https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/69582_Boeing_SSFL_Documents_2013.pdf#page=12-13. Accessed March 10, 2022.

Mark Malinowski, DTSC's SSFL Project Director, submitted a declaration to the Court on October 25, 2013.[181] Mr. Malinowski stated.

- *"As part of their review of any demolition notices from Boeing concerning formerly radiologic buildings, my staff confirms with DPH, that the particular building has been decommissioned and released for unrestricted use by DPH and/or the Nuclear Regulatory Commission (NRC)."* [Extract from paragraph 26, underline added for emphasis]

- *"It is my understanding that Boeing does not require DTSC's permission to demolish any of the buildings identified in the two amendments to the 2010 SOP."* [Extract from paragraph 28, underline added for emphasis]

- *"I have discussed the regulatory classification of low-level radiologic waste (LLRW) with my counterparts at DPH. My understanding is that because building debris from decommissioned former radiologic buildings is not a "regulated radioactive material," and therefore is not LLRW, it can be disposed of at a Class I hazardous waste landfill, even if that Class I hazardous waste landfill is not licensed to receive LLRW. The waste must still comply with the acceptance criteria at the landfill receiving the waste. I also understand that debris from non-radiologic buildings is likewise not LLRW."* [Paragraph 32, underline added for emphasis]

- *"I have been informed by health physicists working for DTSC and DPH that using radiation levels in local soil as background levels to compare to demolition material from buildings is not generally appropriate. The material used in the concrete is not from the local source and it is common that the aggregate in the concrete has minerals with naturally occurring radiological readings that may be significantly different from local soils."* [Paragraph 33, underline added for emphasis]

- *"Health physicists and toxicologists on DTSC staff and with other professionals at DPH review Boeing's demolition program information. I have also reviewed the results of the radiological background study in Area IV of the SSFL that U.S. EPA concluded in 2012. My conclusion, based on their opinions, is that neither the building demolition nor the disposal of the building debris would cause any substantial public safety or environmental harm. The contention that the demolition causes "irreparable harm" or that the site poses an imminent danger to public health, grossly mischaracterize current conditions at SSFL with regard to the magnitude and risk posed by residual chemical and radiological contamination."* [Paragraph 34, underline added for emphasis]

[181] DTSC, "Declaration of Mark Malinowski in Support of Respondent Department of Toxic Substances Control opposition to Petitioners' Motion for Preliminary Injunction", Superior Court of California, Case No. 34-2013-80001589, October 25, 2013. Available at https://www.dtsc-ssfl.com/files/lib_pub_involve/other_docs/66253_2013_10_08MalinowskiDeclaration-final2.pdf. Accessed February 25, 2022.

- *"SSFL has been the subject of extensive and wide-ranging environmental investigation. The current investigation and cleanup of residual chemical and radiological contamination at the site addresses some areas that do not pose an immediate threat but are being addressed to reduce risks from potential long-term (more than 30-years) exposures. The SSFL site is well managed and site access is restricted. The general public does not have direct access to the site. SSFL is carefully managed, under DTSC and other State agency oversight, to assure the residual contaminants at the site are not a danger."* [Paragraph 35, underline added for emphasis]

These statements clearly state DTSC's positions in 2013, summarized below.

- DTSC understands that Boeing-owned former radiological buildings in Area IV have been released for unrestricted use

- Boeing does not need DTSC's approval to demolish its buildings in Area IV.

- Decommissioned material from released radiological buildings is not regulated as LLRW. Debris from non-radiological buildings is not regulated as LLRW.

- Cannot compare building structural contamination measurements to 2010 AOC soil LUTs.

- Disposal of Boeing building demolition debris as non-LLRW would not cause any substantial public safety or environmental harm.

- SSFL is not an imminent threat to public safety.

Taken together, the declarations of Paul Carpenter and Mark Malinowski clearly demonstrate that DTSC fully supported the position of The Boeing Company and its building demolition policies and procedures, as summarized in Table 5.

Table 5. DTSC's Position on Building Demolition

Demolition Programs	Boeing Buildings (2013)
Questions addressed by DTSC Personnel	**Carpenter / Malinowski**
Is DTSC approval needed for building demolition?	No
Does DTSC regulate radioactive wastes?	No
Does DTSC understand the concept of unrestricted release?	Yes
Is decommissioned material from released radiological buildings regulated as LLRW?	No
Did DTSC request assistance from CDPH and USEPA to review radiation survey data?	Yes
Can building structural surface contamination measurements be compared to background soil concentrations?	No
Does disposal of building debris as non-LLRW cause "irreparable" harm?	No
Does SSFL pose an imminent threat to public safety?	No

Between the years 2013 and 2020-2021, DTSC changed its position on building demolition 180 degrees, as illustrated by comparing its statements above to its actions during the DOE building demolition described in Section 23.0.

19.3 Court Denies Petition/Complaint

On November 19, 2018, the PSR-LA complaint was denied for all causes of action.[182] The Court denied allegations (1) and (2) relating to CEQA and APA but chose not to express an opinion on allegation (3) that the demolition debris was a hazard to the public and environment.

[182] Superior Court of California, County of Sacramento, "Ruling on Submitted Matter Re: Petition for Writ of Mandate and Complaint for Injunctive and Declaratory Relief", November 19, 2018. Available at https://www.dtsc-ssfl.com/files/lib_physocrespvsdtsc/courtdocuments/68115_Ruling.pdf. Accessed December 29, 2021.

19.4 Appeal

Following the Court's decision on November 19, 2018, petitioners filed an appeal (Case No. C088821) on February 26, 2019.

The Court documents related to the appeal are available on the DTSC Document Library and are also provided below in chronological order.

- Appellants, Appellant's Civil Appeal Mediation Statement, February 25, 2019
- Appeals Court, Granting of Stay for Period of Appeal, February 28, 2019
- DTSC, Respondent's Civil Appeal Mediation Statement, March 6, 2017 (correction 2019)
- Boeing and CDPH, Respondent's Civil Appeal Mediation Statement, March 6, 2019
- Appellants, Appellants' Opening Brief, June 28, 2022
- Boeing, Boeing Respondent Brief, August 24, 2022
- CDPH, CDPH Respondent Brief, September, 13, 2022
- DTSC, DTSC Respondent Brief, September 13, 2022
- Appellants, Appellants' Reply Brief, October 28, 2022
- DTSC, Amended Administrative Record Index, May 2023
    - DTSC, Administrative Record, Volume I
    - DTSC, Administrative Record, Volume II
    - DTSC, Administrative Record, Volume III
    - DTSC, Administrative Record, Volume IV
    - DTSC, Administrative Record, Volume V
- CDPH, Administrative Record Index, May 2023
    - CDPH, Administrative Record, Part 1
    - CDPH, Administrative Record, Part 2
    - CDPH, Administrative Record, Part 3
    - CDPH, Administrative Record, Part 4
    - CDPH, Administrative Record, Part 5
    - CDPH, Administrative Record, Part 6
- Appeals Court, Appeal Decision, May 2, 2023

The author reviewed the June 2022 Appellants' Opening Brief in 2022.

- Rutherford, Response to PSR-LA Appeal, August 5, 2022
- Rutherford, Annotated Comments on Appellants' Opening Brief, August 5, 2022
- Rutherford, Plutonium, August 5, 2022

On May 2, 2023, almost 10 years after the original petition, and 5 years after plaintiffs filed their appeal, the California Appeals Court (Third District), finally issued its decision, finding for the defendants. The Court affirmed the prior November 2018 decision and concluded,

- *"The judgment is affirmed. The parties shall bear their own costs on appeal. (Cal. Rules of Court, rule 8.278(a)(5).) The stay of the Department of Toxic Substances Control's approval of any demolition and disposal activities related to the Area IV buildings, issued by this court on February 28, 2019, is vacated upon issuance of the remittitur."*

A key conclusion of this appeal process is that …

- when a facility has undergone decommissioning, and
- when final status surveys show that federal/state cleanup standards have been met, and
- when multiple independent surveys confirm these standards have been met, and
- when the regulatory authority has released the facility for unrestricted use, and
- when the regulatory authority has removed the facility from applicable licenses

… then …

- the facility is no longer licensed or regulated,
- the regulatory agency has no further say about how the facility is used and/or demolished,
- the regulatory agency has no further authority over what happens to demolition debris,
- material from the facility is no longer "regulated radioactive material,"
- therefore the material cannot be arbitrarily labeled, low-level radioactive waste.

This may seem obvious to those familiar with the licensing framework and decommissioning concept and process. After all, why spend millions of dollars following regulatory decommissioning guidance, only to be told that decommissioned material should go to a LLRW disposal site anyway. Apparently plaintiffs/appellants do not understand that, and it has taken 10 years for the California Courts to agree.

The following are key extracted paragraphs from Boeing and CDPH briefs and the Court's Final Decision that demonstrate consensus on this truism.

Boeing Respondent Brief, Section B, page 14, states,

> *"As noted, once the license is terminated, DPH's regulatory authority ceases, and the property is released to unrestricted use under the status quo ante. (Cal. Code Regs., tit. 17, § 30256, subd. (k); 11 AA 8052 ¶ 22.) Notably, this means that, even if the demolished decommissioned buildings were to retain some non-zero amount of radiological residue that DPH deemed permissible, disposal of such materials would not be covered by the laws governing disposal of "[l]ow-level radioactive waste," as those laws are limited to "regulated radioactive material." (Health & Saf. Code §§ 115255, art. 2(I), art. 2(P), art. 6(A), and 115261, subd. (e)(4) [emphasis added].) Instead, the disposal of any such materials would at most be subject to an Executive Order prohibiting disposal of decommissioned materials into municipal solid waste landfills and unclassified waste*

management units—and Boeing's disposal plans are consistent with that restriction. (DPH4526.)"

CDPH Respondent Brief, Section I, page 18, states,

"Removing a building from a license ends DPH's regulation of that building. By definition, once a building has been decommissioned, the radioactive material subject to the license "has been properly disposed" and the licensee has made a reasonable effort to decontaminate the building. (Cal. Code Regs., tit. 17, § 30256, subd. (k).) And unlike the NRC, which may release federal licensees with restrictions on the released property, DPH may only release for "unrestricted use." (Compare 10 C.F.R. § 20.1003 [defining "Decommission"] with Cal. Code Regs., tit. 17, § 30100, subd. (c) [same].) DPH has no authority over what happens to decommissioned buildings removed from a license, including how they are used, whether they are demolished, or what happens to the debris if they are demolished. In terms of rights and regulation, a formerly licensed building is no different from any other building that DPH *does not license or has never licensed to receive, possess, or use radioactive materials."*

Appeals Court Decision, Section IIC, pages 8-9, state,

"When DPH terminates a license, it does so through a decommissioning process that requires licensees "to remove safely from service and reduce residual radioactivity to a level that permits release of the property for unrestricted use and termination of the license." (Cal. Code Regs., tit. 17, § 30100, subd. (c).) A prerequisite for terminating a license is a determination by DPH that the radioactive material has been properly disposed, reasonable effort has been made to eliminate residual radioactive contamination, and a radiation survey has been performed and demonstrates that the premises are suitable for unrestricted use. (Cal. Code Regs., tit. 17, § 30256, subd. (k).)8 Removing a building from a license ends DPH's regulation of that building."

*"Disposal of "low-level radioactive waste," defined as "regulated radioactive material" that meets certain technical requirements, is regulated under a separate multi-state compact.9 (Health & Saf. Code, §§ 115255, art. 2, 115261, subd. (e)(4).) Because there is no longer any "regulated radioactive material" in a decommissioned building, the compact would generally not apply. (Health & Saf. Code, § 115255, art. 2(I).) Under an executive order signed in 2002 by then-*Governor Davis*, decommissioned materials may not be disposed into municipal solid waste landfills and unclassified waste management units."*

19.5 Petition for Review by the California Supreme Court

Immediately following the Appeals Court's decision in favor of the defendants, Appellants filed a petition for a rehearing.

- Appellants, Appellants' Petition for Rehearing, May 17, 2023.

One week later, the Appeals Court responded by making three minor edits to its prior opinion, and concluded by stating, *"There is no change in the Judgement. Appellants' petition for rehearing is denied."*

- Appeals Court, Order Modifying Opinion and Denying Rehearing, May 24, 2023

Three weeks later, Petitioners submitted a petition for review to the California Supreme Court.

- Petitioners, Petition for Review, June 12, 2023

The California Supreme Court summarily denied the "Petition for Review" on July 26, 2023. Rebuttals to this Petition for Review are below.

- Rutherford, Response to PSR-LA Petition for Review to California Supreme Court, August 27, 2023
- Rutherford, Annotated Comments on PSR-LA Petition for Review, August 26, 2023

Desperate to claim some victory from the three successive losses in the California Courts, Petitioners claimed that their litigation had forced DTSC to include the demolition of the remaining Boeing-owned buildings in Area IV in the Final CEQA-required PEIR (Section 20.2).

- Consumer Watchdog, The Good That Came Out Of Suing the State Over Allowing Illegal Disposal Of Radioactive Waste From CA's Most Notorious Cold War Lab: An Epitaph, August 21, 2023

Counter to Petitioners' claims, this would not impact the ultimate disposal of demolition debris in a California Class I hazardous waste disposal facility, and not in an out-of-state licensed LLRW disposal facility.

- Rutherford, Response to Petitioners' Claim of Victory in PSR-LA Litigation, February 20, 2024

19.6 Presentation to Health Physics Society Annual Meeting

In July 2025, a presentation was made by the author to the Annual Meeting of the Health Physics Society, in Madison, Wisconsin, summarizing the ten-year PSR-LA Petition and Complaint.

- Rutherford, PSR-LA Decommissioning Litigation at the Santa Susana Field Laboratory, July 16, 2025
- Rutherford, Abstract of above presentation.

20.0 DTSC PROGRAM ENVIRONMENTAL IMPACT REPORT (2017 and 2023)

20.1 Draft PEIR (2017)

In September 2017, DTSC issued its Draft Program Environmental Impact Report for the SSFL.[183]

The Draft PEIR included Table 3-12, "Estimates of DOE Building Debris Volumes Not Destined for Low-Level Radioactive Waste Facilities." Table 3-12 itemized the decommissioned material from Building 4019, destined for a California Class 1 hazardous disposal facility (in compliance with Executive Order D-62-02), plus the debris from the non-radiological buildings, 4038, 4057, 4462 and 4463 that was destined for either recycle, clean waste disposal or hazardous waste disposal.

Ultimately the 2020 AOC mandated that all waste from these buildings would be classified, managed, and disposed of as LLRW (See Section 23.0).

Section 3.3.4 discusses Boeing's and DOE's building demolition programs,

- *"Demolition of Boeing's buildings is neither required by DTSC nor subject to DTSC approval."*

- *"The PEIR description of these particular buildings and infrastructure in no way: (1) establishes or implies that DTSC has discretionary authority in the demolition process; (2) impacts Ventura County's general building and permitting authority with regard to Boeing-owned buildings within Area IV; or (3) undermines DOE's discretionary authority regarding the building removal program under NEPA."*

- *"The PEIR references to DOE- and Boeing-owned buildings and infrastructure within Area IV, as they relate to the environmental analysis, provide background information only. Those references do not indicate that DTSC has discretionary authority over buildings and infrastructure which, as in this case, are not associated with hazardous waste activities."*

Section 3.7.3.2 further discusses Boeing's building demolition.

- *"As discussed in Section 3.3.4, demolition of Boeing's five inactive buildings in Area IV is not subject to DTSC approval and is therefore not evaluated or described in this PEIR as part of the proposed project."*

These statements clearly outline DTSC's acknowledged limited regulatory authority over building demolition.

[183] DTSC, "Draft Program Environmental Impact Report for the Santa Susana Field Laboratory, Ventura County , California", September 2017. Available at https://dtsc.ca.gov/wp-content/uploads/sites/31/2016/05/SSFL_Draft_Program_EIR.pdf. Accessed June 7, 2022

20.2 Final PEIR (2023)

On June 8, 2023, DTSC issued its Final Program Environmental Impact Report[184], almost 6 years after the release of the Draft PEIR. The Final PEIR evaluated several alternatives to proposed cleanup, potential environmental impacts of those alternatives, and measures to be taken to mitigate those impacts. The Final PEIR is not a decision document. Comments below are limited to the demolition and disposal of remaining Boeing-owned buildings in Area IV.

