Supplemental Detailed Comments
Regarding the Department of Toxic Substances Control
Draft Program Environmental Impact Report
on Cleanup
of the Santa Susana Field Laboratory
by
the Committee to Bridge the Gap
and
the Natural Resource Defense Council
14 December 2017

A. BACKGROUND

The history of the site provided in the draft Program Environmental Impact Report (PEIR) is inaccurate and minimizes the problems. We provide here a more complete picture.

The Santa Susana Field Laboratory (SSFL) was established in the late 1940s for rocket testing and in the early 1950s commenced nuclear reactor work. In this initial incarnation, the site was supposed to be a remote field lab for work too dangerous to conduct near populated areas, and the original siting criteria stated that "care must be taken to select an area where prospects for population growth in the near future are not anticipated."[1] However, over the decades the population nearby mushroomed, so that there are now more than 150,000 people living within 5 miles of the site and more than half a million people are within 10 miles.[2]

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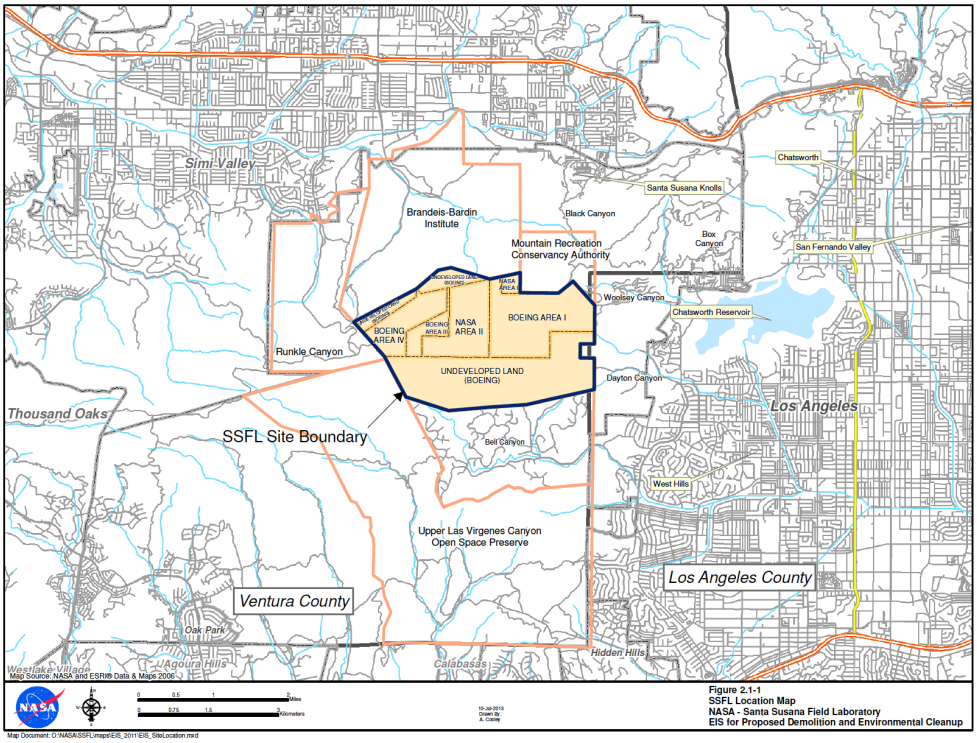
[1] NAA-SR-30, *General Reactor Site Survey of the Los Angeles Area*, U.S. Atomic Energy Commission, June 1, 1949, as cited in *Report of the Santa Susana Field Laboratory Advisory Panel,* October 2006 (hereafter SSFL Panel Report), p. 8. http://www.ssflpanel.org/files/SSFLPanelReport.pdf The SSFL Advisory Panel was established at the initiative of local legislators in the early 1990s to oversee independent health studies of SSFL and the surrounding areas. Under its auspices, federally-funded worker studies by the UCLA School of Public Health were conducted in the 1990s, and in the next decade a series of studies about potential offsite effects funded by the State Legislature were prepared. This summary of the siting and accident history is drawn in part from the Panel's 2006 report; the reader is referred to the full report for more detail and supporting citations, which is incorporated herein by reference.

[2] SSFL Panel Report, pp. 8-9.



1. A History of Safety Considerations Subordinated to Other Concerns; Accidents, Spills and Releases

a. Nuclear Activities

SSFL housed ten reactors, plutonium and uranium fuel fabrication facilities, numerous nuclear "critical facilities," and a "hot lab" wherein highly irradiated nuclear fuel from around the nation was cut apart. Safety considerations were "subordinated to other concerns from the outset."[3] Despite being ranked 5th out of 6 candidate sites for the safety of meteorological conditions (in part because of nighttime migration of potentially contaminated air into the San Fernando Valley), the site was chosen as a nuclear testing site nonetheless, in large measure because of convenient drive times from nearby universities. To compensate for the poor site conditions, and because the reactors would have no containment structures, a reactor power limit was set to limit radioactive inventory. But a decade thereafter, the AEC chose to build the Sodium Reactor Experiment (SRE) with power twenty times the limit, despite people living much closer than the original rule recommended.[4]

Poor environmental and safety practices resulted in at least four of the reactors suffering significant accidents, including a partial nuclear meltdown.

[3] *id.,* p. 8.
[4] *id.*, pp. 8-9.

First, in March of 1959, the AE6 reactor released fission gases as a result of malfunction.. Then blockage of coolant precipitated a power excursion and partial meltdown of the SRE in July 1959. The SNAP8ER accident damaged 80% of its fuel in 1964. A similar accident in the SNAP8DR resulted in damage to a third of its fuel in 1969.[5] None of these reactors had a containment structure like modern reactors to prevent radiological releases into the environment.

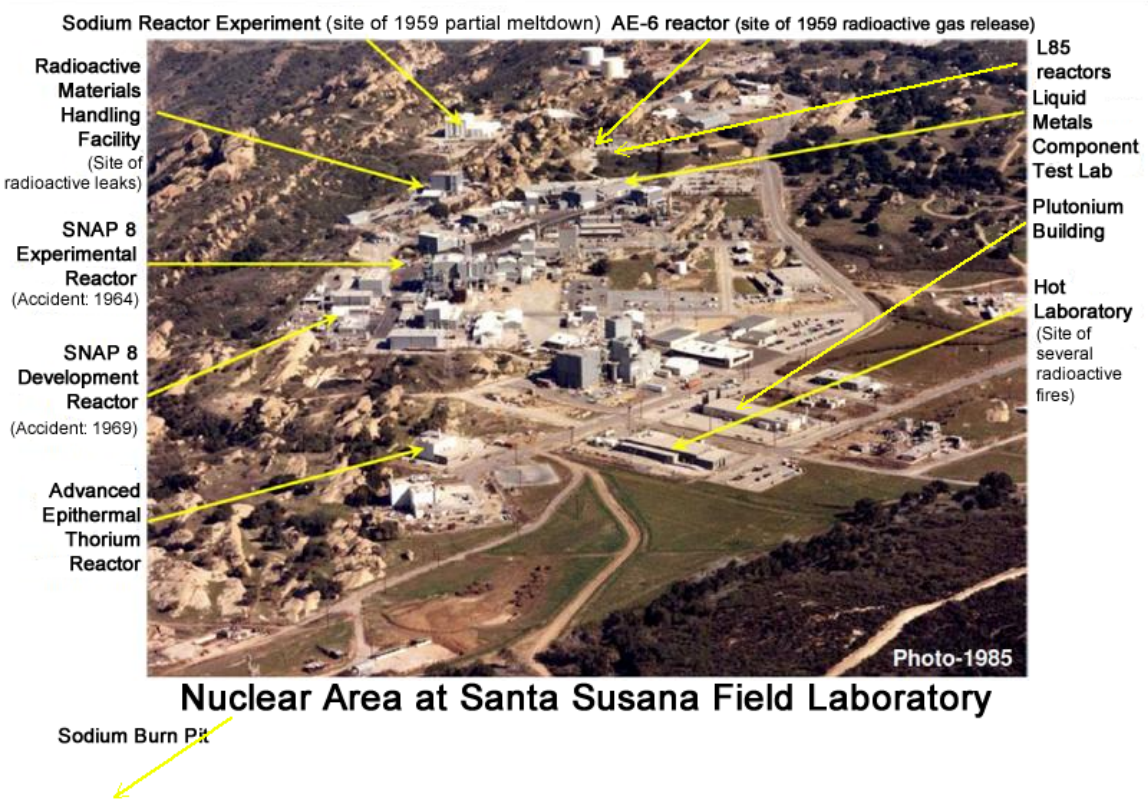


photo source: DOE; labels: SSFL Work Group[6]

The events of June, 1959 at the SRE are emblematic of the problems caused by a troubled safety culture at SSFL.[7] On that date, a fuel rod at the SRE, coated with sodium, exploded when it was washed with water in a "wash cell." The explosion lifted the shield plug out of the wash cell, and created "extremely high contamination levels

[5] SSFL Panel Report, p. 10.
[6] https://energy.gov/em/energy-technology-engineering-center; http://www.ssflworkgroup.org/about-ssfl/
[7] See, e.g., the review of the SRE accident performed for DOE by Dr. Thomas Cochran of NRDC, *Sodium Reactor Experiment Partial Fuel Meltdown, 29 August 2009.* http://www.etec.energy.gov/Library/Main/Cochran%20SRE%20Presentation.pdf

within the entire building."[8] A couple of weeks later, on July 13, the SRE experienced a power excursion—the reactor power suddenly began to increase exponentially, out of control, and the reactor barely was able to be shut down, or "scrammed." Yet, inexplicably, the operators of the reactor, unable to figure out what had caused the incident, started it up again two hours later, and continued to operate it for another week and a half, in the face of rising radioactivity readings (off-scale) and numerous other signs of reactor in trouble. When it was finally shut down, it was determined that 13 of 43 fuel elements had experienced melting.

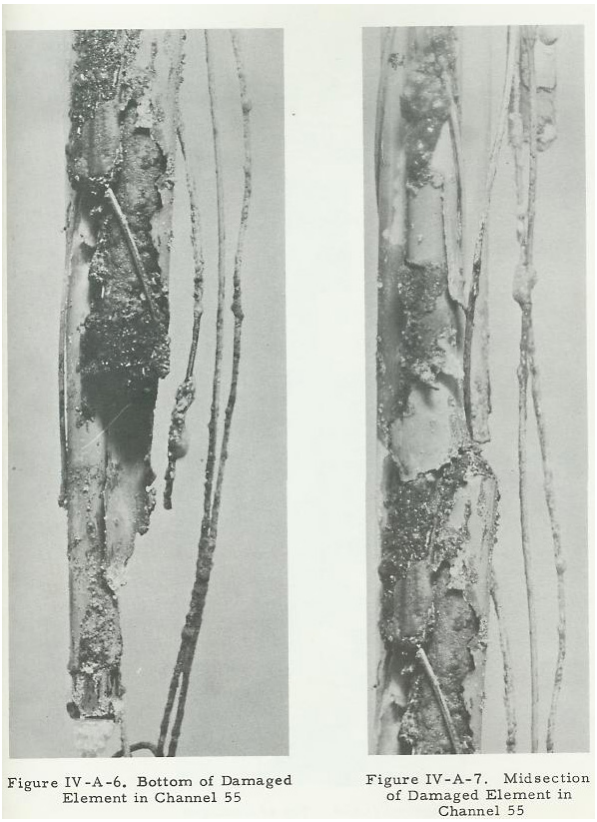
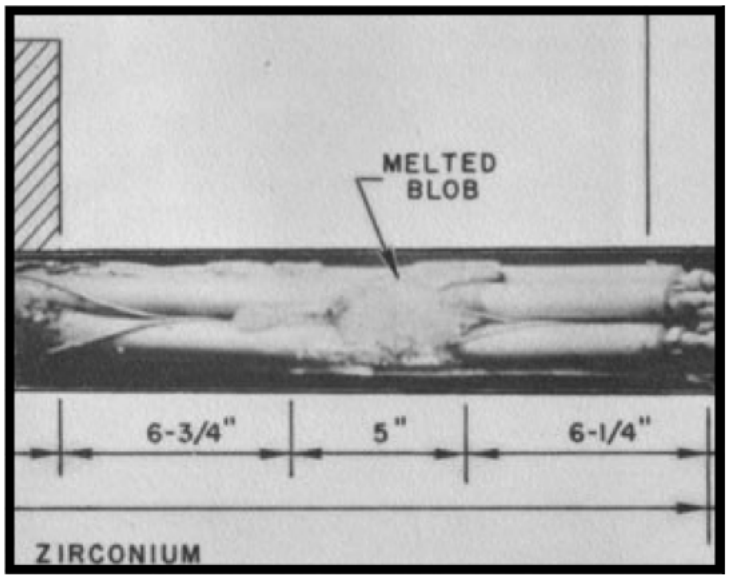


Figure IV-A-6. Bottom of Damaged Element in Channel 55

Figure IV-A-7. Midsection of Damaged Element in Channel 55

Photo of Damaged Fuel Element; source: AEC/Atomics International

[8] See Committee to Bridge the Gap, *Past Accidents and Areas of Possible Present Concern Regarding Atomics International*," January 18, 1980, and the citations therein. (Atomics International was the name of the AEC contractor running the nuclear portion of SSFL at the time.)



SRE Fuel "Melted Blob" (label in original); source: AEC/Atomics International

The accidents at the SRE, SNAP8ER and SNAP8DR all involved running the reactors for extensive periods of time while they were failing, despite clear indications of problems. As an AEC analysis[9] of the SRE partial meltdown concluded:

> [S]o many difficulties were encountered that, at least in retrospect, it is quite clear that the reactor should have been shut down and the problems solved properly. Continuing to run in the face of a known Tetralin leak, repeated scrams, equipment failures, rising radioactivity releases, and unexplained transient effects is difficult to justify. Such emphasis on continued operation can and often does have serious effects on safety and can create an atmosphere leading to serious accidents. It is dangerous, as well as being false economy, to run a reactor that clearly is not functioning as it was designed to function.

Nonetheless, the same pattern of continuing to operate reactors for long periods despite evidence of failing cores subsequently resulted in significant fuel damage in two other reactors at the site.