Page P-11 of the Final PEIR Preface discusses removal of Boeing-owned buildings in Area IV.[185]

- *"In addition to the DOE-owned buildings in Area IV, Boeing owns five non-RCRA permitted buildings within Area IV (Buildings 4009, 4011, 4055/4155, 4100, and the remaining slab of 4005). Building removal will include both above- and below-ground structures. In the Draft PEIR, the demolition of these buildings was evaluated in Chapter 5, Cumulative Impacts, as a related project and, therefore, considered in conjunction with the project. DTSC analyzed this activity in the Final EIR as if it were part of the project itself, in order to provide a conservative assessment of site cleanup. The environmental impacts of demolition and removal remain substantially the same as those evaluated in Draft PEIR Chapter 5, Cumulative Impacts. DTSC will ensure that the demolition and disposal of these buildings is carried out in accordance with applicable law. Aspects of the demolition and disposal of the buildings was the subject of litigation. The Court of Appeal recently found in favor of DTSC and its co-respondents on all claims."* [Underline added for emphasis]

Each of the paragraphs from the Draft PEIR Sections 3.3.4 and 3.7.3.2 quoted above have been deleted In the revised Draft PEIR.[186] The Final PEIR and revised Draft PEIR are silent on how DTSC may attempt to mandate classification and disposal of debris from the subject buildings. However the revised Section 3.7.3.2. Boeing Area IV Building and Structure Demolition, now vaguely states,

[184] DTSC, "SSFL Final Program Environmental Impact Report", DTSC Web Page, June 8, 2023. Available at https://dtsc.ca.gov/santa_susana_field_lab/fpeir/. Accessed June 12, 2023.

[185] DTSC, "Final Program Environmental Impact Report for the Santa Susana Field Laboratory, Ventura County, California", Page P-11, February 2023, Released June 2023. Available at https://www.envirostor.dtsc.ca.gov/getfile?filename=/public%2Fdeliverable_documents%2F5178303360%2F00_SSFL%20Final%20PEIR.pdf#page=37. Accessed June 12, 2023.

[186] DTSC, "Draft Program Environmental Impact Report for the Santa Susana Field Laboratory, Ventura County, California", September 2017, Revised February 2023, Released June 2023.
Section 3.3.4 available at
https://www.envirostor.dtsc.ca.gov/getfile?filename=/public%2Fdeliverable_documents%2F5792988419%2F00_SSFL%20Draft%20PEIR%20%5BRevised%5D.pdf#page=188-189. Accessed February 21, 2024.
Section 3.7.3.2 available at
https://www.envirostor.dtsc.ca.gov/getfile?filename=/public%2Fdeliverable_documents%2F5792988419%2F00_SSFL%20Draft%20PEIR%20%5BRevised%5D.pdf#page=264. Accessed February 21, 2024

- *"To facilitate a more conservative and quantitative analysis of impacts, DTSC is including the remaining Boeing building demolition as part of the analysis of project impacts. The buildings include Buildings 4009, 4011E, 4055/4155, and 4100, and 4005. Building 4155 was the 480-square-foot security control station in front of Building 4055. For Building 4005, only the below-grade slab remains."*

Based on the DTSC agreements prior to the 2013 PSR-LA litigation, disposal of this decommissioned material should go to a Class I or II disposal site within the State of California in compliance with Executive Order D-62-02.

The reference in the Final PEIR that, *"The Court of Appeal recently found in favor of DTSC and its co-respondents on all claims"* was in part due to DTSC successfully arguing that Boeing did not require DTSC's "approval" to demolish its remaining buildings in Area IV. Why then did DTSC remove these very statements from Sections 3.3.4 and 3.7.3.2 from the revised Draft PEIR? Is DTSC setting the stage for repeating its demand for decommissioned material to be disposed of as LLRW, as it did for DOE-owned buildings in 2020-2021? Court documents filed in the PSR-LA Appeal and the Court's Final Decision concurred that such a demand would be inconsistent with the California Health & Safety Code and California Code of Regulations, Title 17 (See Section 19.4).

21.0 DOE FINAL ENVIRONMENTAL IMPACT STATEMENT (2018)

In November 2018, DOE issued its Final EIS for Remediation of Area IV and the Northern Buffer Zone of the SSFL[187] that had been ordered by Judge Conti in 2007 in the NRDC/CBG vs. DOE litigation (Section 9.0). Although most of the EIS dealt with soil and groundwater remediation, DOE-owned building demolition was also addressed. Three major statements were made.

- *"Waste from all buildings with a radioactive history is assumed to be disposed of as radioactive waste"* [EIS Summary, page S-48, footnote 37].[188] This would apparently include buildings 4019 and 4029 that had been released for unrestricted release by DOE.[189,190] This statement bears an uncanny resemblance to the statement made two years later by DTSC in a public meeting on the 2020 Amendment to Order on Consent (See Section 23.0).
    - *"Buildings with a history of radiological use, regardless of the status of unrestricted release, was sufficient enough to say that the waste could be characterized as LLRW."*

- *"Waste only from Buildings 4038, 4057, 4462 and 4463 is not assumed to be radioactive."* [EIS Summary, page S-48, footnote 37]. Ultimately the 2020 AOC mandated that all waste from these buildings would be classified, managed, and disposed of as LLRW (See Section 23.0).

- *"Materials are suitable for free release if they do not exhibit radioactivity above background levels"* [EIS Summary, page S-48, footnote 38]. This is inconsistent with DOE, NRC and State decommissioning policy and practice. Cleanup standards are not based on cleanup to background.

[187] DOE, "Final SSFL Area IV EIS Document." Available at http://www.ssflareaiveis.com/final_documentation.aspx. Accessed March 6, 2022.

[188] DOE, "Final Environmental Impact Statement for Remediation of Area IV and the Northern Buffer Zone of the Santa Susana Field Laboratory - Summary", DOE/EIS-0402, November 2018. Available at https://www.philrutherford.com/SSFL/doe_building_demolition/Final_DOE_Area_IV_EIS_Summary.pdf. Accessed March 2022.

[189] DOE, "Release of Building 4019", January 31, 2005. Available at https://www.energy.gov/sites/default/files/2023-10/4019-doerel.pdf. Accessed July 11, 2024.

[190] DOE, "Release of Facilities for Unrestricted Non-Radiologic Use", April 21, 1997. Available at https://www.energy.gov/sites/default/files/2023-10/4029-doerel.pdf. Accessed July 11, 2024.

These statements remained essentially unchanged from the earlier draft EIS that DOE issued two years earlier in January 2017.[191] Apparently, DOE had made the decision to ignore its own determinations that 4019 and 4029 had been released for unrestricted use, and that they would follow the dictates of Senate Bill 1970 that had been vetoed 12 years earlier. This decision also contradicted DTSC's own determination in the September 2017 Draft PEIR, that decommissioned material from the released 4019 would go to a California Class 1 hazardous waste disposal facility in compliance with Executive Order D-62-02.

On September 27, 2019, DOE published the building demolition Record of Decision in the Federal Register.[192] It was curiously silent about waste classification and disposal for all remaining DOE buildings.

[191] DOE, "Draft Environmental Impact Statement for Remediation of Area IV and the Northern Buffer Zone of the Santa Susana Field Laboratory - Summary", DOE/EIS-0402, January 2017. Available at https://www.philrutherford.com/SSFL/doe_building_demolition/Draft_DOE_Area_IV_EIS_Summary.pdf. Accessed March 7, 2022.

[192] DOE, "Record of Decision for Final EIS for Remediation of Area IV and the NBZ of the SSFL", FR Vol. 84, No. 188, pages 51149-51156, September 27, 2019. Available at http://www.ssflareaiveis.com/fr-rod-eis-0402-ssfl-area-iv-buildings-2019-09-27.pdf. Accessed March 6, 2022.

22.0 ORDER ON CONSENT FOR INTERIM RESPONSE ACTION AT THE RMHF (2020)

On May 19, 2020, DTSC and DOE signed an "Order on Consent (OC) for Interim Response Action at the Radioactive Materials Handling Facility (RMHF) Complex."[193] The OC required demolition and disposal of ten buildings within the Radioactive Materials Handing Facility (RMHF) (Figure 3). Though many of these buildings had prior characterization surveys performed showing that they met standards for release for unrestricted use,[194] portions of some buildings were still contaminated, and the RMHF, in total, had not been decommissioned or released for unrestricted use. The OC therefore required that the above ground portions of the RMHF be demolished as is, and all demolition debris disposed of as LLRW and sent to Energy*Solutions* in Clive Utah.

The OC was signed by …

- Grant Cope, Deputy Director, Site Mitigation and Restoration Program, DTSC
- William I. White, Senior Advisor for Environmental Management to the Under Secretary for Science, US DOE

On June 11, 2020, DTSC conducted a COVID-19 required, virtual public meeting describing the OC.[195,196] It is significant that this public meeting was hosted by DTSC alone, with no presentations or participation by DOE or its demolition contractor, North Wind. No DOE or North Wind personnel were present to field the various questions by the public. One can only assume that DOE did not share DTSC's enthusiasm. DTSC's press release[197] claimed that the action was consistent with Governor Newsom's efforts to prevent and mitigate the impacts of wildfires and

[193] DTSC, "Order on Consent for Interim Response Action at the Radioactive Materials Handling Facility (RMHF) Complex", May 19, 2020. Available at https://dtsc.ca.gov/wp-content/uploads/sites/31/SSFL/DOE-Order-on-Consent-for-Interim-Response-Action-at-RMHF-with-DN.pdf. Accessed January 11, 2022.

[194] Cabrera Services, "Combined Summary Report: Radioactive Materials Handling Facility Building Surveys", October 2007. Available at https://www.energy.gov/sites/default/files/2023-11/07-1016-00_Boeing_SSFL_RMHF_FINAL_Report.pdf. Accessed July 11, 2024.

[195] DTSC, Public Meeting, "Order on Consent for Interim Response Action for the Radioactive Materials Handling Facility", June 11. 2020. Available at https://dtsc.ca.gov/wp-content/uploads/sites/31/SSFL/RMHF-Order-on-Consent-Community-Meeting-Presentation-June-11-2020.pdf. Accessed January 10, 2022.

[196] DTSC, Video of Public Meeting, ""Order on Consent for Interim Response Action for the Radioactive Materials Handling Facility", June 11. 2020. Available at https://www.youtube.com/watch?v=AuLkhhSRlqA. Accessed January 10, 2022.

[197] DTSC Press Release, "California Issues Legal Order for Cleanup of Santa Susana Toxic Site - Requires U.S. Department of Energy to Remove 10 Buildings at SSFL", May 20, 2020. Available at https://dtsc.ca.gov/2020/05/20/california-issues-legal-order-for-cleanup-of-santa-susana-toxic-site/. Accessed January 10, 2022.

subsequent heavy rains including the 2018 Woolsey Fire that had burned 80% of SSFL.[198] This appeared to be a righteous act but was disingenuous.

Figure 3. DOE-Owned Buildings at the Radioactive Materials Handling Facility (circa 2000)
Courtesy Department of Energy

The DOE-owned buildings could have been demolished in 2007 but for DTSC's over-reaching interpretation of Judge Conti's Order following the EA lawsuit.[199] DTSC stopped DOE's demolition

[198] Executive Order N-05-19, January 8, 2019. Available at https://www.gov.ca.gov/wp-content/uploads/2019/01/1.8.19-EO-N-05-19.pdf. Accessed January 10, 2022.

[199] DTSC, "Discontinuation of DOE Activities at the Santa Susana Field Laboratory, Simi Valley, California", June 26, 2007. Available at https://www.philrutherford.com/SSFL/doe_building_demolition/SSFL_Ltr_Tho_062607.pdf. Accessed January 10, 2022.

plans for the RMHF[200] and SNAP Building 4024[201] in their tracks. DTSC recognized its error in judgement in 2007, and in 2012 gave DOE approval to pursue building demolition.[202] Why did it take a further 8 years for DTSC to issue a demolition order?

On June 5, 2020, DOE subsequently issued the final revision to its demolition Standard Operating Procedure (SOP).[203] Section 2.6, Compliance with the AOC, of the SOP states,

> *"All of the building debris generated as part of the RMHF building decommissioning and demolition will be classified as either LLRW or MLLW (irrespective of the presence of radioactivity above background) and will be transported and disposed of at a facility authorized to receive LLRW or MLLW waste."* [Underline added for emphasis]

Section 2.9, Radiological Surveys, of the SOP states,

> *"Because DOE will be using existing radiological characterization data for waste acceptance criteria determination, no additional radiological surveys of the RMHF buildings will be performed. All of the building debris generated during decommissioning and demolition will be transported to either a LLRW or MLLW facility based on the waste profile."* [Underline added for emphasis]

Section 4, Waste Management and Disposal, of the SOP states,

> *"Out of an abundance of caution, demolition waste debris from the RMHF buildings has been characterized and categorized and will be managed as LLRW or MLLW, irrespective of having characterization data showing no radioactivity above background."* [Underlines added for emphasis]

Section 4.1.1, Radiological Waste Management, of the SOP states, in total,

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[200] Boeing, "Radioactive Materials Handling Facility Decontamination and Decommissionng Engineering Evaluation / Cost Analysis", June 18, 2007. Available at https://www.energy.gov/sites/default/files/2023-10/Revised_RMHF_DD%20EECA%20_6-14-07.pdf. Accessed July 11, 2024.

[201] Boeing, "Building 4024 Decontamination and Decommissiong Engineering Evaluation / Cost Analysis", May 1, 2007, Available at https://www.energy.gov/sites/default/files/2023-10/BUILDING-4024-DECONTAMINATION-AND-DECOMMISSIONING-ENGINEERING-EVALUATION-COST-ANALYSIS.pdf. Accessed July 11, 2024.

[202] DTSC, "U.S. Department of Energy Building Demolition in Area IV, Santa Susana Field Laboratory, Ventura County, California", February 28, 2012. Available at https://www.philrutherford.com/SSFL/doe_building_demolition/US_DOE_Building_Demolition_in_Area_IV_2012-02-28.pdf. Accessed January 10, 2022.

[203] DOE, "Department of Energy - Standard Operating Procedure for Phase 1 of Demolition of Facilities at the Radioactive Materials Handling Facility, Area IV at the Santa Susana Field Laboratory", Revision E, June 5, 2020. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/8473677694/ETEC%20RMHF%20SOP%206-5-2020%20Revision%20E%20FINAL.pdf. Accessed January 10, 2022.

> *"Demolition waste will be managed as LLRW or MLLW using pre-existing characterization data. All material will be shipped to a LLRW or MLLW facility outside of the state of California."* [Underline added for emphasis]

Let us not forget the pre-existing characterizing data of the Cabrera survey that showed that many RMHF buildings met standards for release for unrestricted use.[204]

DTSC approved the RMHF SOP on June 16, 2020.[205] DTSC's approval letter concludes,

> *"DTSC has taken public comments into consideration and provided comments regarding the Department of Energy's 2016 Standard Operating Procedure Revision C. DTSC finds that the Standard Operating Procedure Revision E adequately addresses DTSC's previous comments. Consistent with the requirement specified in the Order on Consent for Interim Response Action at the RMHF Complex and the 2010 Administrative Order on Consent, DTSC approves the Standard Operating Procedure Revision E."* [Underlines added for emphasis]

Coincident to the Demolition SOP, DOE issued the final revision to its RMHF Decommissioning & Demolition Plan, on June 19, 2020.[206] Much of the content on waste disposal mirrored the content of the SOP, specifically sections on compliance with the AOC, radiological surveys, waste management and disposal, and radiological waste management. They will not be repeated here.

Section 1.5 Compliance with the AOC, of the Plan states,

> *"In accordance with the May 2020, Order on Consent for Interim Response Action at the Radioactive Materials Handling Facility (RMHF) Complex, all building debris generated as part of the RMHF building decommissioning and demolition will be classified as either LLRW or MLLW (irrespective of the presence of radioactivity above background) and will be transported and disposed of at a facility authorized to receive LLRW or MLLW waste, outside of the State of California."* [Underline added for emphasis]

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[204] Cabrera Services, "Combined Summary Report: Radioactive Materials Handling Facility Building Surveys", October 2007. Available at https://www.energy.gov/sites/default/files/2023-11/07-1016-00_Boeing_SSFL_RMHF_FINAL_Report.pdf. Accessed July 11, 2024.

[205] DTSC, "Approval of Department of Energy Standard Operating Procedure for Phase I of Demolition of Facilities at the Radioactive Materials Handling Facility, Area IV at the Santa Susana Field Laboratory, Revision E", June 16, 2020. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/1423476278/DTSC%20Approval%20RMHF%20SOP%20Phase%201%2020200616.pdf. Accessed January 11, 2022.

[206] North Wind Portage, "Radioactive Materials Handling Facility (RMHF) Decommissioning & Demolition Plan", RMHF-PLA-10784, Revision 4, June 19, 2020. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/8385903477/RMHF%20Decommissioning%20and%20Demolition%20Plan%20Revision%204%2020200619.pdf. Accessed January 11, 2022.

The same day, June 19, 2020, DTSC approved the Plan.[207] DTSC's approval letter concludes,

> *"Offsite disposal of building and demolition debris must occur at a licensed commercial low-level or mixed low-level radioactive waste disposal facility or authorized low-level or mixed low-level radioactive waste disposal facility at a DOE site that is not located in the State of California."*

Concurrently, with the RMHF SOP and D&D Plan, DOE developed a Closure Plan since three of the RMHF buildings, 4021, 4022 and 4641 were RCRA-permitted hazardous waste facilities.

[207] DTSC, "Approval of Radioactive Materials Handling Facility (RMHF) Decommissioning and Demolition Plan, Energy Technology Engineering enter, Santa Susana Field Laboratory, Simi Valley, California, Revision 4", June 19, 2020. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/7795975208/DTSC%20Approval%20Decommissioning%20and%20Demolition%20Plan%20RMHF%20Rev%204.pdf. Accessed January 11, 2022.

23.0 AMENDMENT TO ORDER ON CONSENT (2020)

The two lawsuits related to SB 990 (Section 16.0) and the Boeing building demolition program (Section 19.0) have had far reaching consequences irrespective of the fact that both had successful outcomes from Boeing's point of view.

On October 30, 2020, DTSC and DOE signed another fateful agreement, second only in import to the 2010 AOC. This agreement was titled "Amendment to Order on Consent (AOC) for Interim Response Action at the Radioactive Materials Handling Facility (RMHF) Complex."[208,209] The title is misleading since the agreement has nothing to do with the RMHF, but states requirements for the demolition and disposal of eight remaining DOE-owned, non-RMHF facilities (Figure 4).

The 2020 AOC[210] was signed by …

- Grant Cope, Deputy Director, Site Mitigation and Restoration Program, DTSC
- Todd A. Shrader, Principal Deputy Assistant Secretary, DOE

The subject buildings are …

- Buildings 4019 and 4029 which had been decommissioned and released for unrestricted use by DOE.[211,212] The USEPA subsequently surveyed 4019 and 4029 and agreed that both facilities were suitable for unrestricted release.[213]

[208] DTSC Community Update, "DTSC Issues an Amended Order on Consent for Interim Response Action for Clean-Up of Santa Susana Field Laboratory Requiring U.S. Department of Energy to Remove 8 Additional Buildings at SSFL", November 2020. Available at https://dtsc.ca.gov/wp-content/uploads/sites/31/SSFL/SSFL-Amended-RMHF-Order-Com-Update-110320-.pdf. Accessed January 2, 2022.

[209] DTSC, "Amendment to Order on Consent for Interim Response Action at the Radioactive Materials Handling Facility (RMHF) Complex", October 30, 2020. Available at https://dtsc.ca.gov/wp-content/uploads/sites/31/SSFL/2020.10.30_Signed-ETEC-Amendment-to-Order.pdf. Accessed January 2, 2022.

[210] Not to be confused with the 2010 AOC.

[211] DOE, "Release of Building 4019", January 31, 2005. Available at https://www.energy.gov/sites/default/files/2023-10/4019-doerel.pdf. Accessed July 11, 2024.

[212] Federal Register Vol. 62, No. 67, pages 16796-16798, "Certification of the Radiological Condition of Building 029 at the Energy Technology Engineering Center near Chatsworth, California", April 8, 1997. Available at https://www.energy.gov/sites/default/files/2023-10/B029.pdf. Accessed July 11, 2024.

[213] USEPA, "EPA's Independent Assessment of Building Decontamination and Decommissioning (D&D) Program at the Boeing Rocketdyne Propulsion and Power Division, Santa Susana Field Laboratory (SSFL)", January 9, 2003. Available at https://www.energy.gov/sites/default/files/2022-12/EPA_Building_Survey_Letter.pdf. Accessed July 11, 2024.

- Building 4133 which had been surveyed by ORISE and CDPH/RHB and declared by CDHS/RHB to meet standards for release for unrestricted use.[214]

- The above ground portion of Building 4024 has been characterized as meeting standards for release for unrestricted use.[215]

- Buildings 4038, 4057, 4462 and 4463 have no history of radiological use, yet have still been surveyed by North Wind. Survey reports for buildings 4462 and 4463,[216] and 4057 and 4038,[217] both conclude that the buildings are "radiologically non-impacted" and that all measurements were "indistinguishable from background (IFB)."

[214] CDHS/RHB, "Building 4133, Area IV, Santa Susana Field Laboratory", March 13, 2007. Available at https://philrutherford.com/SSFL/DandD/4133/4133-dhsrel.pdf. Accessed July 11, 2024.

[215] AREVA NP Inc., "Report of Radiological Characterization and Confirmatory Survey Results for the SNAP Environmental Test Facility - Building 4024", January 2008. Available at https://www.energy.gov/sites/default/files/2023-10/SETF_Char_Report_finalr_010908%20_2_.pdf. Accessed July 11, 2024.

[216] North Wind, "ETEC Radiological Survey Report for Buildings 4462 and 4463", RPP-010784-11.1, Revision 0, November 18, 2019. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/8325884759/ETEC%20Rad%20Survey%20Report%20for%20Buildings%204462%20and%204463%20Rev%200%2020191118.pdf. Accessed January 23, 2022.

[217] North Wind, "ETEC Radiological Survey Report for Buildings 4038 and 4057", RPP-010784-012, Revision 0, February 25, 2021. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/8871499180/ETEC%20Rad%20Survey%20Report%20for%20Buildings%204038%20and%204057%20Rev%200%2020210225.pdf. Accessed January 23, 2022.

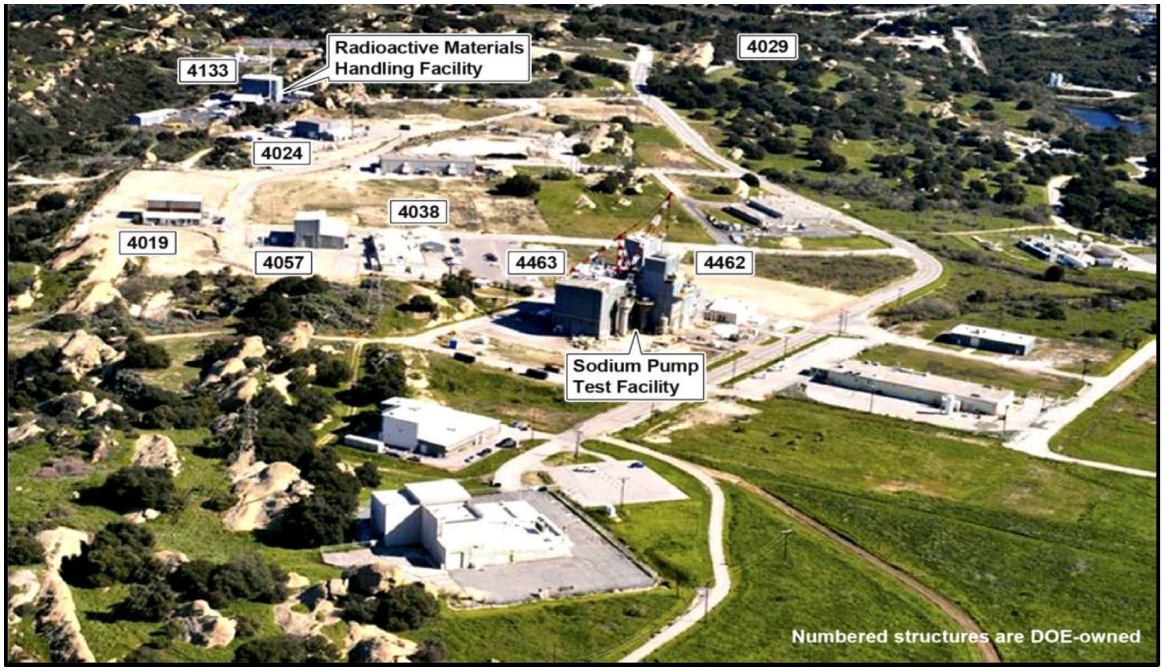

Figure 4. DOE-Owned Buildings in Area IV of SSFL (March 2005)
Courtesy Department of Energy

The 2020 AOC stated …

> *"Disposal of debris and waste from the four remaining buildings (4038, 4057, 4462, and 4463) that have no radiological function or history of radiological usage will be disposed out of the State of California and out of an abundance of caution, at an authorized mixed low-level radioactive waste disposal facility …"* [Section 4.3.1(b). Underlines added for emphasis]

Almost identical wording was stated four separate times in the 8-page AOC, in case readers failed to get the message the first time. Note that the use of the word "authorized" is usually used to distinguish a facility from a USNRC "licensed" LLRW disposal facility. An example of an authorized facility would be the DOE-authorized LLRW facility at the NNSS site in Nevada[218] that would certainly be a logical disposal option for real DOE LLRW instead of imagined LLRW.

Both the 2020 AOC and DTSC use a favorite phrase *"out of an abundance of caution"* as reason for disposing as LLRW, both released decommissioned material and demolition debris from buildings with no radiological history. When asked for a legal or regulatory citation for this criterion, we are met with silence.

[218] NNSS, Nevada National Security Site web site at https://www.nnss.gov/. Accessed January 3, 2022.

Notwithstanding the statements in the AOC, the DTSC stated in a November 19, 2020, public Zoom meeting[219] that debris from buildings 4038, 4057, 4462 and 4463 would go to US Ecology in Idaho (USEI).[220] DTSC acknowledged that USEI was not a USNRC LLRW disposal facility, neither is it an authorized LLRW disposal facility, but is instead a RCRA & TSCA permitted hazardous waste facility that is also permitted to accept NORM/TENORM and other license-exempt material. However numerous other times during the Zoom meeting DTSC incorrectly described USEI as a LLRW disposal facility. DTSC also stated that the debris was going to USEI because it was hazardous waste not because it was LLRW.

Clearly DTSC was giving confused, mixed messages. It provided an easy target for Dan Hirsch (CBG) who accused DTSC of lying, breaking the law, and violating the 2010 AOC by allowing DOE to dispose of debris to the non-licensed, non-LLRW USEI disposal site.

During the same Zoom meeting DTSC stated that,

> *"Buildings with a history of radiological use, regardless of the status of unrestricted release, was sufficient enough to say that the waste could be characterized as LLRW."*

In a single sentence, DTSC dismissed the entire federal (NRC and DOE) and State decommissioning process, dismissed Executive Order D-62-02, and adopted Senate Bill 1970 (2002) that had been vetoed by Governor Davis. Why spend millions of dollars in the decommissioning process if, in the end, activists, legislators and regulators mandate disposition of released, decommissioned material as LLRW?

As with the prior OC public meeting, it is significant that the public meeting was hosted by DTSC alone, with no presentations or participation by DOE or its demolition contractor, North Wind. No DOE or North Wind personnel were present to field the numerous questions by the public. One can only assume that DOE did not share DTSC's enthusiasm over the 2020 AOC.

23.1 Destination of DOE Waste Streams

To investigate why all waste streams were ultimately sent to Energy*Solutions* as LLRW, we need to dig a little deeper into the timeline of DTSC-DOE negotiations and DTSC-Hirsch communications, leading up to early 2021.

In August 2016, DOE issued Revision C of the "DOE Standard Operating Procedure (SOP) for Demolition of Area IV Facilities."[221] Table 1 of that report clearly states that DOE, not DTSC, has

[219] DTSC, "YouTube Video of DTSC Zoom Meeting on Amendment to Order on Consent', November 19, 2020. Available at https://www.youtube.com/watch?v=b6lMh4Pyr4A&feature=youtu.be. Accessed January 2. 2022.

[220] U.S. Ecology, Grandview, Idaho web site at https://www.usecology.com/location/us-ecology-idaho. Accessed January 3, 2022.

[221] DOE, "DOE Standard Operating Procedure for Demolition of Area IV Facilities", Rev. C, August 2016. Available at https://www.dtsc-ssfl.com/files/lib_permit_active/radioactive_mat_han_/67594_ETEC_DD_SOP_2016_Rev_4a_-_Aug_9_Final.pdf. Accessed January 3, 2022.

regulatory authority for demolition for buildings 4019, 4038, 4024, 4057, 4462 and 4463. Figure 1 of the same document clearly states that non-LLRW debris from 4019, 4029 and 4133 will go to a California Class I hazardous waste facility (in compliance with EO D-62-02, being decommissioned material), and that non-LLRW debris from 4038, 4057, 4462 and 4463 will go to a California Class III facility or be recycled. This would make sense given the differing histories of these facilities and is consistent with the DTSC accepted policies during the 2012-2013 demolition of Boeing-owned buildings in Area IV.[222] The SOP also stated,

> *"DTSC will have approval authority over the demolition for the RCRA-permitted facilities. DOE will have authority for the demolition of the non-permitted facilities and will provide the demolition work package documents prepared for these units to DTSC for information only."* [Underline added for emphasis]

DTSC had no objections to the DOE SOP document or its waste disposal proposals or DOE's demarcation of DTSC's authority in its August 2018 review.[223] Note that DTSC had two years in which to conduct its review and ponder its response.

Immediately following its August 2018 review, DTSC circulated the SOP for public comment, along with the closure plans for the RCRA-permitted, Radioactive Material Handling Facility (RMHF) and the RRA-permitted Hazardous Waste Management Facility (HWMF). The public comment period was August 13, 2018, to October 12, 2018. The NRDC and CBG comments were mirrored by other public comments, demanding compliance with the 2010 AOC.[224]

[222] Boeing, "Standard Operating Procedures: Building Demolition Debris Characterization and Management", April 19, 2013 (Revised). Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/buildingdemolition/66029_Boeing_Standard_Operating_Procedures_for_SSFL_Building_Demolition,_April_2013_Revision.pdf. Accessed January 3, 2022.

[223] DTSC, "DTSC Review of Department of Energy Standard Operating Procedure for Demolition of Facilities in Area IV (Rev C) August 2016", August 1, 2018. Available at https://www.dtsc-ssfl.com/files/lib_rcra_soils/BuildingDemo/Correspondence/67790_DTSC_Review_of_DOE_SOP_for_Demolition_of_Facilities_in_Area_IV_at_SSFL.pdf. Accessed January 3, 2022.

[224] NRDC and CBG, "Comments on Draft Closure Plans for the RMHF and HWMF and Draft DOE SOP for Demolition of Facilities in Area IV at the SSFL", October 12, 2018. https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/3545227527/20181015_mail_NRDC_CBG.pdf. Accessed January 9, 2022.

On August 17, 2020, DTSC approved[225] the latest Waste Management Plan (WMP) submitted by DOE on August 7, 2020.[226] DTSC states,

> *"DTSC finds that Waste Management Plan Revision 3 sufficiently addresses DTSC's comments and approves it for use*." [Underline added for emphasis]

Table 7-2 of the WMP for D&D-covered waste streams specifies that approximately two thirds (30,000 cubic yards) of the total demolition debris (44,520 cubic yards) will be classified as industrial waste, not LLRW, and sent to US Ecology, Idaho, not Energy*Solutions*, Clive, Utah. DTSC approves this proposal, in opposition to the prior lobbying for Energy*Solutions* by CBG and followers.

DOE radiological survey reports for buildings 4462 and 4463 (November 18, 2019),[227] and 4057 and 4038 (February 25, 2021)[228] both conclude that the buildings are "radiologically non-impacted" and that all measurements were "indistinguishable from background (IFB)."

During the period from mid-November 2020 (DTSC's virtual AOC meeting) and March 2021, DTSC bows to Hirsch's demands and forces DOE to send all demolition waste to Energy*Solutions*, classified as LLRW or MLLRW. DTSC accomplishes this by providing DOE with an impossible requirement in a February 11, 2021, letter.[229] It requires DOE to confirm that buildings 4038,

[225] DTSC, "Comments on Waste Management Plan, Energy Technology Engineering Center, Santa Susana Field Laboratory, Simi Valley, California Revision 3", August 17, 2020. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/4314405679/DTSC%20Approval%20of%20WMP%20Rev3%2020200817.pdf. Accessed January 4, 2022.

[226] North Wind, "Waste Management Plan, Energy Technology Engineering Center, Santa Susana Field Laboratory, Simi Valley, CA", WMP-10784, Revision 3, August 7, 2020. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/7927794516/WMP-10784%20Rev.%203%20Waste%20Management%20Plan.pdf. Accessed January 4, 2022.

[227] North Wind, "ETEC Radiological Survey Report for Buildings 4462 and 4463", RPP-010784-11.1, Revision 0, November 18, 2019. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/8325884759/ETEC%20Rad%20Survey%20Report%20for%20Buildings%204462%20and%204463%20Rev%200%2020191118.pdf. Accessed January 23, 2022.