The problem of cutting safety corners was compounded by a culture of secrecy and a lack of candor. The AEC said nothing publicly about the SRE partial meltdown for nearly five weeks. Finally, it issued a news release, embargoed for Saturday morning papers, saying that "a parted fuel element had been observed," that there were no

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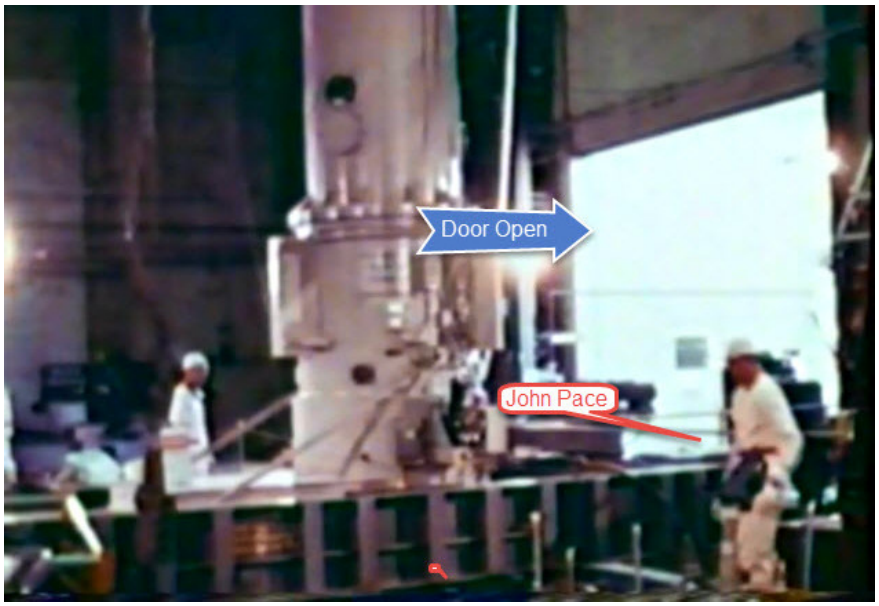
[9] T. J. Thompson and J. G. Beckerley, *The Technology of Nuclear Reactor Safety,* prepared under the auspices of the US Atomic Energy Commission, 1964, p. 644

indications of unsafe operating conditions and no radioactive release. However, in fact, the fuel had experienced not just parting, but melting. A third of the core underwent partial melting, not just a single fuel element. It was a clear indication of unsafe operating conditions,, and radioactivity had been intentionally vented into the atmosphere for weeks.

Despite subsequent claims that only noble gases were released, independent experts have concluded that other radionuclides such as iodine-131 could have been vented into the atmosphere. One estimate is that over 260 times the I-131 released at the Three Mile Island accident could have been emitted by the SRE.[10] The reactor had no containment structure; because of the coolant blockage, the coolant vaporized, and volatile radionuclides like iodine, cesium and strontium could have been emitted into the core cover gas, which was deliberately vented from the reactor and into the environment. Furthermore, a report by an eyewitness, John Pace, indicates that the reactor room became so radioactive that the large equipment door had to be kept open to vent radioactivity from the room to the outdoors.[11]



By no means was the SRE partial meltdown the only problem at SSFL that led to releases. Much of the work at SSFL involved radioactively contaminated liquid sodium coolants for reactors, which burn if exposed to air and explode in the presence of water.

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[10] Declaration of Arjun Makhijani, Ph.D., President of the Institute for Energy and Environmental Research, in *Lawrence O'Connor et al. v. Boeing North American, et al.,* U.S. District Court for the Central District of California, February 12, 2004, p. 24.

[11] http://data.nbcstations.com/national/KNBC/la-nuclear-secret/ The above photograph is from an AEC film about the accident, taken during the recovery operation. The labels have been added. Pace says the door had to be opened for extended periods during the accident itself because of high radiation readings.

There were radioactive fires at the hot lab and numerous other radioactive and chemical releases and spills. In addition, for decades, despite requirements to the contrary, radioactive and toxic chemical wastes were burned in open "burnpits." Sodium-coated reactor components were placed in shallow pools of water to chemically react. The resulting clouds of airborne contamination fell out over wide areas, including beyond the SSFL boundaries. These activities resulted in contaminating soil and groundwater. They also contaminated surface water that ran into the neighboring Brandeis Bardin Institute.

b. Rocket Testing

In addition to nuclear development work, tens of thousands of rocket tests were conducted at SSFL, many with very toxic fuels such as monomethyl hydrazine. The rocket tests produced massive airborne plumes of contaminants extending substantial distances.

Perchlorate, a very hazardous solid rocket fuel component, also resulted in substantial contamination of soil, groundwater and surface water. Because it is so mobile, there is evidence it rapidly traveled offsite contaminating land and groundwater; numerous wells in Simi Valley are polluted with it.[12]

In addition, over 21,500 tests alone involved flushing the rocket engines after firing with trichlorethylene (TCE), a very hazardous volatile organic compound.[13] Approximately one million gallons of TCE were employed for this purpose at SSFL, and about half a million gallons are estimated to have been allowed to percolate into the soil and groundwater. The acceptable concentration (the EPA Maximum Concentration Limit, or MCL) of TCE in drinking water is 5 parts per billion; concentrations orders of magnitude higher than that have been found in SSFL groundwater plumes. A substantial

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[12] See Ali Tabidian, *Land-use conversion and its potential impact on stream/aquifer hydraulics and perchlorate distribution in Simi Valley, California,* prepared for the SSFL Advisory Panel, October 2006

[13] NASA, *Santa Susana Field Laboratory: The Use of Trichloroethylene at NASA's SSFL Sites*, 2008.

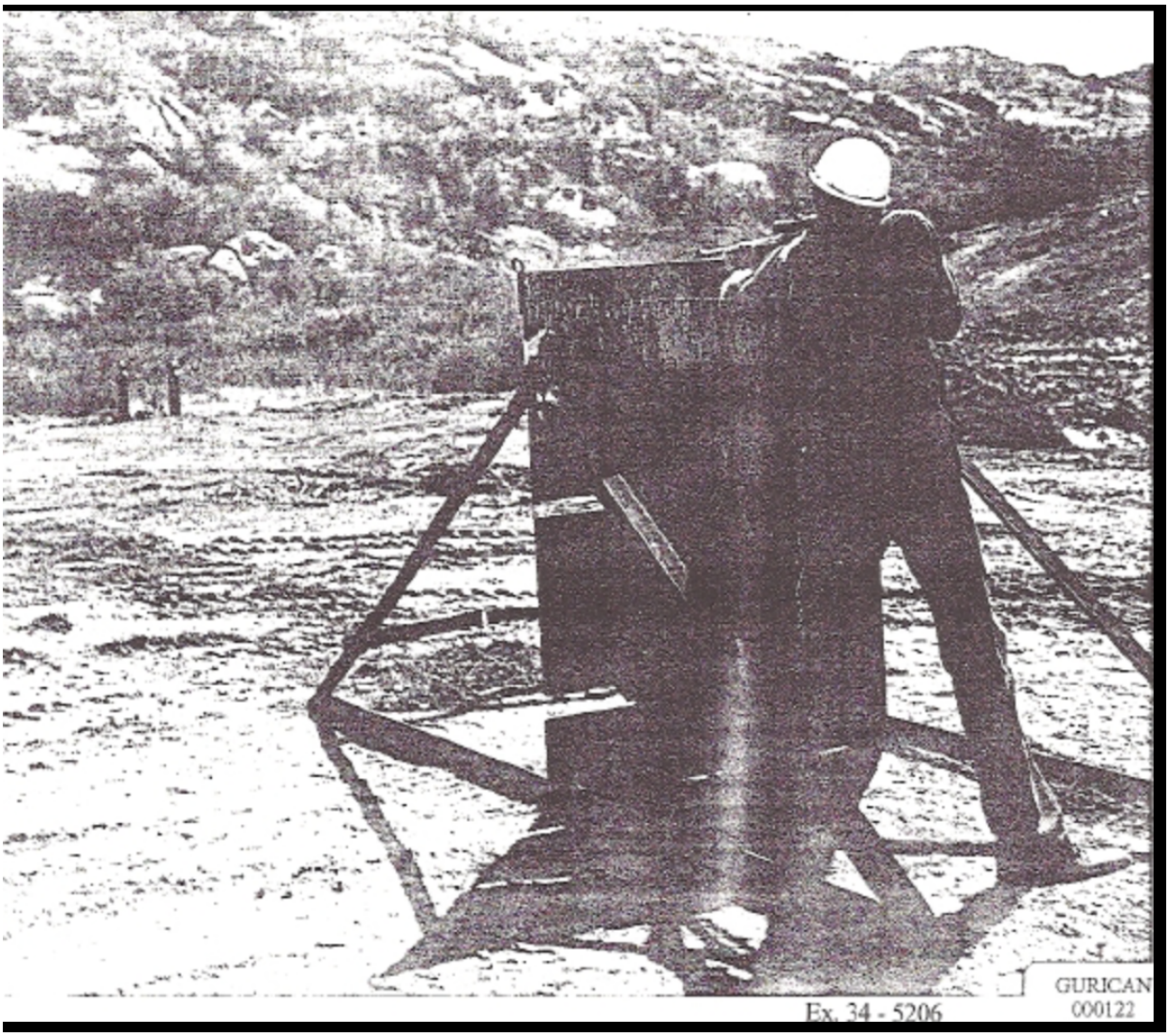
fraction of the groundwater at SSFL is contaminated with TCE and other pollutants. The TCE groundwater plume extends offsite.

There were also various accidents, such as explosions at the Alpha and Coca rocket test stands.[14] In 1994, two workers were killed when hazardous wastes that were being illegally burned in open pits exploded. The U.S. Justice Department commenced legal proceedings against Rocketdyne, resulting in an admission of guilt and plea agreement.

Just as in Area IV, the nuclear area, there was also an open-air burnpit where for years toxic wastes were illegally burned in the open air. To save the expense of transporting the waste offsite for proper disposal, scores of barrels of toxic waste were brought to the pit each month, and ignited by workers firing rifles at them to blow them up, releasing large plumes of contamination.

Ex. 34 - 5

[14] NASA, Historic Resources Survey and Assessment of the NASA Facility at Santa Susana Field Laboratory p. 3-42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A federally-funded study by the UCLA School of Public Health found markedly increased rates of death from key cancers for workers associated with their radiation and chemical exposures.[15] The most highly exposed workers had triple the deaths from those cancers as did less exposed SSFL workers.

A subsequent federally funded study by a team of researchers led by UCLA's Professor Yoram Cohen found evidence of contaminants having migrated outside the site

[15] Morgenstern, Froines, Ritz and Young, *Epidemiologic Study to Determine Possible Adverse Effects to Rocketdyne/Atomics International Workers from Exposure to Ionizing Radiation*, June 1997, at http://www.ssflpanel.org/files/UCLA_rad.pdf. See also *Santa Susana Field Laboratory Epidemiological Study: Report of the Oversight Committee,* September 1997, at http://www.ssflpanel.org/files/panel_worker_radiation.pdf, and the UCLA study of and panel report about chemical exposures, included in exhibits to these comments.

boundaries and exposing the public at levels in excess of EPA levels of concern.[16] A study by Dr. Hal Morgenstern of the University of Michigan, also federally funded, found a greater than 60% increase in incidence of various cancers in people living near the site associated with their proximity to it.[17]

SSFL is located atop the Santa Susana mountains overlooking significant populations in the City of Los Angeles and elsewhere. The site is contaminated with a wide range of radioactive materials, such as plutonium-239, cesium-137, and strontium-90, and over a hundred hazardous chemicals, such as dioxins, PCBs, heavy metals, and volatile organic compounds. Contaminants at the site can migrate offsite and expose those communities. Thus, the cleanup of the source of pollution above these communities is critical to their health. The concern thus is not limited in any fashion to potential exposures to people at the site in the future, but to the people who live in the area surrounding SSFL. As we shall show, the failure to recognize this is a fundamental failure of the PEIR.

2. Responsible Parties' History of Resisting Cleanup Obligations

Along with the history of weak environmental and safety controls at SSFL, the AEC – and its successor the DOE – have long resisted doing anything more than a minimal cleanup of the contamination for which it was responsible, at this or its other polluted facilities across the country.[18]

After incidents like the Rocky Flats fires in the 1970s, the Three Mile Island meltdown in Pennsylvania in the late 1970s, and the 1986 Chernobyl accident in the former Soviet Union raised concerns with the widespread environmental and safety problems throughout the DOE nuclear complex nationwide, tentative attempts at reform were undertaken. Reviews were undertaken of environmental problems at DOE sites; one performed by DOE contractor (and thereafter, NRDC engineer) James Werner found widespread chemical and radioactive contamination at SSFL.[19] Admiral James Watkins

[16] Yoram Cohen, et al., *Potential for Offsite Exposures Associated with the Santa Susana Field Laboratory,* February 2006, at http://www.ssflworkgroup.org/potential-for-offsite-exposures-associated-with-ssfl/

[17] Hal Morgenstern, et al., *Cancer Incidence in the Community Surrounding the Rocketdyne Facility in Southern California*, March 2007, at http://www.ssflworkgroup.org/files/UofM-Rocketdyne-Epidemiologic-Study-Feb-2007-release.pdf . See also, Professor Hal Morgenstern letter to Senator Joe Simitian, then-Chair, California Senate Committee on Environmental Quality, April 5, 2007, summarizing his findings, at http://www.ssflworkgroup.org/files/LettertoSen.Simitian_041507.pdf

[18] See, e.g., National Governors Association, *Cleaning Up America's Nuclear Weapons Complex:* 2015 Update for Governors.

[19] Environmental Survey, Preliminary Report, DOE Activities at Santa Susana Field Laboratory, February 1989; DOE/eh/OEV-33-P.

was brought in as Secretary of Energy to attempt to change the troubled "safety culture" at DOE. In 1991 an investigative "Tiger Team" team found significant problems in the safety and environmental program at SSFL.[20] In 1995, in an effort to bring DOE into the modern era of environmental regulation, it entered into a Joint Policy with the U.S. EPA committing that all DOE nuclear sites in the country, irrespective of whether they were on the National Priority List, would be cleaned up consistent with EPA's CERCLA (Superfund) guidance.[21] However, significant elements within DOE continued to resist these efforts at reform.