[228] North Wind, "ETEC Radiological Survey Report for Buildings 4038 and 4057", RPP-010784-012, Revision 0, February 25, 2021. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/8871499180/ETEC%20Rad%20Survey%20Report%20for%20Buildings%204038%20and%204057%20Rev%200%2020210225.pdf. Accessed January 23, 2022.

[229] DTSC, "Revisions to Standard Operating Procedures and Associated Documents for Demolition of te Four Remaining Buildings at the Energy technology Engineering Center, Santa Susana Field laboratory, Simi Valley, California", February 11, 2021. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/6300267100/Letter%20to%20DOE%20Dated%2020210211%20Regarding%20SOP%20Revision%20for%20ETEC%20Buildings%204038%204057%204462%204463.pdf. Accessed January 9, 2022.

4057, 4462 and 4463 are at or less than local background using the DQOs and MQOs of Section 2.12 of the 2010 AOC.

The letter refers to "DTSC approval" in no less than six separate places and "directs DOE" to follow the process outlined in the letter. Given DTSC's vehement denial that it was "approving" Boeing's building demolition activities in 2013, DTSC appears to have changed its tune with the 2020 AOC and "approval" of DOE's activities.

> *"The proposed characterization shall demonstrate if the building materials have detectable radiological contamination above local background (based on comparison with the Draft Provisional Radiological Look-Up Table Values and following measurement quality objectives and data quality objectives consistent with those cited in Section 2.12 of the AOC)."*

That requirement is nonsensical for the following reasons. The 2007 Consent Order[230] was silent on building demolition and debris waste disposal. The various draft iterations amending the 2007 Consent Order to comply with SB 990 were also silent on building demolition since SB 990 focused on soil remediation. Although the 2010 AOC[231] also explicitly focused on cleanup of soils, Section 1.8.4 strangely defines "soils" to include "debris, structures and other anthropogenic materials." Doubtless this was a politically driven definition rather than a technically driven definition, in a clear last-minute attempt to include facility decontamination and decommissioning (D&D) into the "cleanup-to-background" agenda of the 2010 AOC. It appears to have been an afterthought. However, neither the 2010 AOC nor its Appendix B, "Final Agreement in Principle",[232] nor its Appendix C, "Confirmation Protocol – Not to Exceed – Background Cleanup Standard",[233] discuss backgrounds, or protocols for measuring surface or volumetric contamination of solids (debris, structures of anthropogenic materials). Appendices B and C discuss exclusively local background levels for radionuclides in soil, established by the USEPA, and for chemicals in soil established by the DTSC, look-up-table (LUT) values for soil, and testing of backfill soil. DTSC has only published

[230] DTSC, "Consent Order for Corrective Action", August 16, 2007. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/6902220785/2007%20Consent%20Order%20for%20Corrective%20Action.pdf. Accessed January 9, 2022.

[231] DTSC, "Administrative Order on Consent for Remedial Action", December 6, 2010. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/6902220785/2007%20Consent%20Order%20for%20Corrective%20Action.pdf. Accessed January 9, 2022.

[232] DTSC, "Appendix B - Final Agreement in Principle", December 6, 2010. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/7760207951/64791_SSFL_DOE_AOC_Final.pdf#page=44-48. Accessed January 9, 2022.

[233] DTSC, "Appendix C - Confirmation Protocol, "Not to Exceed", Background Cleanup Standard for Soils", December 6, 2010. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/7760207951/64791_SSFL_DOE_AOC_Final.pdf#page=50-53. Accessed January 9, 2022.

look-up-tables for soil contaminants. DTSC has not published look-up-tables for solids (debris, structures, or anthropogenic materials). Of course, such release criteria are well established in federal (USNRC and DOE) and State (CDPH) guidance that are not based on achieving background. Counter to DTSC's assertions, the 2010 AOC is silent on the testing and disposal of building debris. Indeed, DTSC directs DOE to compare radionuclide content of building materials to the "draft provisional radiological look-up table values", which were established by the USEPA in coordination with DTSC for soil.[234] It could therefore be argued that the 2010 AOC does not apply to building structural material.

Page 3 of Appendix B of the 2010 AOC, "Final Agreement in Principle"[235] states …

- *"Disposal of contaminated soils:*
  - *Soils contaminated with radioactive contaminants above local background to licensed low-level radioactive waste (LLRW) disposal site or an authorized LLRW disposal facility at a DOE site*
  - *Soils contaminated with chemical contaminants above local background:*
    - *Hazardous wastes to licensed Class 1 hazardous waste disposal facilities only*
    - *Non-hazardous waste to licensed Class 2 or subtitle D compliant Class 3 disposal facilities only"*

As an aside, the final two bullets above acknowledge that there is a non-zero threshold above which chemically contaminated soil is classified as hazardous, while below the threshold, chemically contaminated soil is classified as non-hazardous and does not require disposal in a Class I hazardous waste landfill. That is rational. In contrast, DTSC and the 2010 AOC does not afford that luxury to radionuclides, DTSC and the 2010 AOC would consider any detection above background (a zero threshold) as indicative of LLRW and requires disposal to a licensed LLRW disposal site (second bullet above). That is not rational, is inconsistent with the policy for chemicals, and inconsistent with NRC and DOE radioactive waste regulations.

Faced with this impossible and nonsensical task, DOE capitulated and issued a March 3, 2021, Standard Operating Procedure (SOP) for Demolition of 4462, 4463, 4057 and 4038.[236] The SOP

[234] DTSC, "Draft Provisional Radiological Look-Up Table Values", January 30, 2013. Available at https://dtsc.ca.gov/wp-content/uploads/sites/31/2016/05/App_B-_Preliminary_Screening_Levels_Complete.pdf#page=31-32. Accessed January 9, 2022.

[235] DTSC, "Final Agreement in Principle", page 3, December 6, 2010. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/7760207951/64791_SSFL_DOE_AOC_Final.pdf#page=46. Accessed January 9, 2022.

[236] North Wind, "Standard Operating Procedure for Phase 1 and Demolition Plan of Facilities. 4462 - Sodium Pump Test Facility (SPTF), 4463 - Component Handling and Cleaning Facility (CHCF), 4057 - Liquid Metal Development Laboratory (LMDL-2), and 4038 - ETEC Administrative Offices", SPTF-PLA-10784, Revision 0, March 3, 2021. Available at

references the survey reports and restates the radiologically non-impacted status of these buildings. Nevertheless, Table 15.1 of the SOP states that all demolition waste from the subject buildings will be sent to the out-of-California, Energy*Solutions*-operated, licensed LLRW disposal facility in Clive, Utah.[237]

DTSC immediately approved the March 3, 2021, DOE SOP on March 4, 2021.[238] DTSC approved demolition of non-RCRA permitted buildings, exactly what it claimed it was not doing in the Boeing demolition program in 2013.

It is transparently obvious that DTSC had allowed itself to be swayed by the intentionally misguided, misleading, and incorrect claims of Dan Hirsch that any trace of residual radioactivity "above background" means that waste is designated as low-level radioactive waste (LLRW) and should be managed and disposed as such. He (and DTSC) fails to provide any federal or state regulatory citations that support this fallacy. He (and DTSC) fails to recognize any, and all, of the federal and state radiological standards for soil, water, air, materials, or equipment that are all based on low-dose, low-risk, acceptably safe limits, and not on zero tolerance (See Section 24.0). He fails to recognize that no chemical cleanup standards are based on zero tolerance or cleanup-to-background. But I mis-speak. Of course, the Brausch/Hirsch 2010 AOC does exactly that. However, Hirsch fails to recognize that even the 2010 AOC states that chemically contaminated soil at low concentrations (but not zero) is classified as non-hazardous and does not require disposal at Class I hazardous waste disposal facilities. Neither Hirsch nor the 2020 AOC allows that graded approach for radioactivity.

Section 15 of the SOP on Waste Management and Disposal states,

- *"Out of an abundance of caution, demolition waste debris has been characterized and categorized and will be disposed of as LLRW or hazardous, irrespective of having characterization data showing no radioactivity."*

This is an interesting sentence. Demolition debris waste is characterized as *"having characterization data showing no radioactivity."* DTSC approved this SOP and, by definition, has approved all statements in the SOP saying that the buildings are radiologically non-impacted,

https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/8420410633/SOP%20Phase%201%20DOE%20Buildings%204038%204057%204462%20and%204463%2003_03_2021.pdf. Accessed January 3, 2022.

[237] Energy*Solutions* web site, "Clive Disposal Facility." Available at http://www.energysolutions.com/clive-disposal-facility/. Accessed January 3, 2022.

[238] DTSC Letter to DOE, "Approval of Department of Energy Standard Operating Procedure For Phase 1 and Demolition Plan of Facilities 4462, 4463, 4057 and 4038", March 4, 2021. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/6951933920/DTSC%20Approval%20Phase%201%20SOP%20B4038%204057%204462%20and%204463%20Revision%200%2003_04_2021.pdf. Accessed January 3, 2022.

because of survey data that is *"indistinguishable from background."* Of course, the only reason that DTSC approved this SOP was that DOE, at DTSC's urging and using DTSC's own words, also said *"out of an abundance of caution, demolition waste debris has been … categorized and will be disposed of as LLRW …"* Note the distinction between characterized (based on measured data) and categorized (based on Hirsch/DTSC dictates).

It is believed that DOE ETEC technical and program management does not concur with the 2020 AOC. It is suspected that DOE bureaucrats in Washington chose to "make the problem go away", judging that the added expense of sending all ETEC DOE demolition waste to Energy*Solutions* was a "drop-in-the-bucket" compared to EM's total budget. It is also suspected that the DOE's own authorized LLRW disposal site in NNSS, Nevada refused to accept the non-contaminated, non-LLRW. Disposal to NNSS would have been acceptable to Hirsch and would have been far cheaper for DOE than using Energy*Solutions*.

23.2 Explosive Demolition

One would have thought DOE and DTSC, after finally "agreeing" to classify, manage, ship, and dispose of demolition debris as LLRW from seven clean buildings, would have questioned the optics of DOE's plan to blow up the final building, the Sodium Pump Test Facility (Building 4462). But no! On October 1, 2021, DOE, presumably with DTSC's "approval" did just that. Following the "demolition-by-explosion", DOE announced,[239]

- *"This accomplishment was the direct result of an ongoing and successful collaboration with the State of California. It builds on a new era at DOE's Office of Environmental Management as we tackle ambitious priorities and continue to shrink the footprint of EM sites," EM Acting Assistant Secretary William "Ike" White said.*

- *"Following agreement in 2020 with the State of California, DOE safely removed the 18 remaining DOE-owned buildings at the ETEC site, and all building materials and waste from the demolition will be removed from the site and disposed at a licensed facility outside the state. The completion of building demolition at ETEC fulfills an EM priority for 2021."* [Underline added for emphasis]

- *"The demolition of the ETEC buildings marks a significant step towards the DOE's mission to clean up its former site at the SSFL, said Josh Mengers, acting ETEC federal project director. We will continue cleanup efforts, which are based upon years of scientific analysis and planning. Our highest priority is protecting human health and the environment to ensure the site remains safe for nearby communities."*

[239] DOE-EM, "Final DOE Buildings Safely Come Down at ETEC Site." https://www.energy.gov/em/articles/final-doe-buildings-safely-come-down-etec-site. Accessed January 9, 2022.

Note the phrase *"… disposed at a licensed facility."* I wonder who decided to delete "low-level radioactive waste" … and why? If the building debris is being classified as LLRW and buried in a licensed LLRW disposal facility *"out of an abundance of caution"*, has DOE and DTSC conveniently overlooked the "abundance of caution" when blowing up SPTF? Should the community be concerned that radioactive waste (albeit alleged) could be scattered into Simi Valley?

Watch the videos on YouTube[240] and ETEC's web site.[241]

In response to its recognition of the need to do a little damage control, DOE discussed the explosive demolition in a November 23, 2021, announcement.[242] Statements in this announcement included,

- *"Long before we started any work, we examined the buildings for presence of radiological constituents and hazardous chemicals. We developed detailed implementation plans and safety procedures, which were reviewed and approved by the DTSC."* [Underline added for emphasis]

- *"Many months before demolition, we installed four air monitors around the perimeter of the site to collect baseline data on air quality, and then continued air monitoring throughout the demolition process. We will continue to monitor now that demolition is completed."*

- *"The U.S. Environmental Protection Agency had attached a preliminary "Class 1" radiological designation to the SPTF based solely on the buildings' proximity to radiological buildings on the site. Those other buildings were more than a football field away, and our pre-demolition studies confirmed the SPTF buildings were non-radiological."* [Underline added for emphasis]

- *"We monitored air quality before and throughout the SPTF demolition process and found no increase in particulate matter around the perimeter of the site from any building demolition, including the SPTF demolition."* [Underline added for emphasis]

[240] YouTube. Available at https://www.youtube.com/watch?v=Pu9x64QPLZ4&t=14s. Accessed January 9, 2022.

[241] DOE, "SPTF Demolition Videos", October 1, 2021. Available at
https://www.energy.gov/etec/articles/demolition-october-2021-part-1
https://www.energy.gov/etec/articles/demolition-october-2021-part-3 Accessed July 11, 2024.

[242] DOE-EM, "ETEC Manager Discusses Completion of DOE Building Demolition", November 23, 2021. Available at https://www.energy.gov/em/articles/etec-manager-discusses-completion-doe-building-demolition. Accessed February 1, 2022.

These are all commendable and correct statements, so why does the same announcement also state,

> *"We committed to the state [DTSC] that all demolition debris would be disposed at a licensed [LLRW] facility out of state, and we are in the process of completing that work now."* [Parentheticals added for clarification]

DOE (and DTSC) cannot continue to claim that SPTF and other non-radiological facilities are not contaminated, blow up SPTF, with no "abundance of caution", then manage, ship, and dispose of all demolition debris as LLRW to the out-of-state licensed LLRW facility, Energy*Solutions*, "out of an abundance of caution."

Subsequent DOE/EM announcements discuss the completion of its demolition program.[243] The ETEC 2021 Year In Review reports that 22,000 cubic yards (594,000 cubic feet) of demolition debris was shipped for disposal out of the State of California.[244]

23.3 Communications, FOIA & PRA Requests

Extensive communication with DTSC and DOE, seeking scientific and regulatory justification for the 2020 AOC has been met with silence.[245, 246, 247, 248]

On March 11, 2021, a California Public Records Act (PRA) request was submitted to DTSC seeking all records (letter, email, telecon) of communications between DTSC and Dan Hirsch for the

[243] DOE-EM, "Remaining Demolition Waste Departs ETEC", February 1, 2022. Available at https://www.energy.gov/em/articles/remaining-demolition-waste-departs-etec. Accessed February 1, 2022.

[244] DOE-EM, "Energy Technology Engineering Center (EEC) 2021 Year in Review." Available at https://www.energy.gov/em/energy-technology-engineering-center-etec-2021-. Accessed February 1, 2022.

[245] Phil Rutherford email to Michell Banks-Ordone (DTSC), "Questions and Issues Related to the Amendment to Order on Consent", November 15, 2020. Available at https://www.philrutherford.com/Personal_Communication/Questions_&_Issues_for_2020_DOE_Building_AOC.pdf. Accessed January 2, 2022.

[246] Phil Rutherford Letter to Steven Becker (DTSC), "Zoom Meeting on the Amendment to Order on Consent", November 29, 2020. Available at https://www.philrutherford.com/Personal_Communication/Letter_to_Becker_2020-11-29.pdf. Accessed January 2, 2022.

[247] Phil Rutherford email to DTSC Management, "RE: Santa Susana Field Laboratory", March 11, 2021. Available at https://www.philrutherford.com/Personal_Communication/Email_to_DTSC_2021-03-11.pdf. Accessed January 2, 2022.

[248] Phil Rutherford email to DTSC Management, "Demolition of DOE-Owned Facilities in Area IV, SSFL", August 28, 2021. Available at https://www.philrutherford.com/Personal_Communication/Email_to_DTSC_2021-08-28.pdf. Accessed January 2, 2022.

period November 19, 2020, and March 11, 2021, seeking how Hirsch pressured DTSC to switch waste destination from US Ecology, Idaho to Energy*Solutions*, Utah. DTSC took 5 ½ months to provide a handful of emails which were non-informative. Of course, no telephone transcripts were provided.

On August 30, 2021, a California PRA request was sent to the Southwestern Low-Level Radioactive Waste Compact Commission (SWLLRWCC) requesting any, and all Export Permit requests sent by North Wind Portage (DOE's demolition contractor) to the Commission for "LLRW" sent from ETEC. It is understood that two permits exist for the year 2020, CA/E-20-040 for shipments to Energy*Solutions*, Utah,[249] and CA/WCS-20-020 for shipments to Waste Control Specialists (WCS), Texas.[250] Both are NRC-licensed LLRW and MLLRW disposal sites.

According to SWLLRWCC, the Final Disposal Report for CA/E-20-040 stated that 0.2 cu. ft. of LLRW was sent to Energy*Solutions* in 2020.[251] According to SWLLRWCC, the Final Disposal Report for CA/WCS-20-020 stated 1.584 cu. ft. of LLRW was sent to Waste Control Specialists in 2020.[252] These volumes are somewhat less than the estimated 1,200,000 cu. ft. of demolition waste from the Waste Management Plan.[253] 12 of 18 buildings were demolished in 2020, therefore <2 cu. ft. of alleged LLRW makes no sense. As of June 2022, no further information on LLRW volumes in 2020 or 2021 has been received from SWLLRWCC.

After further investigation, it appears that a SWLLRWCC export permit is not required for DOE generated LLRW.

[249] SWLLRWC, "Approved Petition SWC-North Wind Portage-CA/ E-20-040", February 2, 2020. Available at https://www.philrutherford.com/SSFL/SWLLRWCC/E-20-040_Export_Permit.pdf. Accessed February 7, 2022.

[250] Unavailable.

[251] Email from Kathy Davis, SWLLRWCC, "Disposal of "LLRW" to Energy*Solutions*", January 10, 2022. Available at https://www.philrutherford.com/SSFL/SWLLRWCC/E-20-040_Final_Disposal_Record.pdf. Accessed February 7, 2022.

[252] Email from Kathy Davis, SWLLRWCC, January 10, 2022. Available at https://www.philrutherford.com/SSFL/SWLLRWCC/WCS-20-020_Final_Disposal_Record.pdf. Accessed February 7, 2022.

[253] North Wind, "Waste Management Plan, Energy Technology Engineering Center, Santa Susana Field Laboratory, Simi Valley, CA", WMP-10784, Revision 3, August 7, 2020. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/7927794516/WMP-10784%20Rev.%203%20Waste%20Management%20Plan.pdf. Accessed January 4, 2022.

23.4 Falsification of ETEC Waste Manifests

A Freedom of Information Act (FOIA) request was submitted to the DOE on November 9, 2021, seeking specific documents relating to "LLRW" shipments to Energy*Solutions*. DOE acknowledged receipt and assigned a tracking no. EMCBC-2022-00149-F.[254] Specific documents requested were,

- Documents for shipments of demolition debris from buildings RMHF, 4019 4024, 4029, 4133, 4038, 4057, 4462 and 4463 from the Energy Technology Engineering Center (ETEC) to Energy*Solutions*, Clive, Utah.
- Export Permits from the Southwestern LLRW Compact Commission.
- Energy*Solutions* forms, "Radioactive Waste Profile"
- NRC Forms 540/541, "Uniform Low-Level Radioactive Waste Manifest"
- Radiation surveys of transport roll-offs, containers, trailer, and cab of haulers
- All other DOT required documentation for these shipments
- All other Energy*Solutions* required documentation for these shipments
- Dates of these shipments and documents are for 2020, 2021 and 2022

On October 6, 2022, eleven months after the request, DOE submitted the requested material with the exception of the radiation surveys of the transport roll-offs, containers, trailers, and cabs.[255] Unfortunately, none of the 1,902 pages of waste shipping papers[256] identified the specific building name/number as source of individual waste shipments. Therefore, it was not possible to distinguish valid LLRW from RMHF and 4024, from decommissioned material from 4029 and 4019, from non-radiological building waste from 4038, 4057, 4462 and 4463. Although building identification may not be a regulatory requirement on the subject shipping forms, the lack of any building identification for any waste streams, radioactive waste profiles or manifests suggests an intentional cover-up of what is real LLRW and what is fake LLRW, designed to obfuscate DOE's and DTSC's commitment to dispose of non-radiologically impacted waste as LLRW *"out of an abundance of caution."*

Liberal use is made of arbitrary conservative upper bound estimates for SNM, TRU, fission products and NORM in order to estimate total manifest activities. This may be an acceptable conservative process for waste from the non-decommissioned, potentially contaminated RMHF

[254] DOE-EMCBC, "FOIA Request for Records - EMCBC-2022-00149-F", November 17, 2021. Available at https://www.philrutherford.com/SSFL/doe_building_demolition/FOIA/DOE_FOIA_EMCBC-2022-00149-F.pdf. Accessed January 9, 2022.

[255] DOE-EMCBC, "Freedom of Information Act Request - EMCBC-2022-00149-F, Undated. Digitally signed on September 29, 2022. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/Response_to_EMCBC-2022-00149-F_Received_2022-10-06.pdf. Accessed October 23, 2022.

[256] FOIA-EMCBC-00149-F Data Package. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/Data_Package/ . Accessed January 9, 2023.

buildings since these upper bound measurements were taken at the RMHF. However it is not appropriate to use upper bound RMHF data for non-RMHF buildings that have been decommissioned and released for unrestricted use. And it is totally unacceptable for non-radiological buildings with no history of radiological use. Using questionable upper bound scan contamination data from RMHF to falsify data for non-radiological buildings in order to justify disposal at Energy*Solutions* as LLRW is dishonest.

Review of a random selection of the 408 NRC 541 Uniform Low-level Radioactive Waste Manifests, revealed widespread, systematic, inconsistent, and transparently nonsensical data.

- Instead of using the waste stream profile weighted average concentrations to derive the container activities by multiplying by the waste weight, the manifests appear to do the reverse by dividing the container activities (whose source is unexplained) by the waste weight to derive the container weighted average concentrations, which are then inconsistent with the waste stream profile weighted average concentrations.
- NRC 540/541 manifests for multiple separate containers have identical individual and total radionuclide activities (to the 5th significant place), yet significantly different net waste weights, which is a physical impossibility.
- NRC 540/541 manifests for multiple separate containers have identical individual and total radionuclide activities, and identical net weights (to the 7th significant place), which is a physical impossibility.
- Some individual manifests have identical gross and net waste weights implying the container has zero weight.

One wonders why no quality control was implemented by North Wind who prepared these forms, by DOE who is the federal generator and who should have had better oversight, and by Energy*Solutions* who is supposed to ensure its federal customers comply with its own waste acceptance criteria, paperwork, and NRC regulations.

On July 25, 2023, this falsification of shipping data was presented at the Annual Meeting of the Health Physics Society at National Harbor, Maryland.[257] A video of the presentation can be viewed on YouTube.[258]

[257] Phil Rutherford, "Waste Characterization by DOE at the Energy Technology Engineering Center." Presented at the 68th Annual Meeting of the Health Physics Society, National Harbor, Maryland. July 25, 2023. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/Waste_Characterization_by_DOE_at_ETEC_PowerPoint.pdf. Accessed August 1, 2023.

[258] YouTube Video, "Waste Characterization by DOE at the Energy Technology Engineering Center." Presented at the Annual Meeting of the Health Physics Society, National Harbor, Maryland. July 25, 2023. Available at https://www.youtube.com/watch?v=QC2nv-oi_1k. Accessed August 1, 2023.

23.4.1 Complaint to DOE

On January 10, 2023, a detailed critique of the data package was communicated to the management of ETEC, DOE EM-1, the Secretary of Energy, North Wind, Energy*Solutions,* and DTSC.[259] As of the revision date of this report no response has been received from DOE or any of the distribution.

23.4.2 Complaint to Utah Division of Waste Management and Radiation Control

On February 9, 2023, a letter was sent to the Director of the Utah Division of Waste Management and Radiation Control (DWMRC) outlining the irregularities mentioned above and including the original letter to DOE.[260] DWMRC issues the license to Energy*Solutions*, regulating its LLRW disposal site in Clive, Utah. DWMRC responded to the complaint (DRC-2023-001509) in a May 16, 2023, letter[261] in which it stated that Energy*Solutions* did not violate its license and did not accept LLRW exceeding Class A limits, and it considered the case closed. This of course was not the issue. DWMRC failed to address the specific allegations of falsified data. Subsequent communications with DWMRC and submission of a GRAMA public records request concluded that,

1. DWMRC did not care about falsified manifest data and considered the allegations to be "*outside the scope of the Division's program.*"[262]
2. No written records exist for the Division's investigation because, by the Division's own admission, investigation of the specific allegations was not conducted.[263]

[259] Letter from Phil Rutherford to Josh Mengers (DOE), "FOIA EMCBC-2022-00149-F Data Package", January 10, 2023. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/Response_to_FOIA_Data_Package_Revised.pdf. Accessed January 10, 2023.

[260] Letter from Phil Rutherford to Doug Hansen, Director of Utah DWMRC, "Shipments of Waste from the former Energy Technology Engineering Center", February 9, 2023. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/UDWMRC_Letter_2023-02-09.pdf. Accessed June 11, 2023.

[261] Letter from Douglas Hansen, Director of DWMRC to Phil Rutherford, "Shipments of Waste from the Former Energy Technology Engineering Center", May 16, 2023. Available at https://www.philrutherford.com/SSFL/doe_building_demolition/FOIA/UDWMRC_Reply_2023-05-16.pdf. Accessed August 1, 2023.

[262] Letter from Douglas Hansen, Director of DWMRC to Phil Rutherford, "Response to Appeal Regarding GRAMA Request Dated May 20, 2023", February 16, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-02-16_DRC-2024-004475.pdf. Accessed February 21, 2024.

[263] Email from Alyssa Stringham, Records Officer to Phil Rutherford, "GRAMA Records Request - Records Relating to WMRC Investigations", February 16, 2024. Available at

On February 17, 2024, a final appeal to DWMRC management was made to re-open the investigation into the specific allegations of the complaint.[264] Other than a receipt acknowledgement by WMRC Assistant Director, Jaylyn Knudsen, no reply to this request has been received.

On April 21, 2024, an email was sent to Jalynn Knudsen, Assistant Director of the Utah DWMRC requesting a response to the February 17, 2024, request to reopen the investigation.[265] Neither Ms. Knudsen nor any other member of WMRC management has replied.

As of the revision date of this paper, no further communication from the Utah DWMRC has been received. A complete timeline of DWMRC communications may be found at https://philrutherford.com/ssfl.html#wastefoia.

23.4.3 Complaint to the DOE Office of Inspector General 23-0160-C

On February 10, 2023, a similar letter was sent to the DOE Office of Inspector General outlining the irregularities mentioned above and including the original letter to DOE.[266] The DOE Office of Inspector General is charged with investigating cases of fraud, waste, abuse and mis-management. The DOE IG assigned a case number, #23-0160-C. Attempts to learn the status of this investigation during 2023 were fruitless other than to be told that the case was still open.

On February 8, 2024, a full year after the original complaint, a random inquiry got the response that the investigation had been closed at an unspecified date, and that "*the OIG had determined*

https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-02-16_GRAMA_Records_Request.pdf. Accessed February 21, 2024.

[264] Email from Phil Rutherford to Douglas Hansen, "Complaint and Records Request Related to ETEC Waste Shipments", February 17, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-02-17_Complaint_to_Utah_ETEC_Waste_Shipments.pdf. Accessed February 21, 2024.

[265] Email from Phil Rutherford to Jaylynn Knudsen (Utah DWMTC), "Complaint and Records Request related to ETEC Waste Shipments", April 21, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-04-21_ETEC_Waste_Shipments.pdf. Accessed July 14, 2024.

[266] Letter from Phil Rutherford to DOE Office of Inspector General, "Shipments of Waste from the former Energy Technology Engineering Center", February 10, 2023. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/DOE_IG_Letter_2023-02-10.pdf. Accessed June 11, 2023.

that no further action was warranted." [267] The same email stated that any further information about the results of the investigation would require a FOIA request to be submitted.

23.4.4 Submission of FOIA Request HQ-2024-01160-F

A FOIA request was submitted on February 8, 2024.[268] Specifics of the FOIA request included.

- All written (email/text/mail/fax) communications between OIG investigators and other referenced parties in the complaint.
- All written records of all telephone/Webex/Zoom/Teams communications between OIG investigators and other referenced parties in the complaint.
- "Other referenced parties" includes,
    - ETEC management and staff,
    - North Wind Portage management and staff,
    - DOE-EM management and staff,
    - DOE-HQ management and staff
    - DTSC management and staff
    - Energy*Solutions* management and staff,
    - Utah Division of Waste Management and Radiation Control management and staff.
- All analysis/reports/documentation performed by OIG investigators.
- Documentation of the added cost of disposing the subject waste to Energy*Solutions* instead of a California waste disposal facilities compliant with California Executive Order D-62-02).
- Timeline of investigation, including start date and end date.
- Criteria by which OIG investigators used to determine that "no further action" was needed, including,
    - OIG's dispute that limited data from a contaminated facility was inappropriately applied to decommissioned facilities and non-radiological facilities when specific data from those facilities was available.
    - OIG's dispute that widespread data in NRC 540/541 manifests were demonstrably, and intentionally falsified,
    - OIG's dispute that taxpayers' dollars were wasted for political reasons.
- Copy of the email/mail by which complainant was notified that the investigation had been closed.

[267] Email from DOE OIG Coordinator to Phil Rutherford, "Complaint 23-0160-C", February 8, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-02-08_RE_Complaint_23-0160-C_from_OIG.pdf. Accessed February 21, 2024.

[268] Email from Phil Rutherford to the DOE FOIA Office, "FOIA Request for File on OIG Complaint 23-0160-C", February 8, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-02-08_FOIA_Request_for_File_on_OIG_Complaint_23-0160-C.pdf. Accessed February 21, 2024.

- Name(s) of personnel completing and signing the NRC 540/541 Uniform Low-Level Radioactive Waste Manifests.

On February 9, 2024, DOE acknowledged receipt of the FOIA request and assigned a case number HQ-2024-01160-F.[269]

The DOE OIG refused three requests to provide the date that the complaint investigation was closed and why the complainant was not notified. OIG cited unspecified *"Privacy Act Restrictions."* The OIG declined to explain why a closure date and the lack of notification to the complainant could be considered "private."[270]

On March 6, 2024, Alexnder C, Morris, the DOE FOIA Officer, wrote an interim response to FOIA request HQ-2024-01160-F, denying my fee waiver request, and denying my request for an expedited response.[271]

On March 7, 2024, I submitted a detailed response letter to Alexander Morris, providing justification for fee waiver, and expedited response, and addressing each and all reasons provided for the denial.[272]

On March 26, 2024, Anthony Cruz of the Office of Inspector General provided a response to the FOIA request HQ-2024-01160-F.[273] Mr. Cruz's letter included,

- A March 16, 2023, "Memorandum for the Senior Advisor for the Office of Environmental Management," which summarized (occasionally misleading) the original allegations of

[269] Letter from Alexander Morris, DOE FOIA Officer to Phil Rutherford, "Complete File on the DOE Office of Inspector General's Complaint 23-0160-C", February 9, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-02-09_HQ-2024-01160-F_Acknowledgement_Letter.pdf . Accessed February 21, 2024.

[270] Email Exchange between Phil Rutherford and the DOE OIG, "Complaint 23-0160-C", February 12, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-02-12_DOE_OIG_Complaint%2023-0160-C.pdf . Accessed February 22, 2024.

[271] Letter from Alexander Morris, DOE FOIA Officer to Phil Rutherford, "HQ-2024-01160-F", March 6, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-03-06_HQ-2024-01160-F_Interim_Letter.pdf. Accessed May 7, 2024.

[272] Letter from Phil Rutherford to Aleander Morris, DOE FOIA Officer, "FOIA HQ-2024-01160-F", March 7, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-03-07_Clarification_of_FOIA_HQ-2024-01160-F.pdf. Accessed May 7, 2024.

[273] Letter from Anthony Cruz, Office of Inspector General to Phil Rutherford, "Freedom of Information Act Request No. HQ-2024-01160-F", March 26, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-03-26_Final_Response_Letter_HQ-2024%2001160-F.pdf. Accessed May 7, 2024.

complaint 23-0160-C. The memo requested a 30-day response to the complaint from William "Ike" White (aka EM-1).[274]

- A February 10, 2023, DOE OIG Complaint Form for complaint 23-0160-C.[275]

Mr. Cruz's letter states *"Document 4 is being referred to Office of Environmental Management for a determination concerning its releasability."* Mr. Cruz does not identify *"Document 4."* However, by connecting the dots, it is highly likely that Document 4 is William White's (EM-1) response to the original complaint 23-0160-C that OIG requested in March 2023, and which remains hidden by DOE's bureaucracy and/or intentional cover-up.