A clear example of this resistance can be found in the cleanup standards for the site. To wit, despite these critical findings and despite the Joint Policy entered into with EPA to carry out environmental remediation pursuant to EPA's CERCLA guidance, in the late 1990s, DOE and its contractor Boeing put forward cleanup standards for SSFL that were orders of magnitude more lax than the EPA CERCLA guidance and which would have left virtually all of the contamination not cleaned up.[22] In January 2002, DOE issued a Draft Environmental Assessment, and in 2003 a final Environmental Assessment and Finding of No Significant Impact approving those standards and its plan to leave substantially more than 90% of the radioactive contamination unremediated.[23]

Concerned about the plan to not clean up the great majority of the contamination and the failure to examine the environmental impacts of the harms associated with such weak cleanup choices, the City of Los Angeles, the Natural Resources Defense Council (NRDC), and the Committee to Bridge the Gap (CBG) filed a lawsuit in U.S. District Court, challenging the legality of DOE's actions under the National Environmental Policy Act (NEPA), 42 U.S.C. §4321, et seq. In 2007, in an Order highly critical of DOE, Judge Samuel Conti, granted summary judgment for the plaintiffs and against DOE.[24]

In 2007, Judge Conti ruled against DOE. He noted, "Area IV is known to be radiologically contaminated and, in fact, was the location of at least one well-known nuclear meltdown....It is located only miles away from one of the largest population centers in the world....Among the primary purposes of NEPA, and the EIS process more specifically, is assuring the public is informed and aware of the potential environmental impacts of government actions....It is difficult to imagine a situation where the need for

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[20] http://www.etec.energy.gov/Library/Main/DOE-EH-0175_ES&H_Tiger_Team_Assessment_of_ETEC.pdf

[21] DOE & EPA, Policy on Decommissioning Department of Energy Facilities Under CERCLA, May 22, 1995, hereafter DOE-EPA 1995 Joint Policy.

[22] Approved Sitewide Release Criteria for Remediation of Radiological Facilities at the SSFL, December 12, 1998.

[23] The EA was restricted to issues related to cleanup of radioactivity, recognizing that the cleanup of the chemicals was subject to the Resource Conservation and Recovery Act (RCRA) and those cleanup decisions were in the hands of the California Department of Toxic Substances Control.

[24] 2007 WL 1302498 (N.D. Cal).

such an assurance could be greater." He therefore permanently enjoined DOE from "transferring ownership or possession, or otherwise relinquishing control over, any portion of Area IV until it completed an EIS and issued a Record of Decision pursuant to NEPA." The Court retained jurisdiction over the matter until it is satisfied that the DOE has met its legal obligations related to the remediation.

Shortly thereafter, DOE issued a Notice of Intent to prepare an EIS. However, DOE dragged its feet for a decade and only now has issued the DEIS for comment.

3. The 2007 and 2010 Cleanup Agreements

a. The 2007 Consent Order

In 2007, the California Department of Toxic Substances Control (DTSC), which regulates toxic chemicals in California pursuant to federal delegation under the Resource Conservation and Recovery Act (RCRA), entered into a Consent Order with DOE and the other SSFL Responsible Parties (Boeing and NASA) in which the Responsible Parties were obligated to complete cleanup of soil and installation of the permanent groundwater remedy by mid-2017.[25] Contrary to the claim in the PEIR, that Consent Order does not mandate a cleanup to standards less than the 2010 AOC requirements, but instead requires cleanup to normal DTSC procedures. Those procedures, as DTSC reiterated in 2010, rely on current County zoning and General Plan land use designations, which in the case of SSFL, allows a wide range of agricultural and residential (with garden) uses and would result in the most protective cleanup standards being employed, comparable, DTSC has written, to a cleanup to background.[26]

b. The 2010 Administrative Order on Consent (AOC)

In 2010, in the face of mounting frustration by DTSC, the California Environmental Protection Agency (CalEPA), and state and federal legislators with what appeared to be continued foot-dragging by DOE mid-level personnel, Dr. Steven Chu, the Nobel-Prize winning physicist who was then the Secretary of Energy, and Dr. Ines Triay, the DOE Assistant Secretary for Environmental Management, proposed to the state that they enter into an agreement whereby the site would be cleaned up to local background; i.e., remove all the detectible contamination and return it to the condition it was in before DOE contaminated it. Over that year, there were numerous negotiating sessions with DOE and the state, with participation from some of the parties to the successful 2007 NEPA lawsuit, to hammer out the written agreement, first an Agreement in Principle (AIP) and then the full Administrative Order on Consent (AOC), which incorporated the AIP. A nearly identical AOC was reached with NASA. After two rounds of opportunity

[25] Consent Order, p. 20.
[26] DTSC, Response to Comments, Agreements in Principle, State of California and the Department of Energy, of California and the National Aeronautics and Space Administration, (hereafter DTSC Response to Comments on Agreements in Principle), October 26, 2010, Volume I, pp. 11-12, 14-7, 21.

for public comment, in which more than 3000 comments were received, of which all but a handful were strongly in favor, DTSC, DOE and NASA executed the AOCs in December, 2010.

There are several key components of the AOCs. (1) They are legally binding; the parties cannot unilaterally choose not to comply with any part of them. (2) Cleanup of soil shall be to local background. (3) For the purposes of the AOCs, soil is defined to include structures, debris, and other anthropogenic materials. (4) There is to be no averaging; any contamination above background is to be cleaned up. (5) The deadline for full soil cleanup and implementation of the groundwater remedy was 2017. (6) All waste with radioactivity above background must be disposed of in licensed or authorized low-level radioactive waste disposal facilities. And (7) critically, no "leave in place alternatives will be considered.

The AOCs contain some very tightly delimited exceptions to the requirement to clean up all contamination to background.[27] Because DTSC in the DEIR misrepresents them as it implies they allow it to leave in place very large amounts of contaminated soil, reprinting the exceptions from the DOE AOC here may be helpful:

> **SUMMARY: The end state of the site (the whole of Area IV and the Northern Buffer Zone) after cleanup will be background** (i.e., at the completion of the cleanup, no contaminants will remain in the soil above local background levels), subject to any special considerations specified below.
>
> • Clean up radioactive contaminants to local background concentrations.
>
> Possible exceptions *(where unavoidable by other means):*
>
> • The framework acknowledges that, where appropriate, DOE will engage in an Endangered Species Act (ESA) Section 7(a)(2) consultation with the U.S. Fish and Wildlife Service (FWS) over any species or critical habitat that may be affected by a federal action proposed to be undertaken herein on a portion of the site. Impacts to species or habitat protected under the Endangered Species Act may be considered as possible exceptions from the cleanup standard specified herein *only to extent that the federal Fish and Wildlife Service, in response to a request by DOE for consultation, issues a Biological Opinion with a determination that implementation of the cleanup action would violate Section 7(a)(2) or Section 9 of the ESA, and no reasonable and prudent measures or reasonable and prudent alternatives exist that would allow for the use of the specified cleanup standard in that portion of the site.*

[27] DOE AOC, Appendix B, pp. 1-2; NASA AOC, Appendix B, p. 1

> • *The acceptance and exercise of any of the following exceptions is subject to DTSC's oversight and approval, and the resulting cleanup is to be as close to local background as practicable*:
>
> > • Detection limits for specific contaminants exceed the local background concentration, in which case the cleanup goal shall be the detection limits for those specific contaminants.
> >
> > • *Native American artifacts that are formally recognized* as Cultural Resources.
> >
> > • *Other unforeseen circumstances but only to the extent that the cleanup cannot be achieved through technologically feasible measures.* Under no circumstances shall exceptions for unforeseen circumstances be proposed in excess of five percent of the total soil cleanup volume.
> >
> > (italics and underlining added[28])

Thus, the only biological exception in the AOC to the requirement to clean up to background is if U.S. Fish and Wildlife Service issues a Section 7 Biological Opinion with a determination that implementation of the cleanup action would violate Section 7(a)(2) or Section 9 of the ESA, and no reasonable and prudent measures or reasonable and prudent alternatives exist that would allow for the use of the specified cleanup standard in that portion of the site. The only cultural exemption is for formally recognized Native American artifacts, and DTSC must approve the exception. And the up to 5% "unforeseen circumstances" exemption also requires DTSC approval and exists only to the extent that the cleanup cannot be achieved through technologically feasible measures. Furthermore, no exception can be applied unless it is demonstrated to be unavoidable by other means and the resulting cleanup is as close to background as practicable. As shall be discussed below, none of the conditions necessary to trigger an exception has been met. In apparent recognition of this, DOE in its DEIS admits that its leave-in-place options would not be in compliance with the AOC and for them to go forward, the AOC's requirements would have to be altered.[29] Nonetheless, after having criticized DOE for suggesting such leave-in-place alternatives and exceptions that go beyond those allowed in its AOC, DTSC now, in the PEIR, proposes to do precisely the same thing, in violation of both the DOE and NASA AOCs.

[28] DOE AOC, Appendix B, p. 1; there are identical exemptions for chemical contaminants on p. 2; those exemptions are also found in the NASA AOC, Appendix B, p. 1.

[29] DEIS p. S-12.

B. THE DOE AND NASA CLEANUPS: The PEIR Breaches the AOCs' Prohibition on Consideration of "Leave in Place" Alternatives

The AOCs expressly bar leaving contaminated soil in place, but also forbid even *consideration* of such an action as alternative. The AOCs require cleanup to local background and then state:

> Cleanup to local background means removal of soils contaminated above local background levels
>
> · **No "leave in place" alternatives will be considered**
>
> · No on-site burial or landfilling of contaminated soil will be considered
>
> emphasis added[30]

Despite this unequivocal prohibition, the PEIR proposes--just as DOE did and which DTSC criticized--leaving in place unspecified but clearly extremely large amounts of contaminated soil.

a. After Declaring that Proposals to Leave in Place Contaminated Soil for "Monitored Natural Attenuation" Would Violate the AOCs, DTSC Proposes the Very Same Action

In its DEIS, DOE had stated that for all alternatives, it would leave in place 150,000 cubic yards of soil contaminated with Total Petroleum Hydrocarbons (TPHs) and Poly Aromatic Hydrocarbons (PAHs).[31] It argued that these will be left in place to "naturally attenuate." However, the AOCs bars consideration of any leave in place alternative.[32] The AOC expressly states, "No 'leave in place' alternatives will be considered." Note that not only are leave in place alternatives prohibited from being employed, they are barred from even being considered.

DOE said in its DEIS that natural attenuation could take up to 70 more years, whereas the AOC required cleanup in just a few years. If DOE did what it proposed in its DEIS, and if DTSC did what it now proposes in the PEIR, those contaminants would be left in place, available for offsite migration, for a lifetime. Given that the contamination was created as much as seventy years ago, it would thus have been not cleaned up for nearly a century and a half if the AOC were breached this way. And of course, if natural

[30] DOE-DTSC AOC, Attachment B, p. 3; NASA-DTSC AOC, Attachment B, p. 2
[31] DEIS p. S-21.
[32] See p. 3, Appendix B, DOE AOC. DOE tried to conflate the prohibition on "leave in place" alternatives with the prohibition on "onsite burial or landfilling of contaminated soil," but these are separate prohibitions. DOE also appeared to try to claim leaving it in place is on-site treatment, but it is of course just the opposite—no treatment at all, just leaving it there.

attenuation were viable and quick, there would be at SSFL no such contamination now, since it was first created many decades ago.

But in fact the time periods appear far longer. The source DOE cited for the 70 year estimate[33] merely refers to another source[34] for the number and correctly points out that this was based merely on a "Phase I literature search." In truth, the study relied upon (Nelson, et al. 2014) says the amount of time could be far longer, because the rates of attenuation slow dramatically after the easiest material degrades, which has already long ago occurred, and because site specific conditions of weathering also would tend to prevent degradation. The initial estimates were based on first-order approximations from the literature, but the report said site-specific studies were needed to determine likely attenuation rates at SSFL. As the Nelson, et al. study stated about the first-order estimate of ~70 years:

> An important assumption in the above calculations was that the same first-order rate constant would be valid throughout the remediation period. As stated above, there are a couple of reasons this may not be a valid assumption: 1) The more easily biodegraded fractions of the hydrocarbon mixture will biodegrade first, leaving the more recalcitrant compounds towards the end, and 2) some fraction of the hydrocarbons will likely remain sequestered in the soil matrix and unavailable for biodegradation. For these reasons, longer remediation times than those calculated ... may be required at SSFL.

Nelson et al. concluded in that study, "It would be helpful to run microcosm experiments under conditions mimicking those at SSFL to get a better idea of potential biodegradation rates at SSFL."

Indeed, Nelson and his team (their studies were performed under contract to DOE) followed up that Phase I literature search with actual tests for SSFL-specific conditions. Those measurements under SSFL actual soil conditions resulted in "essentially no change" in concentrations for any of the unamended samples tested.[35] Thus, the actual studies prepared for DOE do not support the claim that the TPHs at SSFL can be left to naturally attenuate. But even were the claim of 70-year attenuation periods correct—and they aren't—leaving the contamination in place for an additional 70 years would violate the AOC and pose continuing risks.

It is important to keep in mind that the DOE-funded Nelson studies were not aimed at natural attenuation but at identifying active soil treatment options. The former is barred by the AOC but the latter, if it works effectively and quickly, is allowed. The Nelson studies concluded that natural attenuation wouldn't work but that more research should be conducted on possible methods of treatment. One of the failures of both the DEIS and PEIR is the failure to adequately address possible treatment methodologies.

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[33] DOE DEIS reference CDM Smith 2015b.
[34] DOE DOE reference Nelson, et al. 2014.
[35] See Nelson, et al. reports to DOE, DEIS references 296-300.