On March 30, 2024, I replied to Mr. Cruz's letter, requesting a copy of Document 4, William White's response to the original complaint.[276] My reply concluded …

- The Memo and Complaint Form both provide a brief summary of the complaint. However, since they are both notifications to EM-1 of the complaint, and neither provides any detailed rebuttal, or denial of, or concurrence with, any of the specific allegations of the complaint. They do not provide any meaningful information of any EM or OIG investigation of the specifics of the complaint. Since they pre-date the FOIA, they are of course silent on the specific requests in FOIA HQ-2024-01160-F. It is not obvious from review of the limited information in the above three documents, how extensive, and how independent, the OIG investigation of the complaint is (or indeed any complaint to OIG). OIG appears to be relying almost entirely on an, as yet, unidentified, and unproduced, Document 4 from EM-1, to make its determination that *"no further action is warranted."*

On May 11, 2024, a six-week reminder was sent to Mr. Cruz et. al.[277] Also on May 11, 2024, an email was sent to Jennifer Granholm, Secretary of Energy, expressing dissatisfaction over the lack

[274] Memo from OIG to EM-1, "Memorandum for the Senior Advisor for the Office of Environmental Management", March 16, 2023. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2023-03-16_Memo_to_EM-1.pdf. Accessed May 7, 2024.

[275] USDOE OIG Complaint Form, "Complaint 23-0160-C", February 10, 2023. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2023-08-03_23-0160-C_Complaint_Form.pdf. Accessed May 7, 2024.

[276] Letter from Phil Rutherford to Anthony Cruz, Office of Inspector General, "FOIA Request HQ-01160-F", March 30, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-03-30_FOIA_HQ_2024-01160-F.pdf. Accessed May 7, 2024.

[277] Email from Phil Rutherford to Anthony Cruz, DOE OIG FOIA Office, "FOIA HQ 2024-01160-F", May 11, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-05-11_%20FOIA_HQ-2024-01160-F_to_Cruz.pdf. Accessed July 14, 2024.

of any meaningful response from her staff and requesting that she "rattle a few cages."[278] Secretary Granholm did not have the common courtesy to reply.

On June 4, 2024, DOE OIG's FOIA Office emailed a supplemental FOIA response from Mr. Anthony Cruz (dated May 31, 2024), addressing my comments from March 30, 2024.[279,280] The email further stated that I would be receiving a separate response from DOE EM regarding Document 4 (William White's (EM-1) response to the original complaint 23-0160-C). DOE EM has NOT sent any such communication.

As Mr. Cruz's supplemental response was non-informative, leading to further questions that were transmitted to him in a 10-page letter on June 9, 2024.[281] The letter concluded,

> *"Mr. Cruz, neither your March 26, 2024, nor your May 31, 2024, letters have even attempted to address the specific allegations of complaint 23-0160-C or the specific requests of FOIA HQ-2024-01160-F. It appears that the 17-month effort to get answers from DOE regarding complaint 23-0160-C is still awaiting action by Mr. William White. Mr. White has been on distribution for all of my communication with DOE since the original complaint to DOE management on January 10, 2023, and the latter complaint to OIG on February 10, 2023."*

23.4.5 Appeal to the Office of Hearings and Appeals FIA-24-0050

Following failure to elicit further response from the DOE OIG or DOE FOIA Office, an appeal was made on August 31, 2024, to the DOE Office of Hearings and Appeals (OHA).[282] After an

[278] Email from Phil Rutherford to Secretary Granholm (DOE), "FOIA Response", May 11, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-05-11_FOIA_HQ-2024-01160-F_to_Granholm.pdf. Accessed July 14, 2014.

[279] Email from DOE FOIA/OIG to Phil Rutherford, "FOIA Supplemental Response HQ 2024-01160-F", June 4, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-06-04_Email_FOIA_Supplemental_Response_HQ-2024-01160-F.pdf. Accessed July 14, 2024.

[280] Letter from Anthony Cruz (DOE OIG) to Phil Rutherford, "Supplemental Response to HQ-2024-01160-F", May 31, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-05-31_HQ-2024-01160-F_Supplemental_Response.pdf. Supplemental Documents 5 through 34. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-05-31_HQ-2024-01160-F_Supplemental_Response_Documents_5_through_34.pdf. Accessed July 14, 2024.

[281] Letter from Phil Rutherford to Anthony Cruz (DOE OIG), "FOIA Request HQ-2024-01160-F", June 9, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-06-09_Response_to_Anthony_Cruz_FOIA_HQ-2024-01160-F.pdf. Accessed July 14, 2024.

[282] Letter from Phil Rutherford to the Director, Office of Hearings and Appeals, "Freedom of Information Appeal (FOIA HQ-2024-01160-F)." August 31, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-08-31_Letter_to_Office_of_Hearings_and_Appeals.pdf. Accessed May 24, 2025.

exhaustive two-day review, OHA washed its hands of the affair.[283, 284] A reply was made to OHA pointing out the error of its decision,[285] however, as expected this fell on deaf ears.[286]

23.4.6 Whistleblower Complaint to the House Committee on Oversight and Accountability

On September 23, 2024, a whistleblower complaint was submitted to the U.S. Congressional Committee on Oversight and Accountability, documenting the history of (1) re-defining of low-level radioactive waste, (2) falsification of waste shipping records, and (3) cover-up by DOE management.[287] The Committee failed to acknowledge receipt of the complaint and failed to take action on the complaint.

23.4.7 Letter to Energy Secretary Chris Wright

On February 6, 2025, a similar letter was sent electronically and by conventional mail, to Energy Secretary Chris Wright, documenting the history of (1) re-defining of low-level radioactive waste, (2) falsification of waste shipping records, and (3) cover-up by DOE management.[288] President

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[283] Letter from Director of Hearings and Appeals to Phil Rutherford. Untitled. Undated. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-09-05_Cover_Letter_FIA-24-0050.pdf. Accessed May 24, 2025.

[284] OHA , "Decision and Order." September 5, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-09-05_FIA-24-0050_Decision.pdf. Accessed May 24, 2025.

[285] Email from Phil Rutherford to Director of OHA, "Freedom of Information Act (FOIA) Appeal, Request No. HQ-2024-01160-F, OHA Case No. FIA-24-0050." September 8, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-09-08_RE_FOIA_Appeal_Request_HQ-2024-01160-F_OHA_Case_FIA-24-0050.pdf. Accessed May 24, 2025

[286] Email from OHA to Phil Rutherford, ""Freedom of Information Act (FOIA) Appeal, Request No. HQ-2024-01160-F, OHA Case No. FIA-24-0050." September 10, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-09-10_OHA_Reply_FOIA_Appeal_Request_HQ-2024-01160-F_OHA_Case_FIA-24-0050.pdf. Accessed May 24, 2025.

[287] Letter from Phil Rutherford to U.S. Congressional Committee on Oversight and Accountability, "Whistleblower Complaint - Falsification of Waste Shipping Records from the Department of Energy's Energy Technology Engineering Center (ETEC)." September 23, 2024. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2024-09-23_Letter_to_Committee_on_Oversight_and_Accountability.pdf. Accessed May 24, 2025.

[288] Letter from Phil Rutherford to Energy Secretary Chris Wright, "Disposal of Building Demolition Debris from the Department of Energy's Energy Technology Engineering Center." February 6, 2025. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2025-02-06_Letter_to_Chris_Wright.pdf. Accessed May 24, 2025.

Trump was copied on distribution. Neither party acknowledged receipt of the letter, or responded to the letter.

23.4.8 Message to Elon Musk and DOGE

On February 20, 2025, on on-line link to the Chris Wright letter (above) was sent to Elon Musk and the DOGE team via X, as a prime example of "waste, fraud, and abuse" by a major federal department.[289] There was no acknowledgement of receipt of this message.

23.4.9 Final Response from DOE FOIA Office for HQ-2024-01160-F

On April 4, 2025, the DOE FOIA Office finally responded to OIG complaint 23-0160-C.[290] Attached was the original July 13, 2023, EM response to the complaint (otherwise known as Document 4).[291]

A final response from myself closed out this extended search for the truth.[292] An extract from my closing letter summarizes DOE's grudging admission of guilt.

Although DOE EM did its best to whitewash and side-step the specific allegations of the complaint, several statements in EM's investigation report clearly suggest culpability, and acknowledgement of the complaint's major allegations. See quotations below.

Re-defining of LLRW

In response to the allegation of re-defining LLRW by sending debris from non-contaminated, non-radiological buildings to a LLRW disposal site, EM acknowledged,

[289] Message from Phil Rutherford to Elon Musk and DOGE, "Waste , Fraud and Abuse at the Department of Energy." February 20, 2025. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2025-02-20_Message_to_DOGE_via_X.pdf. Accessed May 24, 2025.

[290] Letter from Richard Hayes on behalf of Alexander Morris (FOIA Office) to Phil Rutherford, "HQ-2024-01160-F." April 4, 2025. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2025-04-04_HQ-2024-01160-F_Final_Response_Letter.pdf. Accessed May 24, 2025.

[291] Memorandum from Timothy Harms to Redacted, "Alleged Waste of Funds and Mismanagement." July 14, 2023, and "EM Investigation Report." July 13, 2023. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2025-04-04_HQ-2024-01160-F_Responsive_Document.pdf. Accessed May 244, 2025.

[292] Letter from Phil Rutherford to Tavis William (FOIA Office), "Final Response to FOIA Request HQ-2024-01160-F." April 6, 2025. Available at https://philrutherford.com/SSFL/doe_building_demolition/FOIA/2025-04-06_Letter_to_Travis_Williams_HQ-2024-01160-F.pdf. Accessed May 24, 2025.

- *"... the Amendment to the Order on Consent stated, "Debris from buildings 4038, 4057, 4462 and 4463 will be disposed of out of the State of California and **out of an abundance of caution**, at an authorized mixed low-level radioactive waste disposal facility ...""*

- *"When signing these documents, **Mr. White was aware of the abundance of caution that was applied in making this decision on disposal of building demolition debris.** Given the options available to him, in reaching an agreement with the State of California, **Mr. White determined that signing these orders was the best option for the government**."*

Clearly Mr. White, Senior Advisor to EM was uncomfortable agreeing to the demands of the California DTSC but felt that EM had no option but to sign the two Orders.

Falsification of Data

In response to the allegation of falsification of data by assigning maximum contamination data from one contaminated RMHF facility to all other decommissioned buildings and non-radiological buildings, EM acknowledged,

- ***"We conservatively used worst case radiological data from the facilities to create the waste profile and NRC 540/541 shipping documentation. This approach was utilized to comply with the 2020 Orders requiring that all demolition debris be disposed of at a licensed low level waste landfill outside of the state of California."***

In response to the allegation of falsification of manifest data, including multiple containers with identical waste weights and radionuclide activities, and other multiple containers with identical radionuclide activities but different weights, EM acknowledged,

- *"During the live-load and go campaign of buildings 4462 and 4463, **pre-set activities were established based on maximum allowable transport weight.**"*

Irresponsible Cost Expenditure

In response to the allegation of wasted costs, DOE EM is silent. Disposal of the subject non-LLRW demolition debris as LLRW out-of-state, obviously costs more than disposing in state to appropriate permitted Class 1 or 2 disposal facilities, in compliance with California Executive Order D-62-02. In addition, it violates DOE waste minimization policies.

Cover Up

The original complaint to DOE was made in January 2023, twenty-seven months ago. The subsequent complaint to DOE OIG was made in February 2023. The EM investigation report was completed in July 2023. The "final response" from DOE was emailed to me in April 2025, twenty-one months after the date of EM's investigation report. The simple fact that it has taken this long and extensive communication with DOE to extract a "final response," is proof that DOE management has done its best to cover up this investigation.

A complete timeline of DOE communications may be found at …
https://philrutherford.com/SSFL/etec_waste_records.html.

24.0 DTSC's 180° CHANGE IN "REGULATING" BUILDING DEMOLITION

Between the years 2013 and 2020-2021, DTSC changed its position on building demolition 180 degrees, as illustrated by comparing DTSC management's statements in 2013 in Section 19.0 and its 2020-21 actions described in Section 23.0. Table 6 summarizes this about turn in DTSC's management of building demolition when compared to Table 5. This change occurred coincident with the retirement of DTSC's SSFL Project Director, Mark Malinowski in 2019, to be replaced by Grant Cope and Steven Becker and the increasing "partnership" of DTSC and the anti-nuclear activist, Dan Hirsch.

Table 6. DTSC's Change in Management of Building Demolition

Demolition Programs	Boeing Buildings (2013)	DOE Buildings (2020-2021)
Questions addressed by DTSC Personnel	**Carpenter / Malinowski**	**Cope / Becker**
Is DTSC approval needed for building demolition?	No	Yes
Does DTSC regulate radioactive wastes?	No	Yes
Does DTSC understand the concept of unrestricted release?	Yes	No
Is decommissioned material from released radiological buildings regulated as LLRW?	No	Yes
Did DTSC request assistance from CDPH and USEPA to review radiation survey data?	Yes	No
Can building structural surface contamination measurements be compared to background soil concentrations?	No	Yes
Does disposal of building debris as non-LLRW cause "irreparable" harm?	No	Yes
Does SSFL pose an imminent threat to public safety?	No	Yes

Did the 2013 PSR-LA Petition & Complaint scare DTSC? Has DTSC's new partner, Dan Hirsch, added DTSC to his menagerie of puppets? Clearly the 2019 retirement of Mark Malinowski, DTSC's SSFL Project Director for almost 10 years marked an abrupt decline in DTSC's collective common sense. The DTSC cabal of Cope, Becker and Hirsch represented a new low in DTSC's credibility.

25.0 DTSC-BOEING SETTLEMENT AGREEMENT (2022)

On May 9, 2022, DTSC issued another proclamation relating to a "Settlement Agreement" with The Boeing Company, following a 15-month secret "mediation" with Boeing. With its usual fanfare, DTSC issued a press release[293] with self-serving sound bites from Gavin Newsom, Jared Blumenfeld, Meredith Williams, and Renee Purdy. CalEPA reiterated the same with an identical press release.[294] DTSC emailed and mailed a Community Update,[295] and its website summarized the Settlement Agreement[296] and provided the Settlement Agreement itself.[297]

The Settlement Agreement was signed by,

- Lawrence Hafetz, Chief Counsel, DTSC (using digital font)
- Steven L. Shestag, Senior Director, The Boeing Company (using his real signature)

The press announcements and sound bites refer to delays in cleanup due to disputes over cleanup standards. With the exception of Boeing's successful SB 990 lawsuit against the State, all lawsuits have been initiated by Dan Hirsch and other activist organizations against the California Department of Public Health, DTSC itself, the Department of Energy, and Boeing. Added to this was the plethora of Senate Bills, directed against SSFL, that have also been initiated by Dan Hirsch using then State Senator Sheila Kuehl and her colleagues as proxies. This activist led litigation and legislation is described in this paper. Since Dan Hirsch was not a party in the mediation and not a signatory to the Settlement Agreement, there is no guarantee that future lawsuits will not occur if things do not go as he wants.

[293] DTSC, "California holds Boeing accountable for cleanup at toxic Santa Susana Field Laboratory." May 23, 2022. Available at https://dtsc.ca.gov/2022/05/09/california-holds-boeing-accountable-for-cleanup-at-toxic-santa-susana-field-laboratory/. Accessed May 16, 2022.

[294] CalEPA, "California holds Boeing accountable for cleanup at toxic Santa Susana Field Laboratory." May 23, 2022. Available at https://calepa.ca.gov/2022/05/09/press-release-california-holds-boeing-accountable-for-cleanup-at-toxic-santa-susana-field-laboratory/. Accessed May 16, 2022.

[295] DTSC, "Community Update: Comprehensive Framework Holds Boeing Accountable for Cleanup at Santa Susana Field Laboratory." May 2022. Available at https://www.philrutherford.com/SSFL/Settlement_Agreement/Settlement_Agreement_Community_Update.pdf. Accessed May 23, 2022.

[296] DTSC, "Boeing Cleanup Settlement Agreement." Available at https://dtsc.ca.gov/boeing-cleanup-settlement-agreement/. Accessed May 23, 2022.

[297] DTSC, "Settlement Agreement." May 9, 2022. Available at https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/5013550281/SSFL%20DTSC-Boeing%20Settlement%20Agreement%20%28Final%29.pdf. Accessed May 23, 2022.

25.1 Dissimilar Treatment of Radionuclides and Chemicals

The primary bullet of CalEPA's "comprehensive framework"[298] is,

- *"Boeing will clean up radionuclides in soil in its areas of responsibility to "background," i.e., levels that would exist locally without industrial activity."*

This same statement also appears in the forefront of the DTSC press release, CalEPA press release, DTSC Community Update and DTSC Settlement Agreement web page.