In its formal comments on the DOE DEIS, DTSC strongly criticized DOE for proposing monitored natural attenuation in the DEIS because it would leave contaminated soil in place, violating the AOC:

> The DEIS proposes to rely on the natural process of degradation (monitored natural attenuation) to reduce levels of certain contaminants to achieve cleanup standards, which may take decades and *therefore violate the AOC's prohibition on leaving contamination where it is found*.[36]

It is therefore very puzzling that just a few months later, DTSC in its own PEIR proposes to leave contamination in place via the very claim of monitored natural attenuation that it said would violate the AOC. Indeed, the PEIR assumes precisely the same amount of DOE contaminated soil – 150,000 cubic yards – would be exempted from cleanup by claimed monitored natural attenuation as did DOE in the portions of its DEIS that DTSC criticized.

Leaving contamination in place to "naturally attenuate" can result in continuing migration of the contamination; it may thereby attenuate, i.e., the concentration at the source may go down, but by spreading the contamination elsewhere, including to the public living nearby. The refusal to clean up this contaminated soil but rather leave it in in place violates the AOC's requirement that "no 'leave in place' alternatives will be considered, and they thus should not be considered.

DTSC Fails to Disclose What Contamination It Proposes to Leave in Place

As is the case in so many other ways, the PEIR does not disclose how much soil would be left in place for supposed monitored natural attenuation, with what contaminants and in what concentrations, where the contaminated soil is located and even on what Areas of the site, nor any evidence that monitored natural attenuation would actually occur and if so, over how long a time period. This opacity defeats the public disclosure purposes of CEQA and frustrates the required opportunity for meaningful comment.

In an Administrative Draft of the Project Description Chapter of the PEIR, obtained under the California Public Records Act, the soil volume tables include an estimate of 150,000 cubic yards of contaminated soil at the DOE part of SSFL that would be allowed to be left in place, and associated notes indicate that DTSC wanted NASA and Boeing to estimate how much of their contaminated soil they would similarly like to have

[36] DTSC Deputy Director Mohsen Nazemi, *Department of Toxic Substances Control's Comments on the Department of Energy's Draft Environmental Impact Statement for Remediation of Area IV, Santa Susana Field Laboratory, Ventura County, California,* April 13, 2017, emphasis added

exempted. In the wake of public criticism after the document was obtained, the draft PEIR as issued has removed from Table 3-3 the estimated 150,000 CY for the DOE site, and leaves the entries for each of the three Responsible Parties' portions of the sites as "TBD"--to be determined. Thus, the PEIR hides from public review any estimate of how much of each RP's contaminated soil is being contemplated to be allowed to be left in place under the guise of monitored natural attenuation.

The effort to keep hidden the actual proposal resulted in contradictory statements in what remained. Table 3-3 in the PEIR released for public comments gives no estimate for the monitored natural attenuation soil volumes for any of the RPs, having removed the 150,000 CY entry for DOE in the parallel table (3-2) in the Administrative Draft, but nonetheless kept the same footnote for DOE, which said that for DOE, "the estimate for monitored natural attenuation (MNA) represents the volume of soil where it is anticipated that chemical impacts would be reduced through natural processes...." However, the PEIR table now published now has no MNA estimate for DOE, it having been removed. Furthermore, although no MNA estimate is given for DOE in the PEIR as published, the 150,000 CY figure having been removed, the total soil volume for DOE is unaltered. The Administrative Draft was 1,260,000 CY after assuming an additional 150,000 CY would be MNA; the published PEIR, with MNA estimate for DOE removed, nonetheless remains1,260,000 CY.

To add to the confusion, Table 3-3 in the published PEIR, while asserting MNA volumes for each RP are "to be determined," nonetheless gives a 150,000 cubic yard estimate as the total MNA volume from all RPs together. No basis whatsoever is given for such an estimate, and as indicated above, it is puzzling, given that that figure is precisely the same as the estimate for DOE alone in the Administrative Draft. The puzzling footnote for the 150,000 total estimate says:

> The amount of soil that would be treated through MNA has not yet been determined for Boeing, DOE, and NASA. A volume estimate and evaluation of the appropriateness will be presented in the cleanup decision documents. *For purposes of the PEIR, the disposal volume assumes that 150,000 CY of the total would be amenable to MNA*. Although the amount of soil that would be treated through MNA has not yet been determined, MNA would address a portion of the soil volumes currently identified for cleanup and no additional soil volume is expected to be identified.
>
> emphasis added

No source or basis is given for the volume selected "for purposes of the PEIR," and it makes little sense in the context of an identical estimate for DOE alone, in the Administrative Draft. To confuse things even further, the PEIR as released, in the very next Table, 3-4, in footnote C, says "As presented in Table 3-2, DOE's disposal volume assumes that 150,000 CY of the total 1,410,000 CY would be remediated by monitored natural attenuation." Whereas Table 3-3 says DOE's disposal volume is "to be determined," and estimates the total for all RPs together at 150,000 CY, Table 3-4 asserts

150,000 for DOE alone. It cites Table 3-2 for that claim, but there is no such claim in Table 3-2 of the published PEIR. It appears this is an incorrect reference to a different table, in the Administrative Draft.

Symptomatic of Fundamental Problems in the PEIR

The laborious discussion immediately above about the contradictions in the PEIR as its authors attempted to shield from public view the MNA estimates that were in the Administrative Draft illuminates several of the fundamental problems with the PEIR. It is not actually an Environmental Impact Report by DTSC, the regulatory agency, but rather by a contractor to one of the Responsible Parties, Boeing. It was written in large measure by the RPs, who were also, as the Public Records Act materials demonstrate, allowed to edit much of it.[37] And many of the central, controversial elements of the PEIR, which undermine the DTSC commitments to a full cleanup, came directly from the RPs, with no evidence of critical review by DTSC itself. Finally, the central aspects of the proposed action are hidden from public disclosure and thus meaningful public comment. This is a pattern seen throughout the document.

b. The PEIR Includes Vast But Unspecified Cleanup Exemptions for Biological Features That Go Far Beyond What is Permitted in the AOCs, While Ignoring the Harm to Biological Receptors From Not Cleaning Up the Radioactive and Toxic Chemical Contamination

The PEIR suggests that very large fractions of the contaminated soil would not get cleaned up, pursuant to unspecified and undetailed exemptions for biological features. However, with the exception of a single map, nothing is disclosed about this plan—no volume estimates, no indication of the degree of or nature of contamination in any specific soil that wouldn't get cleaned up, no information on the harm to the public or ecological receptors that would result from the pollution not being remediated, etc. It is all hidden from public scrutiny.[38]

However, under the AOCs, the biological exception only occurs if the United States Fish and Wildlife Service (USFWS) issues a Biological Opinion that finds that the particular cleanup in a particular SSFL location would violate Section 7(a)(2) or Section 9 of the Endangered Species Act and no reasonable and prudent measures or reasonable and prudent alternatives exist that would allow for the use of the specified cleanup standard in that portion of the site, and the exception is unavoidable by other means.

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[37] See emails and Administrative Drafts obtained under the Public Records Act and included in the exhibits to these comments.

[38] As in the case of the amounts proposed to be left in place for monitored natural attenuation, the Administrative Draft from last year did give some estimate for how much soil would be exempted for one of the RPs under supposed biological and cultural exemptions—a vast 300,000 cubic yards for DOE alone. (Table 3-3, Administrative Draft) But once again, the draft PEIR as issued for public review has even that disclosure removed.

No such USFWS Biological Opinion has been issued. The AOC exception does not apply.

And we note that the agency did issue a Biological Opinion a few years ago for EPA's intrusive radiation survey work that involved cutting back much of the vegetation in the area.[39] USFWS approved, indicating in part that the activity would actually be helpful to the natural species by making possible cleanup of the environmental contaminants. The Biological Opinion further indicated that soil disturbance often helps the Braunton milkvetch, a federally listed species, but in any case measures such as tagging and avoiding plants or storing seeds and reseeding thereafter could be undertaken. The Biological Opinion concluded, further, that even were there a loss of a great majority of the Braunton milkvetch at Area IV and the NBZ, "adverse effects caused by this project will not occur throughout a significant portion of the range of the species (only plants in approximately 2 percent of the range of Braunton's milkvetch would be affected by the project)." But in any case, mitigation measures can be undertaken.

It is unacceptable that DTSC and the RPs have dragged their feet on getting a Biological Opinion issued so that it could be considered and its implications responded to during the comment period on the draft PEIR. When it issues, we ask that the PEIR be recirculated for public comment.

We are also concerned that DTSC has not been candid with USFWS (or, for that matter, the California Dept. of Fish and Wildlife). A Biological Opinion is only as valid as the information on which it is based. Since the PEIR claims zero negative impacts from doing no cleanup at all, and contains no analysis whatsoever of the risks to biological receptors from the contamination or the effects on them if it weren't cleaned up, it will be difficult for USFWS to perform an adequate review. Apparently they were not informed that the contamination levels DTSC proposes to allow to remain unremediated far exceed DTSC's own official Ecological Risk Based Screening Levels. In other words, failing to clean the site up would result in contaminant levels deemed harmful to the very species DTSC claims it wants to protect by not protecting them from the pollution.

DTSC is attempting to allow the Responsible Parties to get out of remediating the damage to the environment which they and their predecessors caused by decades of pollution, by saying it now wants to protect biological features by not cleaning up the radioactive and toxic chemicals with which the RPs contaminated them. But it is, of course, that contamination which poses risk to biological features, and failure to clean it up which would harm them, none of which is considered in the PEIR. Instead, claims about prospective harm from cleanup are the sole focus, despite clear evidence that many

[39] Biological Opinion for the Santa Susana Field Laboratory Area IV Radiological Study Project, Ventura County, California [EPA Contract # EP-S7-05-05] (8-8-10-F-12), May 25, 2010.

of those claims are inflated.

The DOE DEIS, for example, asserted that the contamination is concentrated around certain facilities.[40] But the biological features were long ago scraped away by the Responsible Parties to construct those reactor and other facilities; it is not pristine land, even leaving aside the contamination. Somehow, after decades damaging the SSFL land with radioactivity, toxic chemicals, and intensive industrial activity, suddenly it is claimed that DTSC and the RPs shouldn't have to live up to their commitments to remediate the damage done to those very biological resources.

Perhaps in recognition that the AOC's narrow exception has not been met, there has been an effort to confuse the issue by speaking in the PEIR in broad terms about "conserving biological resources." But that, of course, is not the actual AOC exception.

There has been an effort to try to conflate the AOC exception, which is limited to a USFWS Biological Opinion barring a specific aspect of the cleanup as violating ESA, into a misleading effort to get the California Department of Fish and Wildlife (CDFW) to support DOE's efforts to avoid complying with the AOC cleanup requirements.

For example, on September 12, 2016, DOE wrote to CDFW misleadingly asserting that the AOC had a generic exemption for protection of biological resources and "to employ an exemption, DOE requires the opinion of the California Department of Fish and Wildlife that an exemption to the AOC soil cleanup is critical for protection of the species."[41] DOE attached a very misleading document, purporting to show that there is no health risk whatsoever from not cleaning up the site and supposed extreme risk to the tarplant if it is. (The tarplant is not a federally listed species at all, and is not listed by the state as endangered or threatened, but is identified as rare.) Note that CDFW would have no way of knowing that the AOC exception is restricted to a specified narrow finding in a Biological Opinion by the *U.S.* Fish and Wildlife Service, not the CDFW, and that the standard DOE suggests is also far broader than that contained in the AOC.

Intriguingly, the DOE submission to CDFW indicates that the tarplant has thrived in formerly developed areas at SSFL where facilities were removed followed by interim restoration. It is conceded that the tarplant grows in previously disturbed areas ("including cracks in paved areas") and that "Boeing has had success at getting Santa Susana tarplant to reestablish at sites where soil has been removed as part of remediation." Area IV and the NBZ contain about 850 plants total, or about 2 per acre; it estimates an average of only about 13 plants per acre it proposes as exemption areas in Area IV. Clearly one could simply work around those few plants if one wished.

In the guise of trying to protect biological features, DOE proposed (and DTSC

[40] DEIS, p. S-1.
[41] Letter from DOE's John Jones to CDFW's Mary Meyer, September 12, 2016, including Attachment A, "Supporting Analysis, Effects of Soil Remediation on Santa Susana Tarplant (*Deinandra minthornii)* in SSFL Area IV, August 25, 2016.

now proposes) to walk away from the obligation to clean up the radioactive and chemically toxic pollution which contaminated those features, and leave behind concentrations far above the established Risk Based Screening Levels for ecological receptors, let alone for human health.

None of this was explained to CDFW by DOE. On the day DOE issued the DEIS, however, DTSC's Director Barbara Lee wrote to DOE Assistant Secretary Regalbuto expressing significant dismay about DOE's misleading approach to CDFW, asserting that it was essentially violating the AOC.[42] DTSC stated,

> We are concerned that DOE is proposing cleanup actions inconsistent with the Administrative Order on Consent (AOC) between DOE and the Department of Toxic Substances Control (DTSC), and is basing these proposals on assumptions unsupported by needed data and analysis.
>
> ***
>
> *First, and most importantly, we note that it appears DOE is proposing cleanup approaches that fail to fully recognize the AOC provisions that apply to sensitive plant and animal species located at SSFL. These provisions allow limited exceptions to cleanup activities to safeguard protected species.* As you know, DTSC is committed to implementing and enforcing the AOC. DTSC requests DOE to discontinue early consultation until we can discuss with DOE and CDFW how the requirements of the AOC apply to this process.
>
> Second, DTSC is concerned that DOE may not have supported its initial assessments of key issues with sufficient data and analysis.
>
> ***
>
> Further, it does not appear that DOE has analyzed individual, location-specific approaches to minimizing and mitigating potential impacts to the Tar Plant and other sensitive habitat and resources consistent with the AOC.
>
> emphasis added

In sum, DTSC rightly objected that DOE was attempting to claim a biological exception for which it does not qualify. That exception is only triggered by a USFWS Section Biological Opinion finding a proposed cleanup action on part of the property to violate specified sections of the ESA, with no reasonable and prudent measures or reasonable and prudent alternatives that would allow for the use of the specified cleanup standard in that portion of the site. No such USFWS Biological Opinion exists. No such showing has been made. Cleaning up the radioactive and toxic damage DOE and the other RPs did to the SSFL environment would help biological features in the long run,

[42] January 6, 2017, DTSC letter "Initial DOE Assessments Related to the Santa Susana Field Lab Cleanup."

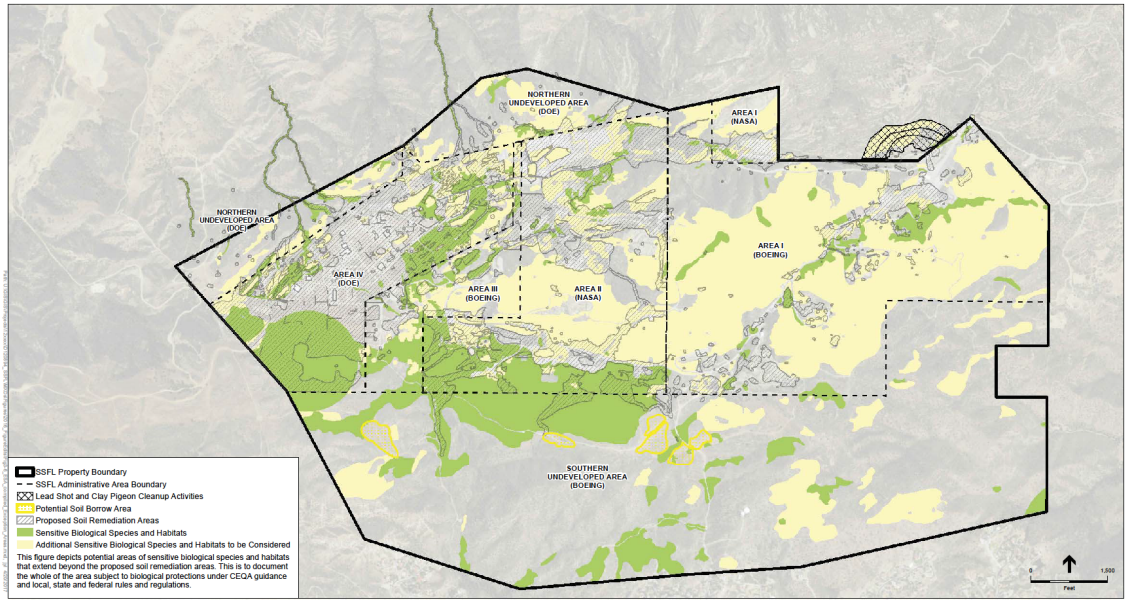
not harm them.

But now, merely a few months later, just as was the case regarding leaving in place contaminated soil under the guise of monitored natural attenuation in violation of the AOC, DTSC has issued a draft PEIR that does precisely what it criticized DOE for -- claiming vast biological exemptions that go far beyond what is allowed by the AOCs.

The PEIR includes no information whatsoever as to how much contaminated soil is being contemplated to be exempted from cleanup, how polluted and with what pollutants that soil is, and – critically—how far in excess of the ecological Risk Based Screening Levels (low-TRV ecoRBSLs) the contamination would be (i.e., how far above the level for no observable adverse effects). It is an extraordinary omission. In the guise of protecting biological resources, DTSC proposes to expose those biological receptors to levels of radioactivity and toxic materials far above the levels that DTSC has established as causing harm to those plants and animals. Yet that is not disclosed, and no data showing how the proposed exemptions from cleanup would result in exceeding levels that DTSC has determined harm those very biological features.

All that one is given that gives any suggestion of the magnitude of the proposed exposure of biological features to harmful pollutants is a single map, reproduced below. No soil volume figures are provided, no contaminant identification or levels, and no comparison to the no observable adverse effects ecoRBSLs to show how much harm would be done by not cleaning up the contaminants that place those ecological features at risk. The PEIR is silent on the harm to the environment from exempting contamination from cleanup. At best one can make an approximation that the contemplated exceptions would prevent a very large fraction of the contamination from being cleaned up, and that they appear to go far beyond the exceptions allowed in the AOCs.

The problem of "hiding the ball," in violation of CEQA, is exacerbated by the failure of DTSC to make available the referenced material upon which the conclusory claims such as this critical map are based. In small print at the bottom of Figure 3-6, the sources are identified in the most cursory of ways: "SOURCE: DOE 2012; Boeing/MWH 2016; USFWS 2016; ESA 2016." However, not one of these has been made publicly available. Indeed, not one is even listed in the references for this chapter. There is thus no way to independently ascertain the validity, or lack of same, of any claim documented on the map as to contaminated areas that are purported to be exempt from cleanup. And yet, this single map, entitled "Proposed AOC Exception Areas," is perhaps the most important aspect of the entire PEIR, and its validity and the environmental impacts that flow from it – exempting vast portions of SSFL contamination from cleanup—cannot be independently assessed. It appears to come primarily from the RPs, who have a vested interest in getting out of cleanup obligations. The impacts for public health and the environment could be immense, yet the bases for it, the level of contamination in various areas that would thus not be cleaned up, and the consequences of continued pollution on biological receptors and the public, are shielded from public review.



SOURCE: DOE 2012; Boeing/MWH 2016; USFWS 2016; ESA 2016

Santa Susana Field Laboratory,120894

Figure 3-6

Potential AOC Exceptions Areas

The proposed exemption areas in the PEIR appear to include some of the most contaminated areas on the property.[43] These areas are the opposite of pristine natural areas, and it is troubling that DTSC would attempt to claim biological exceptions not allowed by the AOC as a way of avoiding cleaning up among the biggest toxic impacts on wildlife.

The figure is contradictory, but no explanation is available for the contradictions. The green highlighted areas are called "sensitive biological species and habitats," while the yellow areas are called "additional sensitive biological species and habitats to be considered." What the difference, if any, between the two might be is unexplained. The legend also says, "This figure depicts potential areas of sensitive species and habitats that extend beyond the proposed soil remediation areas." But that does not appear to be what the figure depicts; instead it shows vast areas of proposed soil remediation areas that are suggested to not get remediated. Lastly, the legend asserts "This is to document the whole of the area subject to biological protections under CEQA guidance and local, state, and federal rules and regulations." But these are not identified; to the extent one can ascertain the matter from the limited information disclosed, none of that guidance or rules or regulations bars the cleanup from occurring; and the AOC' biological exemption is far more narrow, restricted, as indicated above, to a USFWS Biological Opinion that forbids a particular place from being cleaned up because to do so would violate sections of the Endangered Species Act and there are no mitigations or alternatives available, which hasn't happened.

In summary, the AOCs have very narrow biological exemptions, which have not

[43] DEIS, p. 2-23.

been met at SSFL, while the PEIR appears to contemplate vast amounts of contamination being exempted from cleanup by purported exemptions that far exceed those allowed by the AOCs. CEQA and other environmental statutes and rules are generally designed to protect pristine areas from actions like polluting activities that could harm biological features, not to prevent already polluted areas from being remediated so those biological receptors are no longer at risk from the contamination.

c. Cultural Features Exemption Claim

In addition to unquantified purported biological exceptions that go beyond those allowed by the AOCs, the PEIR asserts exemptions from cleanup of unspecified magnitudes that it describes as being for cultural features. However, the AOC exception is limited to Native American artifacts that have been formally recognized, and for those, only if DTSC approves and the exception is unavoidable by other means. Even then, the resulting cleanup of those specific areas would still have to be as close to local background as practicable.[44] Cultural features that are not Native American (e.g., NASA rocket stands) are not an allowable exemption. Native American interests that are not artifacts are not an allowable exemption. Native American artifacts that are not formally recognized as Cultural Features are not bases for cleanup exemptions under the AOCs.

Again, DTSC in the PEIR has gone far beyond the exemptions allowed in the AOCs. Like its attempt to expand the narrow exception for a USFWS Biological Opinion to a shotgun set of claims about biological features generally, DTSC similarly tries to inflate the narrow exception for formally recognized Native American *artifacts* to cover far broader claims not allowed under the AOC.

The PEIR identifies only 6 formally recognized Native American artifacts.[45] Those are all rockshelters, which presumably wouldn't be affected by cleanup of soil in any case, but which can be readily worked around if cleanup nearby were required.

We are sensitive to the need to protect Native American artifacts. But the information put forward in the PEIR and other evidence suggests that very little if any cleanup of contamination need be avoided in order to protect those artifacts.

A cultural features survey performed for the USEPA radiation survey identified some additional rockshelters and similar features and isolated small artifacts such as the mano stone, a few inches across, pictured below. These were flagged and either avoided

[44] AOCs, Appendix B, p. 1

[45] Table 4.4-1. The table lists a few other items as not officially recognized, but potentially eligible for such recognition in the future. Again, most of these are rockshelters and other similar features that appear to either not be associated with soil cleanup in the first place or could readily be worked around.

during the survey or carefully collected and then returned to their original location, which could be done as well during the cleanup.[46]

mano stone, source: DOE DEIS Ref. 465 (Corbett 2012)

What artifacts have been found – although none is formally recognized—have generally been quite small and isolated, whereby one can readily work around them or, as was done in the EPA survey, carefully collect and then return them. There is no basis, as DOE has done, to propose exempting a vast amount of the contamination from cleanup because of isolated small artifacts, which can be fully protected while also allowing the site to be returned to its natural state before DOE polluted it.

It is troubling that the PEIR is issued without the USFWS Biological Opinion, which is the only basis for a biological exemption, and without any information about asserted cultural exemptions.[47] The public review mandated by CEQA is impaired accordingly and prevents public review and comment in the CEQA process, amounting to a game of hide the ball. DTSC and the RPs have had years, indeed decades, to obtain the Biological Opinion and complete any necessary Native American artifacts consideration, and their delay in doing so impermissibly shields from CEQA review the basis for cleanup exemption claims. One notes that EPA was able to timely obtain its USFWS Biological Opinion and its cultural features review for its activities at Area IV and the NBZ, and that neither Opinion indicated that the activity would cause an unacceptable impact and could be readily conducted in a way that was acceptable. DTSC's efforts to exempt very large but undisclosed volumes of contaminated soil from cleanup for purported biological and cultural reasons violates the narrow AOC exceptions and is unsupportable upon careful examination.

The PEIR also suggests the possibility, without disclosing any specifics, of exempting from cleanup "cultural features" such as rocket test stands. This would clearly violate the AOCs, which strictly limit exceptions to formally recognized Native

[46] DOE DEIS Ref. 465 Corbett 2012.

[47] Given claims by Boeing that it wishes to eventually make SSFL into a park, with full public access, the failure to disclose information about proposed cultural exemptions cannot reasonably be based on protecting the location of the features.

American artifacts. Since much of the contamination is due to and thus collocated with the rocket test stands, such exceptions would strike at the heart of the cleanup obligations. For example, a million gallons of TCE was used to flush rocket engines after firing, with the TCE and the dissolved pollutants therein allowed to percolate into the soil at the test stand locations. One can't clean up the soil with the test stands there. Attempting to avoid promised cleanup by declaring the test stands to be cultural features would abrogate the AOC requirements.

No estimates are given as to how much contaminated soil would be left in place pursuant to these vaguely claimed biological and cultural exemptions.

Summary Regarding PEIR Discussion of Cleanup of the DOE and NASA Portions of SSFL

The PEIR violates the legally binding AOCs that were entered into by DTSC, DOE and NASA. It proposes leaving in place obviously large, but undisclosed, amounts of contaminated soil, in violation of the AOC prohibition on consideration of "leave in place" alternatives. The exceptions contemplated in the PEIR go far beyond those allowed by the AOCs. Furthermore, the key aspects of the DOE and NASA cleanups are hidden from public disclosure, making adequate CEQA consideration and public review and comment impossible.

C. THE PEIR CONSIDERATION OF THE CLEANUP OF THE SSFL PORTIONS FOR WHICH BOEING IS RESPONSIBLE: BREACHING DTSC'S 2010 COMMITMENTS

a. The PEIR Improperly Excludes Cleanup of SSFL to Any of the Standards DTSC Previously Promised: to a Standard Equivalent to the AOCs, to Background, or to the Agricultural/Rural Residential Standard

Under EPA and DTSC practice, one is to clean up to the exposure scenario that produces the greatest risk and which is allowed under current County zoning and General Plan designations.[48] As DTSC described the process[49]:

> One of the primary assumptions that these calculations rely upon is the land use. The Superfund process requires the assumption to be based upon the reasonably anticipated land use. *The local government General Plan land designations and local zoning designations are the most reliable expressions of prospective land use.* OSWER Directive No. 9355.7 - 04 ."Land Use in the CERCLA Remedy

[48] See, e.g., Land Use in the CERCLA Remedy Selection Process, EPA OSWER Directive 9355.7-04, and DTSC Response to Comments on Agreements in Principle, p. 11-12.

[49] DTSC Response to Comments, *supra*.

> Selection Process," May 25, 1995, p. 2, 4 - 5. *DTSC and U.S.EPA, in implementing the Superfund process, defer to local governments' land use plans and zoning decisions, and base their cleanup level calculations on the assumption that the land will be used as the land use requirements would allow, irrespective of its current use.*
>
> (emphasis added)

As DTSC said in 2010, its normal practice, even if there were no AOC or site-specific law, would be to require SSFL to be cleaned up to the rural residential/agricultural standard because that is what the site is zoned for and allowed under the General Plan:

> Even absent SB 990 [an SSFL-specific statute], *DTSC, in implementing its cleanup authorities, would defer to local governments' land use plans and zoning decisions. In this instance, the Ventura County zoning maps specify that the site and much of the surrounding area are currently zoned as rural agricultural*. Carrying out the cleanup specified in the Agreements in Principle is consistent with both SB 990 and with local land use decisions.
>
> (emphasis added)[50]

DTSC after analyzing various contaminants at SSFL, stated that a cleanup using its standards for all sites in the state, i.e., relying on local land use designations, would result in a cleanup at SSFL essentially equal to a cleanup to background, because the agricultural/rural residential cleanup levels were generally at or below background (one doesn't have to clean up below background).[51] Thus, DTSC said, a genuine risk-based cleanup would be the same as the cleanup-to-background required by AOC, even where there is no AOC and even if SB990, which subsequently was struck down, didn't exist.[52]

In 2015, in response to a request by DTSC, Ventura County confirmed for DTSC that its land use designations for the property allow a wide range of residential (e.g., with gardens) and agricultural (rural residential) uses.[53] Ventura noted that the current zoning (RA-5) for parts of the property might be changed in the future to comport with the General Plan's larger minimum parcel size, but that either zone that is compatible with the General Plan and to which it might be changed, OS-160 or AE-40, would be similar in continuing to allow residential and agricultural uses. Ventura provided the following table summarizing allowable land uses of SSFL under the General Plan and the zones compatible therewith:

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[50] *id.*, p. 21.
[51] *id.* pp. 14-17.
[52] *id.,* pp. 11-12, 14-7, 21
[53] Letter of July 20, 2015 from Kimberly L. Prillhart, Director, Ventura County Planning Division, to Mark Malinowski, DTSC.