Interestingly, this statement does not appear at all in the 31-page main body of the Settlement Agreement, neither do the words "radionuclides" nor "background" appear. The requirement to cleanup radionuclides to background was banished to Exhibit 5, Attachment 5, page 179 of the 796-page document.

This aspect of the Settlement Agreement flies in the face of Boeing's refusal to sign up to the 2010 AOC cleanup-to-background protocols and Boeing's hard-fought and hard-won success in the SB 990 legal battle. What are the current decision makers in Boeing thinking? What has changed between 2010 and 2022? We will never know because the mediation talks were, and will continue to be, secret.

Why are cleanup goals for radionuclides different from cleanup goals for chemicals? Does DTSC regard radionuclides as more harmful than chemicals? EPA regulates both chemicals and radionuclides using the same risk assessment guidance. DTSC has chosen to require a cleanup-to-background philosophy for radionuclides, but a risk-based, residential/garden philosophy for chemicals. DTSC has limited the land-use options for chemicals, ignoring the future realistic land use of open space. However, DTSC may potentially follow EPA guidance, using EPCs, RMEs, and NCP risk management decisions to determine a risk goal between 10^{-6} and 10^{-4}. In contrast, DTSC will not allow EPA risk assessment guidance or risk management decision making for radionuclides. DTSC mandates cleanup to background for radionuclides for no good reason.

A report detailing opposition to the radiological aspects of the Settlement Agreement was prepared.[299]

The claim that this agreement would avoid future litigation delaying cleanup progress was obviously bogus since most past litigation has been initiated by CBG, NRDC, PSR-LA and SCFS, with the express intent on delaying cleanup. These activist organizations were not party to the secret mediation or to the settlement agreement. It was therefore no surprise that on October 6, 2022, the Public Employees for Environmental Responsibility (PEER), the Parents Against Santa

[298] CalEPA, "Santa Susana Field Laboratory Cleanup Development." May 9, 2022. Available at https://calepa.ca.gov/sitecleanup/santa-susana-field-laboratory-cleanup-development/. Accessed May 23, 2022.

[299] Rutherford, "Opposition to the DTSC-Boeing Settlement Agreement", May 23, 2022. Available at https://www.philrutherford.com/SSFL/DTSC-Boeing_Settlement_Agreement.pdf. Accessed My 24, 2022.

Susana Field Lab and Physicians for Social Responsibility - Los Angeles, filed suit to vacate the agreement.[300]

[300] Ventura County Star, "State Sued Over Deal Allegedly Weakening Boeing's Cleanup at Toxic Site Near Simi", October 11, 2022. Available at https://www.vcstar.com/story/news/local/communities/simi-valley/2022/10/11/suit-alleges-state-gave-lenient-deal-boeing-toxic-site-cleanup-santa-susana-field-lab-simi-valley/8234450001/. Accessed October 23, 2022.

26.0 WHAT NOW?

An interesting conundrum arose during the 2009-2012 USEPA Area IV Radiological Survey project. Some "stakeholders" complained that the continued existence of several dozen DOE-owned and Boeing-owned buildings limited USEPA's ability to sample the soil under the building footprints and complete its mission to radiologically characterize soil in Area IV.

- The 2004 NRDC/CBG lawsuit against DOE (Section 9.0) and subsequent Judge's Order in 2007 to conduct an EIS, plus DTSC's 2007 interpretation of that Order to halt further DOE building D&D was the reason DOE buildings were still standing in 2009-2012.

- The 2013 lawsuit by CBG against DTSC, CDPH and Boeing (Section 19.0) halted planned removal of Boeing-owned buildings.

- Section 2.3.1 of the 2010 AOC (Section 17.0) stated, *"Within 30 days of receiving relief from the terms of the judgment in United States District Court for the Northern District of California entitled Natural Resources Defense Council, Inc., Committee to Bridge the Gap, and City of Los Angeles v. Department of Energy, et al. ("NRDC v. DOE"), Case No. C-04-04448 SC, so as to allow the work under this Order to be performed, as described in Section 6.0 of this Order, DOE shall submit to DTSC for its review and approval a demolition plan, demolition schedule and detailed procedure that describe the activities that DOE shall perform to sample and characterize DOE's remaining buildings to determine whether they are contaminated with radiological or chemical contaminants, and to determine appropriate handling methods for managing and disposing of demolition debris. DOE shall request U.S. EPA's assistance in reviewing the procedures for the assessment of the structures and debris for radiological contaminants."* Although, DTSC subsequently changed its mind in 2012 giving its approval to DOE to demolish its buildings, DOE chose to complete the EIS before removing its buildings, awaiting the 2020 OC and 2020 AOC. Also, DOE clearly did not request EPA's assistance in the "assessment of the structures and debris for radiological contaminants." It did not need to since DTSC told DOE that all debris was LLRW.

- Section 2.3.2 of the 2010 AOC stated, *"DOE shall make every effort to gain The Boeing Company's cooperation and approval in removing the buildings at the Site that remain under the ownership and control of The Boeing Company."* DOE of course is not party to the 2013 lawsuit, and since the 2014 termination of the Boeing-DOE contract, DOE has no influence over removal of Boeing-owned buildings.

- Clearly, Hirsch has DTSC, DOE and Boeing tied in knots, which has been his objective all along.

- Even following the completion of the 2020-2021 removal of DOE Buildings, the sub-surface portions of 4021 (RMHF), 4024 and 4019 still remain in place. When will these sub-surface features be removed?

- When will the Boeing buildings, 4005 slab, 4009, 4011, 4055 and 4100 be removed?

- When will DOE's soil remediation of Area IV start? Will the remediation be in compliance with the 2010 AOC cleanup-to-background, or will it be the preferred alternative in the DOE Final EIS?
    - *"DOE's preferred alternative for soils remediation is the Conservation of Natural Resources, Open Space Scenario. DOE is identifying this as the preferred alternative because it would be consistent with the risk assessment approach typically used at other DOE sites, other DTSC-regulated sites, and EPA CERCLA sites, which accounts for the specific future land use of the site. Use of a risk assessment approach would be consistent with the process being used by Boeing for the land it owns at SSFL and recognizes the Grant Deeds of Conservation Easement and Agreements (Ventura County 2017a, 2017b) that commit Boeing's SSFL property, including Area IV and the NBZ, to remaining as open space. This scenario would use a CERCLA risk assessment approach that would be protective of human health and the environment rather than LUT values (action levels)."*[301]

- Will USEPA have the stomach to deal again with DTSC and Dan Hirsch and conduct a Final Status Survey as required by Section 5.0 of the 2010 AOC? Will USEPA follow the statistical protocols of MARSSIM?

So far, these are all unanswered questions.

[301] DOE, Final SSFL Area IV EIS", Summary, Section S.10.5, Preferred Alternative, DOE/EIS-0402, November 2018. Available at http://www.ssflareaiveis.com/final_documentation.aspx. Accessed January 25, 2022.

27.0 WHY HAS THIS HAPPENED?

Like all problems there is no one cause but there are plenty of culprits.

- **Dan Hirsch of CBG** is the grand puppet-master of state and federal legislators. He ghost-writes bills using state legislators as his proxy. He ghost-writes their letters so they can send them to agency heads with their signatures. He has been the instigator of all the legislation and all the litigation discussed in this paper.

- **Activist organizations** sow misinformation in the media.

- The **media** loves controversy and conflict, so sides with the activists.

- **Legislators** want to appear as knights in shining armor, and pressure State bureaucrats and regulators to do what they do not understand.

- **Regulators** exert pressure on responsible parties (Boeing, DOE, and NASA) into implementing un-realistic remedies that do not achieve any additional level of public safety.

- **DOE** Site Project Directors resist unscientific demands, but in the end, are answerable to their politically appointed bosses in Washington DC, who just want the problem to go away.

- **DTSC** is only too willing to kiss the ring of Dan Hirsch and do whatever he demands. DTSC calls him a *"partner."*[302] DTSC displays an arrogant and duplicitous behavior, denying that it was "approving" Boeing's building demolition activities in 2010-2013, yet openly "directing and approving" DOE's building demolition activities in 2020-2021.

- **CDPH** seriously dropped the ball in not developing dose-based cleanup standards. In addition, it has eliminated all internal policy memoranda that specified acceptable surface contamination limits used to determine if a facility can be released for unrestricted use. In so doing, RHB has no written quantitative criteria to guide its health physics staff, or its licensees, and claims to release facilities on a "case-by-case basis." That is the main reason why Dan Hirsch can run rough-shod over the decommissioning process. CDPH claims it is a "technical" organization and does not want to get involved in the messy politics.

[302] DTSC, "DTSC Statement on SSFL Mediation", February 12, 2021. Available at https://dtsc.ca.gov/2021/02/12/dtsc-statement-on-ssfl-mediation/. Accessed June 8, 2022. DTSC refer to CBG and NRDC as "our partners."

- **Boeing** wants to do the right thing and has had many decommissioning successes (See Tables 1 and 2). In the interest of moving its RCRA chemical remediation activities forward, Boeing signed the 2022 Settlement Agreement, agreeing to cleanup radionuclides to background. This was an unfortunate decision and was contrary to its refusal to sign a 2010 AOC and its successful SB 990 litigation. However, following the success in the PSR-LA litigation, Boeing will dispose of future decommissioned material to a California Class I hazardous waste disposal facility as originally planned in 2013, and in compliance with Executive Order D-62-02.

28.0 HOW CLEAN IS CLEAN?

How clean is clean? How safe is safe? We have all heard the radiation paranoid mantra that there is no safe level of radiation. This is the basis of efforts by all anti-nuclear activists to impose zero tolerance in the decommissioning, release, and clearance process. The LAPSR, SCFS, CBG & CW complaint against DTSC, DPH & Boeing[303] (See Section 19.0) exemplified this agenda. The complaint included the following incorrect statement.

> *"State law defines low-level radioactive waste as all regulated radioactive material that is not high-level radioactive waste or subject to other exceptions not applicable here; there is no floor beneath which radioactive material is not subject to regulation as a low-level radioactive waste."* [Paragraph 29. Underline added for emphasis]

When State or federal agencies release a former nuclear or radiological facility for unrestricted use, that means that the agency has determined that no residual contamination remains that would result in an unacceptable hazard or risk to the public. It means that the facility is removed from a State or federal license. It means that the building is no longer subject to any further regulatory radiological controls. It means that the building can be used for any other non-radiological purpose. And it means that the building could be demolished, and waste debris is subject to no further radiological controls. Any potential residual contamination that may be present is no longer "regulated radioactive material" and is therefore NOT low-level radioactive waste.

The statement "*there is no floor beneath which radioactive material is not subject to regulation as a low-level radioactive waste*" is preposterous. No federal or state regulation that is designed to protect the public and environment is based on a zero threshold. All regulations are based on meeting low risk, low dose, acceptably safe, levels. This applies to both chemicals and radioactive materials. For radioactive materials, this includes,

- USEPA drinking water maximum contaminant levels (MCL) based on 4 mrem/y[304]
- USEPA airborne release limits based on 10 mrem/y[305]

[303] Superior Court of California, County of Sacramento, Case No. 34-2013-80001589. "Verified Petition for Writ of Mandate and Complaint for Injunctive and Declaratory Relief", Petitioners, Physicians for Social Responsibility, Southern California Federation of Scientists, Committee to Bridge the Gap and Consumer Watchdog. Respondents, Department of Toxic Substances Control and Department of Public Health. Real Party In Interest, The Boeing Company." August 6, 2013. Available at https://www.philrutherford.com/SSFL/boeing_building_demolition/Consumer_Watchdog_Complaint_8-6-13.pdf. Accessed February 5, 2022

[304] USEPA, 40 CFR 141, "National Primary Drinking Water Regulations (Radionuclides)." Available at https://www.epa.gov/dwreginfo/radionuclides-rule. Accessed February 6, 2022.

[305] USEPA, 40 CFR 61.92, "National Emission Standards for Hazardous Air Pollutants (Radionuclides)." Available at

- USNRC license termination dose of 25 mrem/y[306]
- USNRC public dose limit from operating nuclear facilities[307] of 100 mrem/y
- USNRC regulations specifying air, water, and sewerage effluent limits based on 50 mrem/y[308]
- USNRC license-exempt articles[309]
- USNRC license-exempt quantities[310]
- USNRC license-exempt concentrations[311]
- USNRC unimportant quantities of source material[312]
- USEPA preliminary remediation goals[313] based on an acceptable risk[314] range of 10^{-6} to 10^{-4}

https://www.govinfo.gov/content/pkg/CFR-2011-title40-vol8/xml/CFR-2011-title40-vol8-part61.xml#seqnum61.92. Accessed February 6, 2022.

[306] USNRC, 10 CFR 20.1402, "Radiological Criteria for Unrestricted Use." Available at https://www.nrc.gov/reading-rm/doc-collections/cfr/part020/part020-1402.html. Accessed February 6, 2022.

[307] USNRC, 10 CFR 20.1301, "Radiation Dose Limits for Individual Members of the Public." Available at https://www.nrc.gov/reading-rm/doc-collections/cfr/part020/part020-1301.html. Accessed February 6, 2022.

[308] USNRC, 10 CFR 20 Appendix B, "Appendix B to Part 20 - Annual Limits on Intake (ALIs) and Derived Air Concentrations (DACs) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage." Available at https://www.nrc.gov/reading-rm/doc-collections/cfr/part020/part020-appb.html. Accessed February 6, 2022.

[309] USNRC, 10 CFR 30.15, "Certain [Exempt] Items Containing By-product Material." Available at https://www.nrc.gov/reading-rm/doc-collections/cfr/part030/part030-0015.html. Accessed February 6, 2022.

[310] USNRC, 10 CFR 30.18 and 30.71 "Schedule B, Exempt Quantities." Available at https://www.nrc.gov/reading-rm/doc-collections/cfr/part030/part030-0018.html https://www.nrc.gov/reading-rm/doc-collections/cfr/part030/part030-0071.html. Accessed February 6, 2022.

[311] USNRC, 10 CFR 30.14 and 30.70 Schedule A, "Exempt Concentrations." Available at https://www.nrc.gov/reading-rm/doc-collections/cfr/part030/part030-0070.html. Accessed February 6, 2022.

[312] USNRC, 10 CFR 40.13, "Unimportant Quantities of Source Material." Available at https://www.nrc.gov/reading-rm/doc-collections/cfr/part040/part040-0013.html. Accessed February 6, 2022.

[313] USEPA, "Preliminary Remediation Goals for Radionuclides." Available at https://epa-prgs.ornl.gov/radionuclides/. Accessed February 6, 2022.

[314] Acceptable risk is defined in EPA's OSWER 9355.0-30, "Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions", April 22, 1991. Available at https://semspub.epa.gov/work/02/114039.pdf. Accessed February 6, 2022.

- Surface and volumetric contamination standards acceptable for clearance, including ANSI/HPS[315,316] and USNRC[317,318]

The California Health & Safety Code does not impose a zero threshold for disposal but instead states *"No person shall bury, throw away, or in any manner dispose of radioactive wastes within the state except in a manner and at locations as will result in no significant radioactive contamination of the environment."*[319]

It is understandable that certain parties should take advantage of the admittedly, vague, and confusing regulations pertaining to low-level radioactive waste (LLRW). LLRW is defined as what it is not, rather than what it is. LLRW is defined as NOT spent nuclear fuel, high-level waste, transuranic waste, or uranium/thorium mill tailings. There is no quantitative upper or lower level defining the activity or concentration of LLRW.

[315] ANSI/HPS N13.12-1999, "Surface and Volume Radioactivity Standards for Clearance." American National Standards Institute/Health Physics Society, 1999. The superseded version of this standard may not be reproduced in any electronic media without permission of the publisher.

[316] ANSI/HPS N13.12-2013, "Surface and Volume Radioactivity Standards for Clearance." American National Standards Institute/Health Physics Society, May 2013. The current version of the standard may not be reproduced in any electronic media but may be purchased at …
https://global.ihs.com/doc_detail.cfm?document_name=ANSI%2FHPS%20N13%2E12&item_s_key=00610089

[317] USNRC "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," April 1993. Available at https://www.nrc.gov/docs/ML1036/ML103620647.pdf. Accessed February 6, 2022.

[318] USNRC, NUREG-1640, "Radiological Assessments for Clearance of Materials from Nuclear Facilities", June 2003. Available at https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1640/. Accessed February 6, 2022.