Table 1: Allowable Residential & Agricultural Uses

Allowable Uses		AE Zone	OS Zone
Agricultural	Crop and Orchard Production[1]	X	X
	Animal Husbandry (animal raising)[2]	X	X
	Agricultural Contractors' Service and Storage yards and buildings	X	X
Animal Keeping, Non-Husbandry	Horses and Other Equines	X	X
	Kennels/Catteries	X	X
	Equestrian Centers	X	X
Residential:	Single Family Dwellings	X	X
	Second Dwelling Units	X	X
	Residential Care Facilities (6 or fewer)	X	X
	Boarding Houses / Bed-and-Breakfast Inns	X	X
	Family Day Care Home	X	X
	Farmworker Dwelling Units	X	X
	Animal Caretaker Dwelling Units	X	X
	Farmworker Housing Complex (multi-family)	X	X

1 See Section 8105-4 for a complete list of allowable uses. A wide range of crops and fruit-bearing trees are grown in Ventura County, and this use includes wineries and other uses related to agriculture.
2 This includes a wide range of animals, including cattle (ranching), horse ranches, etc.

Ventura concluded, "[A]s shown in Table 1 above, both of the zones that are compatible with the General Plan land use designation (OS, AE) **allow for a wide array of both residential and agriculture land uses.**" (emphasis added) Thus, pursuant to DTSC's commitments in 2010 and its normal procedures, even in the absence of an AOC or SB990, any risk-based cleanup for the Boeing portion of the property must be to the most protective of those allowable land uses and exposure scenarios, which is equivalent to the cleanup to background required in the AOCs for the DOE and NASA sections of SSFL.

However, just as the PEIR abrogates the cleanup commitments in the AOCs for the DOE and NASA areas, it breaches the past commitments and normal cleanup requirements for the Boeing portion. The PEIR states that the Boeing cleanup standard will be less protective than that required for DOE and NASA under the AOCs, and rejects even from consideration cleanup pursuant to equivalent standards. It further rejects from consideration cleanup to background for the Boeing portion. And it does not even mention and explicitly reject consideration of cleanup to the rural residential/agricultural standard it had previously promised, but it excludes it as well.

Surprisingly, DTSC does acknowledge in the PEIR that its procedures mandate cleaning up to the land uses allowed by Ventura's General Plan and zoning.[54] But it then

[54] p 3-9

goes on to misrepresent those allowable land uses by asserting that suburban residential represents all allowable land uses and the most conservative exposure scenario, ignoring the agricultural/rural residential entirely and without explanation.[55] No rationale is provided in the PEIR for excluding the agricultural/rural residential exposure scenario, allowed under Ventura County land use designations, nor is there even a disclosure that DTSC is excluding it.

The agricultural/rural residential standard is the most protective standard, as it presumes consumption of not just contaminated fruits and vegetables, but also beef, dairy products, chicken, eggs, etc. and longer exposure times. The agricultural cleanup standards are designed to assure that, for example, cows are not grazing on grass growing in contaminated soil, so that those who drink the milk and eat the meat are not put at risk.

Cow on SSFL Area IV (the nuclear area)
source: William Preston Bowling

[55] There is an assertion that the Standardized Risk Assessment Methodology (SRAM) it approved for SSFL mandates excluding the agricultural/rural residential scenario, but in fact, the SRAM includes detailed requirements for analysis of the agricultural/rural residential scenario as well, albeit, as shall be shown in the next pages, there errors in those input assumptions.

Cows grazing near SSFL Area IV source: William Preston Bowling

The PEIR does contain Risk Based Screening Levels for the agricultural/rural residential scenario in Appendix B, but they are not even considered as a cleanup standard.[56] These RBSLs are clearly wrong, in any case.

By definition, the concentration of contaminants in soil that will lead to the same risk are lower in the agricultural/rural residential scenario than in the suburban residential scenario, because the former assumes one consumes not just contaminated produce but also eggs, dairy, chicken, etc., and the exposure period assumed is longer (40 years as opposed to 30 or less). However, the RBSLs produced by Boeing and incorporated into the PEIR in Appendix B are less protective (i.e., would allow higher levels of contamination) for the SRAM-based agricultural/rural residential scenario than for the SRAM-based suburban residential garden. This, of course, cannot logically occur.

For example, Appendix B indicates one could allow approximately five times higher concentrations of chromium, antimony, mercury, and beryllium in the agricultural/rural residential scenario than in the suburban residential garden scenario, using the SRAM assumptions, even though the former by definition is consuming more contaminated food for a longer time than the latter. That this is clearly erroneous can be checked by comparing the suburban residential (residential) with the rural residential (farmer) preliminary remediation goals (PRGs) in EPA's current PRG calculator for the same elements. The PRGs for the rural residential scenario are 7-20 times tighter (more protective) than for the suburban residential scenario—the opposite relationship than the

[56] Two sets of rural residential RBSLs are provided, one based on the default exposure period of 40 years required by USEPA and DTSC, and the second, based only on 30 years. As was the case with the non-SRAM-based suburban residential garden RBSL, Boeing asked to include the 30 year RBSLs "for informational purposes," even though the DTSC-approved RBSLs were for the standard 40 year assumption.

one claimed in the PEIR Appendix B. In other words, mercury, for example, is purported in the PEIR to have a Risk Based Screening Level 5 times higher (*less* protective) for the rural residential/agricultural scenario than for the suburban residential, when it should be 7 times lower, or *more* protective. The rural residential RBSL is thus off by approximately a factor of 35, in the unsafe direction.

Comparison of Risk-Based Screening Levels (RBSL) for Metals in the PEIR (Appendix B)

Metal	SRAM-based Suburban Residental Garden RBSL (App. B) (mg/kg)	SRAM-based Rural Residential/ Agricultural RBSL (App. B) (mg/kg)	How Many Times Less Protective is the PEIR Rural Res/Ag. RBSL than the Suburban Res. Garden RBSL?
Arsenic	0.00010	0.00014	1.4
Beryllium	0.76	3.95	5.2
Chromium	542	3,020	5.6
Mercury	0.05	0.24	4.8
Antimony	0.14	0.70	5.0
Strontium	121	248	2.0

Comparison of EPA Preliminary Remediation Goals (PRG) for Metals

Metal	EPA Suburban Residental Garden PRG (pCi/g)	EPA Rural Residential/ Agricultural PRG (pCi/g)	How Many Times More Protective Should the Rural Res/Ag. Standard Be Than the Suburban Res. Garden According to EPA Guidance?
Arsenic (As-73)	0.439	0.2290	2
Beryllium (Be-10)	1.690	0.0838	20
Chromium (Cr-51)	0.889	0.2920	3
Mercury (Hg-194)	0.018	0.0025	7
Antimony (Sb-125)	0.053	0.0107	5
Strontium (Sr-90)	0.004	0.0004	10

*According to EPA Preliminary Remediation Goal Calculator for Radionuclides, accessed Nov. 14, 2017

The problem is not just for metals. For example, the PEIR assumes one can leave approximately five times higher concentrations of N-Nitrosodimethylamine, hydrazine and pyrene in soil for the agricultural scenario than for the residential scenario, despite the greater range of contaminated food types and longer exposure time for the former. This scientifically cannot be.

Comparison of Risk-Based Screening Levels (RBSL) for Example Chemicals in the PEIR (Appendix B)

Chemical	SRAM-based Suburban Residental Garden RBSL (App. B)(mg/kg)	SRAM-based Rural Residential/ Agricultural RBSL (App. B) (mg/kg)	How Many Times Less Protective is the Rural Res/Ag. RBSL than the Suburban Res. Garden RBSL?
N-Nitrosodimethylamine	0.00000095	0.00000480	5.1
Hydrazine	0.00000067	0.00000373	5.6
Pyrene	10.4	50.3	4.8

The error seems to be in large part due to failing to use for the rural residential scenario the SRAM-based ingestion rates for home-grown produce and instead using tiny rates that are non-credible. Much of that error appears to involve failing to use the normal, wet weight that EPA estimates comes from home grown produce, as used in the SRAM, and instead using a dry weight estimate, resulting in an indefensible, miniscule *total* produce consumption rate that is given for adults as a risible 28.5 grams of vegetables (about one ounce) and 56.2 grams of fruit per day, and for children, 10.4 and 14.8 grams respectively.[57] By contrast, the SRAM estimates adult residential consumption of vegetables and fruit--just from a residential backyard garden, based on actual EPA data on homegrown produce consumption--of 324.8 and 377.3 grams/day respectively, and for a child, 84.9 and 81.45 grams per day.[58] Current EPA default rates for homegrown produce consumption are even higher.

In short, the PEIR includes in Appendix B purported Risk Based Screening Levels for rural residential/agricultural exposures, values which are clearly erroneous. Additionally, in the PEIR, DTSC simply refuses to even consider cleanup to rural

[57] SRAM-2 Update, pdf p. 1125

[58] SRAM, pdf p. 1129 The error appears due in part to using, correctly, wet weight for the SRAM-based suburban residential garden and ingestion rates based on dry weight for the SRAM-based rural residential/agricultural scenario. Obviously the same amount of produce can appear to be a very different amount if the moisture in the food is not counted.

residential/agricultural standards, despite its past commitment to use them.[59]

It is important to note that DTSC acknowledged in 2010 that what was important was not just the zoning for SSFL itself, but for the areas surrounding it, about which DTSC correctly stated "the Ventura County zoning maps specify that the site *and much of the surrounding area are currently zoned as rural agricultural*."[60] If contamination onsite is not cleaned up, it can continue to migrate offsite and pose risks for the land uses nearby, which includes agriculture and residences.

The PEIR is therefore deficient in that it breaches past DTSC commitments and contradicts longstanding DTSC policy by declaring (1) that whatever cleanup occurs at SSFL will be less protective than the cleanup standards in the AOCs, (2) less protective than a cleanup to background, and (3) less protective than a cleanup to agricultural standards. Furthermore, as shall be shown below, the stated commitment to a cleanup to standards protective of suburban residential exposure with garden are also broken. All of these past promises are not just abrogated, they are excluded from even consideration.

b. <u>The PEIR's Supposed Suburban Residential Standard from Appendix B is Actually Nearly 30 Times Less Protective than DTSC's Official Suburban Residential Standard</u>

It is asserted in the PEIR that it is using a suburban residential standard (with garden) as the maximum cleanup that DTSC will require for Boeing. However, it significantly misrepresents DTSC's own suburban residential garden standard and instead relies on one far, far weaker that would result in very much higher levels of contamination not being cleaned up.

The PEIR asserts that the SRAM identifies three alternative suburban residential cleanup standards: one involving no garden, one involving a garden from which the residents get 100% of their fruits and vegetables, and one involving a garden from which they get 25% of their fruits and vegetables. Each of these assertions misrepresents the actual situation.

The SRAM requires consideration of a suburban residential scenario in which the residents have a backyard garden. It divides the exposures into two components, direct contact with the contaminated soil (e.g., getting some on your hand) and ingestion from consumption of fruit from a fruit tree or vegetables like lettuce and tomatoes from a

[59] It should be noted that even with the errors leading to higher (less protective) rural residential RBSLs in PEIR Appendix B than appropriate, they are nonetheless more protective than the erroneous values used in the PEIR for suburban residential garden RBSLs (either the Appendix B supposed EPA default RBSLs or the Appendix K supposed 25% garden). Cleanup to all the land uses allowed by Ventura County land use designations, as the PEIR asserts it is based on, would thus involve considerably more cleanup of the Boeing land than the very small amount set forth in the PEIR.

[60] DTSC Response to Comments on AIP, *supra,* emphasis added

backyard garden. The separate components were spelled out so that one could more readily see which exposure pathways contributed what portion of the overall risk. But DTSC's official policy is that the two components must be added together, and it so directed Boeing. So the SRAM does not give an option of a suburban residential standard without a garden, for the simple reason that many residences have them and one has to protect people from that exposure.

It is asserted in the PEIR that the standard identified in the SRAM as the SRAM-based suburban residential garden is based on assuming 100% of one's produce comes from one's backyard garden. That assumption is then rejected as unrealistic. However, the SRAM-based suburban residential garden component of the Risk Based Screening Levels (RBSLs) is *not* based on assuming that 100% of the fruits and vegetables one consumes comes from one's garden. It was based on USEPA data about the *amount of homegrown produce people actually consume*. It then assumed, sensibly, that 100% of that homegrown produce, grown in contaminated soil, was contaminated (CF_p, the contamination fraction for that produce, =1).

The inputs for the SRAM-based suburban residential garden RBSLs are found in Table 2 on PDF page 1129 of the SRAM Rev.2 Addendum. The fruit ingestion rates for adults and children respectively are given as 0.3773 and 0.08145 kg/day and for vegetables as 0.3248 and 0.0849, with a CF_p=1. Note (a) at the bottom of the table states that these numbers come from the Tables 5-2 through 5-5 of the 2005 SRAM, and that "Adult and child SRAM-based suburban residential garden fruit and vegetable ingestion rates were adjusted to units of kg/day using the adult and child body weights of 70 and 15 kg, respectively." The referenced Table 5-2 is captioned "ingestion of homegrown food/fish" and states explicitly that the fruit and vegetable ingestion rates are the "value of *homegrown* fruit consumption in the Western U.S." and the "value of *homegrown* vegetable consumption in the Western U.S.," citing as the source of those values EPA's Exposure Factors Handbook.[61] And indeed, Tables 13-12 and 13-13 of the EPA Exposure Factors Handbook provide "intakes of homegrown fruit" and "homegrown vegetables" for the Western U.S. The values given by EPA for homegrown ingestion rates are identical to the values found in Table 5-2 of the SRAM (5.39 and 4.64 g/kg-day respectively, for the 90th percentile). And these values yield the values in Table 2 on PDF p. 1129 of the SRAM-2, when converted, as the note to the table says, into kg/day by multiplying by body weight.[62] Thus, the SRAM-based suburban residential garden RBSLs are based not on 100% of all the produce one eats coming from one's garden, but 100% of all the produce one eats from one's garden coming from one's garden.[63] The

[61] emphases added. Table 5-2 is found at PDF p. 277 of the SRAM-2, which incorporates material from the 2005 SRAM. (The table gives the fractions of those fruit and vegetables totals that are local as 1, because the ingestion rates given are for homegrown produce in the first place.)

[62] e.g., 5.39 g/kg-day x 70 kg (70,000 g, adult)= 0.3773 kg-day fruit, the precise value in the table.

[63] As described in the SRAM at pdf p. 109, "Exposure parameter values for residential ingestion of homegrown fruits and vegetables are provided in Tables 5-2 and 5-3 for

values assumed are values based on actual USEPA data as to how much produce people eat that is homegrown. The fraction of the food from the garden that is contaminated is rightly assumed to be 100%.

Remarkably, the PEIR rejects the use of the official DTSC value for suburban residential garden exposure, the (DTSC-approved) "SRAM-based suburban residential garden." It does so, in part, by falsely asserting it is based on assuming that 100% of all of one's produce is homegrown, which, as we have seen is not the case. Instead, the PEIR proposes to use what it describes as a 25% garden scenario, where 25% of all the produce one eats comes from one's garden. It claims that this is what is found in Appendix B of the PEIR as "EPA-default suburban residential garden." But those values are not in fact based on the EPA defaults, not based on 25% of one's produce coming from one's garden. Furthermore, DTSC had told Boeing that the official suburban residential garden value was the SRAM-based one. Boeing asked to be allowed to include what it claimed was the EPA-default value for purely "informational" purposes. DTSC allowed it for that limited purpose, but made clear DTSC had not approved its use at SSFL and that the approved values were the SRAM-based garden values.

The PEIR, however, mischaracterizes this and claims that the SRAM presented three alternative suburban residential RBSLs (direct contact with the soil, SRAM-based garden, and "EPA default" garden) and that any of the three could be picked. That simply isn't the case. DTSC insisted that the direct contact and SRAM-based garden RBSLs be combined and that the "EPA default" garden was there just for informational purposes.

The PEIR claims that the "EPA default garden" RBSLs are just garden RBSLs with the assumption of 25% of one's produce coming from the garden rather than 100%. As indicated above, the SRAM-based garden was never based on such a 100% assumption, but was always restricted to how much actually was generally consumed from backyard gardens. But assuming *arguendo* the claim to be true, a review of the two sets of RBSLs makes clear that the standard the PEIR applies is not just a factor of four less protective (25% instead of 100%).

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adults and children, respectively. Deterministic values for adult and three- to five-year-old child consumption rates were obtained from USEPA (1997a) and *relate specifically to homegrown produce in the western United States.* Accordingly, the F term in the above equation was set at 1.0." (emphasis added) The F term is the fraction of produce assumed to be grown locally in one's garden. The USEPA document is the Exposure Factors Handbook, which provides data for actual consumption rates from gardens in the western U.S. Whereas other parts of the SRAM were changed in the update, this remained in effect; the updated table is on pdf p. 1129, which gives Table 5-2 as its source for the produce ingestion rates and contaminated fraction, and that table indicates the produce ingestion rates were just for how much came from the garden and the fraction was 1, and pdf. p. 109 explains the basis for Table 5-2.

We have compared the two sets of RBSLs in the attached Tables. As seen there, the values the PEIR says it intends to use are not just four times weaker, less protective, than the SRAM-based values, by 26-29 times so. It is clear that, despite the impression given in the PEIR, the weakened standards are not weakened simply by the SRAM-based values assuming 100% of one's produce comes from one's garden (which they don't) and assuming that the EPA presumes 25% (which it also doesn't), but additional errors have been made that result in dramatically weakened proposed cleanup levels.

Boeing, in its "for information only" supposed EPA-default garden RBSLs, assumed total amount of fruits and vegetables ingested by an adult as 0.0562 and 0.0285 kg/day, and the amount coming from one's garden as 25% of that.[64] The moment one looks at those numbers, one knows they are wrong. People eat far more than 56 grams of fruit and 29 grams of vegetables a day; people with gardens eat far more than 14 grams of fruit and 7 grams of vegetables from their gardens. These erroneous assumptions lead to the incorrect "EPA-default" suburban residential garden RBSLs Boeing put forward that are repeated in Appendix B of the EIR, and which the PEIR asserts (also erroneously, it turns out) is used in the PEIR as the maximum cleanup level for the Boeing site.

So how could the PEIR's supposed 25% garden standard be not four times weaker than the 100% standard, but nearly 30 times so? How could the former standard assume one consumes only 14 grams of fruit and 7 of vegetables from one's garden (less than an ounce total), while the latter assumes 377 and 325 grams respectively? It is in part because Boeing's supposed "EPA Default Suburban Residential Garden RBSL" is not in fact based on the EPA defaults whereas the SRAM-based garden scenario is, as we have seen, based on USEPA actual data on homegrown produce consumption.

Boeing got its total produce consumption rates indirectly from an old draft EPA document[65] but either failed to notice or did notice but failed to acknowledge that the values given were (1) not total consumption rates, but based on actual amounts from a garden [the note at the bottom of the table states: "the recommended ingestion rates are based on national average *home produced* consumption rates" (emphasis added)], and (2) were in dry weight (DW), not wet weight, whereas the formulas in the SRAM, and the values for the SRAM-based suburban residential garden RBSLs, are based on the actual, wet weight. In other words, they used values with the wrong units. It is not a matter of mixing apples and oranges; it is a matter of using the actual weight of the apple for the SRAM-based RBSL and then using the weight of dried apples for the alternative RBSL, making it appear that one is eating far less apples. These two errors largely explain the 26-29-fold lower RBSLs. Boeing double-counted: the ingestion rate was not total produce ingestion, but only the ingestion of home-grown produce, so multiplying that rate by 25% to supposedly get to the amount home-grown erroneously improperly reduced the actual home grown ingestion rate four-fold. And then, by using dry weight instead of, as the SRAM-based garden RBSL correctly did, the actual weight for the ingestion amount, it further artificially reduced the amount of produce ingestion. (One is

[64] Table 2, SRAM-2, PDF p 1129.
[65] Table C-1-2, source given in RAIS

supposed to count the actual weight of the lettuce, for example, not merely the weight of it if you drove off all the water.)

The final version of the draft EPA document that was supposedly the source of some of the erroneous inputs in Boeing's "EPA default garden RBSL" states explicitly one is to assume a contamination fraction of 100% because the ingestion rate is based on the amount from the garden:

6.2.2.3 Percentage of Contaminated Food

The percentage of food consumed by an individual which is home-grown will affect exposure, because the HHRAP assumes that only the portion of an individual's dietary intake which is home-grown is impacted by facility emissions.

We recommend assuming that all food produced at the exposure location - i.e. the farm for the farming scenarios, and the home garden for the residential and fishing scenarios - is impacted by facility emissions. Only that portion of the diet produced at home (and therefore exposed to facility emissions) is of consequence in the risk assessment. As detailed in Section 6.2.2.2, the consumption rates we recommend represent only the home-produced portion of the diet. Therefore, by using consumption rates specific to home produced foods, we consider it reasonable to assume that 100% of those home produced foods are contaminated.

What Boeing and the PEIR purport to be the EPA default garden ingestion rates are thus in fact not the EPA defaults at all. The current EPA's Preliminary Remediation Goal calculator for radionuclides uses the following default intake rates for homegrown fruits and vegetables from a homegrown garden: 626.7 and 852.3 g/day, and a Contamination Fraction of 1 (100%).[66] Thus, if one were to reject the intake values of the SRAM-based suburban residential garden RBSL and use current EPA defaults for the intake values, they would *go up* from 377.3 and 324.8 g/day to substantially higher values, roughly doubling. They would certainly not go down by factors of 27 or 45, as claimed by Boeing and the PEIR.

In summary, the PEIR's claims that the SRAM-based suburban residential garden RBSL is based on assuming 100% of one's produce comes from one's garden and should therefore be rejected are false. Similarly, the PEIR's claims that the "EPA-default suburban residential garden RBSLs" are based on EPA defaults and the assumption that 25% of one's produce comes from one's garden and should be used in the PEIR are also

[66] *Biota Modeling in EPA's Preliminary Remediation Goal and Dose Compliance Concentration Calculators for Use in EPA Superfund Risk Assessment*, ORNL-TM-2016/328, p. A-7,8

erroneous. The PEIR Appendix B "EPA default suburban residential garden" RBSLs are not in fact based on EPA defaults; they aren't based on 25% of one's produce coming from one's garden; and they are nearly 30 times weaker than the DTSC-approved SRAM-based residential garden, which should be employed, as DTSC mandated in the SRAM in the first place. The mistake is due almost entirely to assuming a grossly erroneous value for the intake of homegrown produce, about $1/30^{th}$ – $1/60^{th}$ the actual values EPA had established based on data for actual homegrown produce consumption and which was used for the SRAM-based garden, and $1/60^{th}$ the actual updated values EPA now uses.

The RBSLs Set Forth in Appendix B Are, Despite Claims to the Contrary in the PEIR, Not Even Used, But Rather, Even Less Protective RBSLs from Appendix K Are, **~60 Times Weaker** than DTSC's Official Suburban Residential Garden RBSLs

The PEIR states that it is based on what it describes as the 25% garden standard, found in Appendix B as the supposed EPA-default suburban residential garden. As shown above, it is in fact neither based on 25% of one's produce coming from one's garden nor on EPA defaults, and breaches DTSC's prior determination that the SRAM-based garden should be used instead.

However, the PEIR does not in fact even use the Appendix B values, despite its claims to do so. Instead, one finds in Appendix K that it throws out all the values in the SRAM and uses new ones that are generally even less protective. Nearly half of the supposed 25% garden values are 60 and even 70 times weaker than the DTSC-approved SRAM-based garden RBSLs.

In the attached Tables, we have compared the values for which comparisons are possible (i.e., those chemical contaminants for which 25% suburban residential garden RBSLs are provided in Appendix K, Table 3) One sees that the RBSLs for what Appendix K calls 25% suburban residential garden are frequently twice as high (i.e., half as protective) as what the PEIR calls the 25% garden from the SRAM, as set forth in Appendix B of the PEIR as the "EPA default suburban residential garden." *More critically, the supposed 25% garden values in Appendix K are generally 60 or 70 times higher (less protective) than the DTSC official suburban residential garden value from the SRAM, the "SRAM-based suburban residential garden" RBSL.*

This is not disclosed in the PEIR. Only someone who would laboriously compare the tables buried in Appendix K with the SRAM-based suburban residential garden RBSL in Appendix B would discover the extraordinary weakening of protections proposed. And the flimsy bases for the weakened cleanup levels are quite buried as well. This is all at variance with the purpose of CEQA – public disclosure and transparency and meaningful opportunity to comment.

It is stated in the main volume of the PEIR that DTSC is rejecting from even consideration the SRAM-based suburban residential garden RBSL – i.e., its official suburban residential cleanup values – and the maximum that will be considered is what it

claims is the 25% garden RBSL. As seen above, those values are not, in fact, based on assuming that one consumes one-fourth of one's produce from one's garden, as claimed. Furthermore, if that were the difference, the value used in Appendix K should be one-fourth of the SRAM-based value, but instead is one sixtieth or one seventieth. Put differently, if those values were used as cleanup values, contamination concentrations 60 or 70 times higher than DTSC's official risk-based levels for suburban residences would be allowed to remain.

How did the authors of the PEIR manage to put forward such dramatically weakened standards? One cannot tell, because the sources for the numbers are not disclosed. The reader is informed that Appendix K is a summary of an analysis prepared by Boeing and a review thereof by DTSC[67], but neither the Boeing submission nor the DTSC review are made available. It becomes impossible to check the conclusory claims.

It is mentioned in passing that Appendix K employed assumptions altered from the DTSC-approved assumptions in the SRAM-2 Addendum. There is no explanation of why that would be appropriate. The SRAM-2 Addendum is the latest approved version of the assumptions to be used for risk assessment at SSFL. Apparently Boeing rejected some of the official assumptions, replaced them with others, and the authors of the appendix accepted those alterations. Yet there is no discussion of why those alterations, and not others, were appropriate, particularly when they breach the official SRAM.

A brief table in Appendix K (table 2) summarizes changes purportedly made to the SRAM assumptions. However, a review of the resulting revised RBSLs suggests that other changes, not disclosed, may also have been made, but it is difficult to ascertain precisely what in the absence of the underlying documentation that has been kept from public view. One can't get to the numbers given in the Appendix on the basis of the few changes in inputs disclosed.[68] This is another example of the continued pattern of hiding the bases for conclusions, preventing meaningful review and comment.

Most of the changed inputs from the SRAM that are disclosed are relatively minor in magnitude (e.g., changing adult body weight from 70 to 80 kg, reducing the period of exposure as an adult from 24 to 20 years (not very conservative, given that people often live in the same place for far longer than that), and fairly small changes to assumed skin

[67] Appendix K, p. 1

[68] For example, the overall factor by which the suburban residential garden RBSLs described in the PEIR as representing 100% garden and 25% garden differ is 26-29 times. Making the same changes, as identified in Table 2 in PEIR Appendix K, to both should result in the ratio between the 100% and 25% gardens remaining the same; however they don't. It would appear some other factor or factors have been altered from the Appendix B values and not disclosed in Appendix K, but one can't tell what factor(s) those might be because the Boeing submission on which Appendix K is based has been shielded from scrutiny.

contact area.[69] But one is quite large, reducing the mass loading factor (MLF) by nearly twenty-fold. Depending on the chemical, this change can produce a very large relaxation of cleanup levels, all things being equal. But as we discuss below, all things aren't equal, and the authors of Appendix K are engaging in a scientifically inappropriate form of cherry picking.