[319] California Health & Safety Code, Division 104, Part 9, Chapter 5, Article 1, Section 114715, states, "No person shall bury, throw away, or in any manner dispose of radioactive wastes within the state except in a manner and at locations as will result in no significant radioactive contamination of the environment." For the purposes of this requirement, "significant" is defined in Section 114710 as amounts of radioactive materials that are likely to expose persons to ionizing radiation greater than the guide levels published by the Federal Radiation Council (FRC). The FRC no longer exists, but the applicable guide level last published by the FRC was 500 mrem per year to a member of the public. The regulatory basic dose limit to members of the public has since been lowered to 100 mrem per year. CDPH/RHB conservatively utilizes a lower dose of 1 mrem per year for purposes of defining "significant radioactive contamination."
https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=114715.&lawCode=HSC
https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=114710.&lawCode=HSC

28.1 Low-Activity Radioactive Waste

In an effort to clarify the confusion, the USEPA published in 2003, an Advance Notice of Proposed Rulemaking (ANPR) and introduced the term "low-activity radioactive waste (LARW)."[320] EPA states,

> *"LARW is informally defined as radioactive waste that contain very small concentrations of radionuclides. The concentrations are small enough that protection of public health and the environment from these wastes may not require all of the radiation protection measures necessary to manage higher-activity radioactive material. At this time, "low-activity" itself is a concept, not a definition. Among the wastes that could be addressed as "low-activity" are mixed wastes (chemically hazardous and radioactive), wastes containing natural radioactivity, cleanup wastes and other low-level radioactive wastes."*[321]

Boeing submitted comments[322] recommending that both upper, and more importantly, lower limits for LARW be quantitatively defined so as not to conflict with the numerous existing types of non-regulated radioactive material cited above.

The USEPA did not follow the ANPR with proposed or actual LARW regulation.

28.2 Very Low-Level Waste

USNRC has recently floated the concept of very low-level waste (VLLW). NRC states,

- *"The lowest portion of Class A waste has been referred to as very low-level waste (VLLW), also known as "low-activity waste" (LAW). The term VLLW is not a formal designation and does not have a statutory or regulatory definition. In general, VLLW contains some residual radioactivity, including naturally occurring radionuclides, which may be safely disposed of in hazardous or municipal solid waste landfills."*

- *"In the 2016 programmatic assessment, performing a LAW scoping study was also designated as a medium priority. The LAW scoping study task combines several tasks*

[320] Federal Register, 68 FR 65119-65151, "Approaches to an Integrated Framework for Management and Disposal of Low-Activity Radioactive Waste: Request for Comment:", November 18, 2003. Available at https://www.federalregister.gov/documents/2003/11/18/03-28651/approaches-to-an-integrated-framework-for-management-and-disposal-of-low-activity-radioactive-waste. Accessed February 6, 2022.

[321] USEPA, "Low-Activity Radioactive Wastes." Available at https://www.epa.gov/radiation/low-activity-radioactive-wastes. Accessed February 6, 2022.

[322] Boeing, "Comment on EPA's ANPR Approaches to an Integrated Framework for Management and Disposal of Low-Activity Radioactive Waste: Request for Comment: Proposed Rule", May 11, 2004. Available at https://www.regulations.gov/comment/EPA-HQ-OAR-2003-0095-0436. Accessed February 6, 2022.

> *originally in the 2007 strategic assessment and includes: coordinating with other agencies on consistency in regulating LAW; determining the impact of LAW disposal from radiological dispersal devices; and developing regulatory options that would define the conditions under which LAW, including mixed waste, could be disposed of in Resource Conservation and Recovery Act (RCRA) Subtitle C hazardous waste facilities. The LAW scoping study has been renamed the VLLW scoping study to be more consistent with the current regulatory structure."*[323]

The USNRC has not yet proposed or enacted VLLW regulation that would permit VLLW to be disposed at RCRA Subtitle C hazardous waste facilities.[324] Doubtless that would never happen in California that disallows not only decommissioned material but also IFB material to be disposed at California Class 1 hazardous waste facilities.

[323] USNRC, "Very Low-Level Waste." Available at https://www.nrc.gov/waste/llw-disposal/very-llw.html. Accessed February 6, 2022.

[324] RCRA Subtitle C hazardous waste facilities are referred to as Class 1 hazardous waste facilities in California.

29.0 LINEAR NO-THRESHOLD THEORY OF RADIATION RISK

29.1 LNT History

The science of health physics and the conduct of radiation protection, whether occupational or environmental, rests on the ability to measure the physical phenomena of radioactivity and/or radiation. Whether measured in curies or bequerels, whether measured in rads or grays, these are physical attributes that can be measured and quantified. Since the establishment of radiation protection regulation, limits have been established using these physical, measurable parameters. See Section 28.0.

Beginning in the 1920s research attempted to quantify a causal relationship between high radiation doses and genetic mutations in fruit flies (drosophila). Later, studies of atom bomb survivors established a relation between high doses and solid cancers and leukemia (though not genetic effects). These and other radiation studies led to what is now known as the linear no-threshold model of radiation risk (LNT). The history of LNT is discussed extensively in a video series by the Health Physics Society (HPS), featuring Dr. Edward Calabrese.[325]

With the demise of the Federal Radiation Council (FRC) and the establishment of the Environmental Protection Agency (EPA) in 1970, radiation regulation began to be based less by limits on measured quantities of dose and activity, but more by arbitrary probability limits (e. g. one-in-a-million) on theoretical estimates of lifetime cancer incidence using the LNT model. This trend continues to this day.

The central tenet of LNT is that an observed linear radiation dose response at high doses for cancer can be extrapolated down to very low doses, at and below background levels, below background variability, and ultimately down to zero dose. Therefore, the model predicts that there is a low hypothetical cancer risk associated with even the lowest dose.

Proponents of the theoretical LNT model argue that, since we do not know much about health effects at very low doses, it is prudent and conservative to presume that they exist, and that the LNT model is simple and represents a reasonable upper bound for the risks.

Opponents of the theoretical LNT model argue that it is not supported by any scientific evidence of health effects at low doses, and that regulations based on the LNT are excessively costly and do not achieve any real measurable public health benefit.

On May 23, 2025, President Trump issued Executive Order 14300, in which is stated …

[325] Health Physics Society, "The Historical Foundations of the Linear No-Threshold Dose Response Model for Cancer Risk Assessment." Available at http://hps.org/hpspublications/historylnt/episodeguide.html. Accessed May 2, 2022.

- Section 5(b) "*Adopt science-based radiation limits. In particular, the NRC shall reconsider reliance on the linear no-threshold (LNT) model for radiation exposure and the "as low as reasonably achievable" standard, which is predicated on LNT. Those models are flawed, as discussed in section 1 of this order. In reconsidering those limits, the NRC shall specifically consider adopting determinate radiation limits, and in doing so shall consult with the Department of Defense (DOD), the Department of Energy (DOE), and the Environmental Protection Agency.*
- Extract of Section 1. *"The NRC utilizes safety models that posit there is no safe threshold of radiation exposure and that harm is directly proportional to the amount of exposure. Those models lack sound scientific basis and produce irrational results, such as requiring that nuclear plants protect against radiation below naturally occurring levels."*

In June 2025, the Health Physics Society (HPS) and National Council on Radiation Protection and Measurements (NCRP) co-hosted two webinars discussing the potential impact of EO 14300. The author subsequently submitted comments on LNT/ALARA to HPS and NCRP.[326]

On July 16, 2025, the NRC hosted a webinar on EO 14300 Section 5(b), titled "Reconsidering the NRC's Radiation Protection Framework,"[327] in which various experts on both sides of the issue made presentations. The author later prepared a rebuttal to Dan Hirsch's statements during the webinar.[328]

29.2 LNT Positions

Professional organizations (ANS, HPS) have, in general, questioned the use of LNT. Even those organizations (BEIR, NCRP) that support its continued use, recognize its limitations.

American Nuclear Society Position Statement #41 on "Risks of Exposure to Low-Level Ionizing Radiation" states, *"While the data are clear that high levels of radiation exposure lead to an*

[326] Rutherford, "Nuclear Executive Orders with Focus on LNT." June 18, 2025. Available at https://philrutherford.com/Radiation_Risk/HPS_EO_Webinar_Comments.pdf. Accessed August 10, 2025.

[327] NRC, "Reconsidering the NRC's Radiation Protection Framework," July 16, 2025. Available at https://philrutherford.com/radiation_risk.html#low_risk. Accessed August 10, 2025.

[328] Rutherford, "Rebuttal to Dan Hirsch's Presentation to the NRC Meeting on Executive Order 14300 Section 5(b)." August 5, 2015. Available at https://philrutherford.com/Radiation_Risk/NRC/EO14300_5(b)/2_Hirsch/Rebuttal_to_Hirsch_14300_talk.pdf. Accessed August 10, 2025.

increased risk of humans developing cancer , the data are inconclusive for lower levels of radiation exposure on the order of background radiation." [329,330]

Health Physics Society Position Statement PS010-4 on "Radiation Risk in Perspective", states, *"Below levels of about 100 mSv above background from all sources combined, the observed radiation effects in people are not statistically different from zero."* [331]

Health Physics Society Position Statement PS008-2 on "Uncertainty in Risk Assessment", states, *"Cancer and other health effects have not been observed consistently at low doses (< 0.1 Gy), much less at the even lower doses (< 0.01 Gy) typical of most occupational and environmental exposures."* [332]

National Academies, BEIR V, "Health Effects of Low Levels of Ionizing Radiation", states, *"Studies of populations chronically exposed to low-level radiation, such as those residing in regions of elevated background radiation, have not shown consistent or conclusive evidence of an associated increase in the risk of cancer."* Nevertheless, BEIR V supported continued use of LNT.[333]

National Academies, BEIR VII, Phase2, "Health Risks from Exposure to Low Levels of Ionizing Radiation", states, *"At doses less than 40 times the average yearly background exposure (100 mSv) statistical limitations make it difficult to evaluate cancer risk in humans."* Nevertheless, BEIR VII supported continued use of LNT. [334]

[329] American Nuclear Society, "Risks of Exposure to Low-Level Ionizing Radiation", Position Statement #41, November 2020. Available at https://cdn.ans.org/policy/statements/docs/ps41.pdf?_ga=2.174539365.654830107.1651441063-727143212.1651441063. Accessed May 2, 2022.

[330] American Nuclear Society, "Risks of Exposure to Low-Level Ionizing Radiation", Background Information, Position Statement #41, January 2022. Available at https://cdn.ans.org/policy/statements/docs/ps41-bi.pdf?_ga=2.179178851.654830107.1651441063-727143212.1651441063. Accessed May 2, 2022.

[331] Health Physics Society, "Radiation Risk in Perspective", Position Statement PS010-4, February 2019. Available at http://hps.org/documents/radiationrisk.pdf. Accessed May 2, 2022.

[332] Health Physics Society, "Uncertainty in Risk Assessment", Position Statement PS008-2, February 2013. Available at http://hps.org/documents/riskassessment_ps008-2.pdf. Accessed May 2, 2022

[333] National Academies, National Research Council, Committee on the Biological Effects of Ionizing Radiation (BEIR V), "Health Effects of Exposure to Low Levels of Ionizing Radiation", Executive Summary, page 5. 1990. Available at https://nap.nationalacademies.org/read/1224/chapter/1. Accessed May 2, 2022.

[334] National Academies, National Research Council, Committee on the Biological Effects of Ionizing Radiation (BEIR VII), "Health Effects of Exposure to Low Levels of Ionizing Radiation", Public Summary, page 7. 1990. Available at https://nap.nationalacademies.org/read/11340/chapter/1. Accessed May 2, 2022.

General Accounting Office report on "Radiation Standards", GAO/RCED-00-152, states *"According to a consensus of scientists, there is a lack of conclusive evidence of low-level radiation effects below total exposures of 5,000 to 10,000 millirem."* [335]

National Council for Radiation Protection and Measurements report NCRP #136, "Evaluation of the Linear-Nonthreshold Dose-Response Model for Ionizing Radiation", states *"At the same time, it is important to note that the rates of cancer in most populations exposed to low-level radiation have not been found to be detectably increased, and that in most cases the rates have appeared to be decreased"*, and *"The probability of effects at very low doses such as are received from natural background is so small that it may never be possible to prove or disprove the validity of the linear-nonthreshold assumption."* Nevertheless, NCRP supported continued use of LNT. [336]

29.3 Impact of LNT on Nuclear Decommissioning at SSFL

Dr. Calabrese stated in the HPS video series that LNT encourages a regulatory policy of *"the lower the better"* and *"zero is the goal."* The activists' favorite mantra that *"there is no safe level of radiation"* was also stated several times in the video series. LNT caused the recent history of decommissioning in California that is the subject of this paper. LNT is the perfect model for activists, legislators, and regulators to push for lower and lower goals, culminating in the 2010 AOC *"cleanup-to-background"* and the 2020 AOC declaration that all non-contaminated debris from buildings with no radiological history and shown to be indistinguishable from background be disposed of as LLRW *"out of an abundance of caution."*

ICRP 99 states, *"… radiation protection is a political process, responsive to the interests and perceptions of stakeholders with differing points of view …"* [337] This has been abundantly demonstrated as outlined in this paper.

[335] US Government Accounting Office, "Radiation Standards - Scientific Basis Inconclusive, and EPA and NRC Disagreement Continues", GAO/RCED-00-152, June 2000. Available at https://www.gao.gov/assets/rced-00-152.pdf. Accessed May 2, 2022.

[336] National Council on Radiation Protection and Measurements (NCRP), "Evaluation of the Linear-Nonthreshold Dos-Response Model foe Ionizing Radiation", Executive Summary, pages 6-7, June 4, 2001. Available for purchase at https://ncrponline.org/shop/reports/report-no-136-evaluation-of-the-linear-nonthreshold-dose-response-model-for-ionizing-radiation-2001/. Accessed May 2, 2022.

[337] International Commission on Radiological Protection, "Low Dose Extrapolation of Radiation-related Cancer Risk", ICRP Publication 99, Page 12, 2006. Available at https://journals.sagepub.com/doi/pdf/10.1177/ANIB_35_4. Accessed May 3, 2022.

29.4 Personal Thoughts on LNT

Over the years, the author has penned his thoughts on radiation risk and LNT.

- "Radiation Risk - A Critical Look at Real and Perceived Risks from Radiation Exposure", August 2002 [338]
- "Brief Summary of BEIR VII", October 2005 [339]
- "Radiation Risk and Cleanup Standards." Paper presented to the Mid-Year Meeting of the Health Physics Society, Knoxville, Tennessee, January 2007 [340]
- "Background Radiation", September 2007 [341]
- "Linear No Threshold Model of Radiation Risk", September 2007 [342]
- "Radiation Risks in Everyday Life", Paper presented to the Mid-Year Meeting of the Health Physics Society, Albuquerque, New Mexico, January 2010 [343]
- "Linear No Threshold (LNT) Model of Radiation Risk", November 2018 [344]
- "Radiation Risk", web page, last updated November 2018 [345]

[338] Rutherford, "Radiation Risk - A Critical Look at Real and Perceived Risks from Radiation Exposure", August 12, 2002. Available at https://www.philrutherford.com/Radiation_Risk/Radiation_Risk.pdf. Accessed May 2, 2022.

[339] Rutherford, "Summary of BEIR VII", October 17, 2005. Available at https://philrutherford.com/Radiation_Risk/BEIR/BEIR_VII_Summary.pdf. Accessed July 14, 2024.

[340] Rutherford, "Radiation Risk & Cleanup Standards", January 23, 2007. PowerPoint available at https://philrutherford.com/Conf_Papers/Radiation_Risk_&_Cleanup_Standards_Rev_1_Presentation.pdf. Paper available at https://philrutherford.com/Conf_Papers/Radiation_Risk_&_Cleanup_Standards_Rev_3_Short_Paper.pdf. Accessed July 14, 2024.

[341] Rutherford, "Background Radiation", September 10, 2007. Available at https://philrutherford.com/Radiation_Risk/Background_Radiation_Rev_A.pdf. Accessed May 2, 2022.

[342] Rutherford, "Linear No Threshold Model of Radiation Risk", September 10, 2007. Available at https://philrutherford.com/Radiation_Risk/Radiation_Risk_LNT_Rev_A.pdf. Accessed July 14, 2024.

[343] Rutherford, "Radiation Risks in Everyday Life", January 27, 2010. Available at https://www.philrutherford.com/Conf_Papers/Radiation_Risks_in_Everyday_Life_Rev_1A.pdf. Accessed May 2, 2022.

[344] Rutherford, "Linear No Threshold (LNT) Model of Radiation Risk", November 18, 2018. Available at https://www.philrutherford.com/Radiation_Risk/Linear_No_Threshold.pdf. Accessed May 2, 2022.

[345] Rutherford, "Radiation Risk", Web page from Phil Rutherford *Consulting*. Available at https://www.philrutherford.com/radiation_risk.html. Accessed May 2, 2022.

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