A number of factors affect how much contamination in soil will result in how much risk, given the same exposure scenario (e.g., suburban residential with a garden). Key among these are: (1) how much produce from the garden is assumed to be consumed (ingestion rate of home-grown fruits and vegetables, or IR_f and IR_v), (2) what fraction of that homegrown produce is assumed to be contaminated (the produce contamination fraction, or CF_p), (3) the mass loading factor (MLF, how much contaminated dirt gets on the plant), and (4) the soil uptake factor (BV, the soil to plant uptake factor, i.e., how much contamination in the soil is taken up into the plant via its roots). Updating one of these factors without updating the others will result in incorrect cleanup standards. If one picks as the sole key factor to alter one which weakens the cleanup standard – say, for example, significantly lowering the MLF – the result is artificially creating markedly non-protective standards.

That is precisely what has occurred here. And the flimsy basis provided for such a large weakening of protections – the citation of a single email from a USEPA staffer (with the recipient not even identified) that DTSC has repeatedly refused to release[70]—is indicative of the underlying problem in the PEIR of dramatic diminution of safety with the shaky rationale for such steps kept hidden behind a wall of non-disclosure. DTSC has repeatedly declined to make public the documents referenced in the PEIR and on which it relies, including this cited email. The refusal to release the email raises suspicion that its contents do not fully support the claim for allowing Boeing to avoid cleaning up large amounts of contamination.

Indeed, there is reason to believe that were the email released, one would find precisely that. In the face of repeated refusals by DTSC to make available the documents referenced in the EIR, a Freedom of Information Act (FOIA) request was submitted to EPA. The email does not say that EPA had officially changed the MLF from 0.26 to 0.0135, as claimed in the PEIR Appendix K, but rather a DTSC staffer asked EPA asked what the MLF might in the future be revised to for lettuce, and was told that no decision had been made but the *draft* figure for lettuce was indeed 0.0135. The EPA email author further indicated that some MLFs for other foodstuffs would be unchanging – not

[69] It is unclear why these changes to the SRAM are even being considered now, as the document cited as the source for all of them (with the exception of the MLF matter discussed above separately), pre-dates the SRAM-2 Update.

[70] The other changed values (which have little effect) are all from a single, published EPA document, creating the impression they are there to help bury the far more significant change, which is purportedly based solely on an undisclosed email. This is not a proper way to bypass the officially approved (by DTSC) Standardized Risk Assessment Methodology.

disclosed in the PEIR.[71] And most importantly, the EPA author of the email also indicated that the EPA default produce ingestion rates and soil uptake factors were likely to change as well.

Were these to increase – as they in fact did – they would counteract some or all of the effect of a reduced MLF. Indeed, when USEPA did officially revise the inputs, cleanup standards *tightened* rather than relaxed, despite change to the MLF. The EPA residential PRG for Strontium-90, for example, went from 6.6×10^{-2} pico-curies per gram (pCi/g) to 3.61×10^{-3} pCi/g, an 18-fold reduction, or increase in protectiveness.[72]

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[71] Despite the assertion by the DTSC author of the email to EPA, EPA was not changing the MLF values from dry to wet weight. Instead, EPA had long set an MLF of 0.26 as the conservative default for all intake, and in the new PRG calculator, was setting individual MLFs for each main fruit and vegetable. But, as EPA's Walker indicated in his email response, it was doing the same thing for soil transfer factors and produce ingestion rates. Those changes, which the PEIR does not disclose and does not include, counter to a significant degree the MLF change.

[72] EPA PRG radionuclide calculator, https://epa-prgs.ornl.gov/radionuclides/

[73] The other changed values (which have little effect) are all from a single, published EPA document, creating the impression they are there to help bury the far more significant change, which is purportedly based solely on an undisclosed email. This is not a proper way to bypass the officially approved (by DTSC) Standardized Risk Assessment Methodology.

its contents do not fully support the claim for allowing Boeing to avoid cleaning up large amounts of contamination.

Indeed, there is reason to believe that were the email released, one would find precisely that. In the face of repeated refusals by DTSC to make it available, a Freedom of Information Act (FOIA) request was submitted to EPA. t
The email does not say that EPA had officially changed the MLF from 0.26 to 0.0135, as claimed in the PEIR Appendix K, but rather EPA asked what the MLF might in the future be revised to for lettuce, and was told that no decision had been made but the *draft* figure for lettuce was indeed 0.0135. The email author further indicated that some MLFs for other foodstuffs would be unchanging – not disclosed in the PEIR.[74] And most importantly, the EPA author of the email also indicated that the EPA default produce ingestion rates and soil uptake factors were likely to change as well.

Were these to increase – as they in fact did – they would counteract some or all of the effect of a reduced MLF. Indeed, when USEPA did officially revise the inputs, cleanup standards *tightened* rather than relaxed, despite change to the MLF. The EPA residential PRG for Strontium-90, for example, went from 6.6×10^{-2} pico-curies per gram (pCi/g) to 3.61×10^{-3} pCi/g, an 18-fold reduction, or increase in protectiveness.[75]

This was due to other updated inputs that resulted in lowering rather than relaxing cleanup standards, changes which are selectively ignored in the PEIR when it changes the MLF but not the other countervailing factors. For example, the EPA default values for home-grown fruit ingestion rate have now increased to 626.7 g/day for adults and 260.5 g/day for children; for vegetables the rate increased to 852.3 and 249.6 respectively.[76] This represents about twice the values the SRAM-based garden is based on and about sixty times the erroneous values used in Appendix B as supposedly "EPA default-based garden." These current EPA defaults are based on EPA data about how much of each fruit and vegetable are actually consumed from backyard gardens. But they appear to not be reflected in the PEIR selective revisions.

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[74] Despite the assertion in the initiating email by the DTSC author, EPA was not changing the MLF values from dry to wet weight. Instead, EPA had long set an MLF of 0.26 as the conservative default for all intake, and in the new PRG calculator, was setting individual MLFs for each main fruit and vegetable. But, as EPA's Walker indicated in his email response, it was doing the same thing for soil transfer factors and produce ingestion rates. Those changes, which the PEIR does not disclose and does not include, counter to a significant degree the MLF change. Additionally, the DTSC initiating email also misstated the EPA PRG calculator user's guide then in effect; it did not have an MLF value for lettuce, or any other individual produce; it used a generic value for all.
[75] EPA PRG radionuclide calculator, *supra*
[76] *Biota Modeling, supra,* Table A-1. As stated on p. A-7 therein, these values are for the amount of homegrown produce, not total produce consumed. As such, EPA set the default contaminated fraction (CF) at 1 (100%), not the 25% used in the PEIR. See EPA Radionuclide PRG Calculator User Guide, https://epa-prgs.ornl.gov/radionuclides/prg_guide.html

Additionally, EPA used in its updated PRG radionuclide calculator more modern soil uptake factors (how much of a contaminant in soil is taken up by the plant), ones aimed at each main kind of fruit or vegetable, but the PEIR fails to use updated plant uptake factors for calculating RBSLs in Appendix K. We had an email exchange[77] with the same individual at EPA, Stuart Walker, who was the author of the email cited in the PEIR, and Stuart Dolislager at Oak Ridge National Laboratory (ORNL), who is responsible for many of the technical revisions in the EPA PRG calculator and is a primary point of contact for ORNL's Risk Assessment Information System (RAIS), for both radionuclides and chemicals, about the matter.[78] Dolislager indicated that for metals, the new values in the EPA PRG calculator for radionuclides should be used for chemicals as well. As to non-metal chemicals, Dolislager said the soil transfer values in the RAIS come from a formula for estimating such transfer included in a 1994 paper on uncertainty in human exposures[79] and that it would be far better to use "new equations for all kinds of soil to all kinds of plant by climate zone" and that he understands "there are better ones out there." Walker provided a document which he said showed that many of the European chemical models addressed homegrown produce. (We are not suggesting a quick modification of the transfer factors, nor use of any of the initial sources identified by Dolislager and Walker, but a thorough review of what are the most accurate and updated transfer factors internationally available. One should not change one factor, e.g., MLF, without a thorough review of changing the countervailing other factors that would drive the cleanup levels in the other direction.

In short, the DTSC-approved inputs are found in the current SRAM (Standardized Risk Assessment Methodology Rev. 2 Update) and produce the SRAM-based suburban residential garden RBSLs that should have been used in the PEIR, but were inappropriately thrown out and replaced with far less protective RBSLs that are based on erroneous inputs (Appendix B) and with even less protective RBSLs in Appendix K.[80] The Appendix K RBSLs ignore the approved SRAM assumptions and selectively change them. In particular, the MLF is altered from that in the official SRAM, an action which markedly relaxes the RBSLs, but increased EPA default homegrown produce

[77] Hirsch to Dolislager and Walker, October 27, 2017; Dolislager to Hirsch and Walker, October 30, 2017; and Walker to Dolislager and Hirsch, October 30.
[78] The RBSLs in Appendix B, coming from the SRAM, rely in part on RAIS inputs.
[79] The section of the 23-year-old paper touching on soil transfer factors is merely a page long and suggests a simple generic formula for the purpose of the author's Monte Carlo analysis about uncertainty and variability. It relies on information from three decades ago and hardly forms an adequate basis for estimating soil uptake factors for different kinds of plants, in different soils and climates, for an array of chemicals.
[80] DTSC directed Boeing to propose revisions to the SRAM to reflect current EPA and other information and defaults for the suburban residential garden scenario. Boeing has refused, and instead submitted a proposed SRAM revision that excludes the suburban residential scenario completely. As such, there is no official SRAM-based suburban garden set of RBSLs other than those in the SRAM-2 Update, and they should be used in the PEIR.

consumption rates are ignored and there is no effort to update the extremely old soil transfer factors. This kind of cherry-picking of input changes is scientifically indefensible and would lead to substantially weakened public protections. One should not be modifying the factors that relax standards (MLFs) for different produce types in the absence of as thorough an acquisition of new soil transfer factors for the same produce types, and the use of EPA's new homegrown produce consumption rates.

The PEIR Fails to Include Any Analysis of the Human Health Risks from Leaving Contamination Not Cleaned Up—No Comparison of Levels of Contamination Proposed to be Left in Place Against Human Health Risk Based Screening Levels

It is asserted in the PEIR that the Boeing cleanup will be risk-based. Additionally, the PEIR proposes to "leave in place" very large amounts of contamination in the DOE and NASA portions of SSFL--despite the AOC prohibitions on doing so—with no analysis of how much above human health Risk Based Screening Levels that would be. In the prior sections, we have demonstrated that DTSC has arbitrarily excluded from consideration for the Boeing cleanup the agricultural/rural residential scenario, despite having promised to clean the site up to all the land uses allowed by Ventura County General Plan and zoning designations of SSFL and the surrounding are, which include, as admitted in the PEIR, a wide range of residential and agricultural uses. We have shown how the PEIR does include purported RBSLs for rural residential use, but that they are erroneous by a large margin, in part because of large errors in the homegrown produce consumption rate used. We have similarly shown that the PEIR erroneously dismisses the use of the official DTSC-approved suburban residential garden RBSLs (the "SRAM-based" suburban residential garden) and proposes to use instead RBSLs that are on the order of dozens of times less protective, largely due to misrepresenting the SRAM-based garden as assuming 100% of one's produce comes from a backyard garden and then using trivially small homegrown produce rates far, far lower than the official EPA defaults.

What is most striking, however, is that despite the specification of erroneous RBSLs, and the ignoring of DTSC's official suburban residential RBSLs, they aren't even used to analyze the impacts of the proposed exempting from cleanup and leaving in place hundreds of thousands of cubic yards of contaminated soil. How much above risk based levels would the remaining contamination be? What risk values are associated with leaving contamination that high?

DTSC had required Boeing to perform risk assessments, and those are instructive. In one location, risks of 9.6×10^{-1} were estimated—96 out of 100 people would get cancer from the contamination if exposed. In other areas, risks of 3 in 10, 1 in 5, and so on are estimated. Post-cleanup, Boeing estimated risks remaining as high as 1 in 5 people getting an excess cancer from their exposure, 200,000 to 2,000 times DTSC's (and EPA's) official acceptable risk range.[81] For non-cancer risks, Boeing estimates levels

[81] For a detailed analysis of the Boeing risk assessments, see the Rincon et al. analysis submitted by Physicians for Social Responsibilty. Also, see the letter of December 15,

hundreds of times higher than the required Hazard Index of 1, above which there is supposed to be cleanup. These extraordinary risk estimates, as high as they may be, may still be low, since they are based on suburban residential cleanup levels, rather than the rural residential standards which should be more protective and are required because of Ventura County land use designations.

These numbers from Boeing's own risk assessments are critical. Even if the site were not used for agriculture or residences in the future (although those were its past uses), those are the current uses surrounding the property. Even assuming some dilution or dispersion (and there are mechanisms that could concentrate rather than reduce concentrations that have migrated), the risk estimates are so high that people living and working near the site could still be exposed well above DTSC risk goals if the site isn't fully cleaned up.

What is remarkable about the PEIR is that it contains no assessment whatsoever of the risk from what it proposes – leaving much of the contamination not cleaned up, assumed for all of the alternatives identified. There are hundreds of pages about purported negative impacts of doing the cleanup, but nary a word about the negative impacts of the contamination itself and the effects of not cleaning it up.

Indeed, DTSC told Boeing to remove the embarrassing risk assessments from its prior submissions, purportedly to await a revised approved SRAM, which does not exist.[82] When questioned in June about this, and how an EIR could be issued without estimates of the risk from the proposed plans to avoid cleaning up much of the contamination, DTSC and CalEPA indicated they would do the risk assessments themselves, and they would be in the EIR. However, that didn't happen, and the PEIR is completely silent on the risks from the contamination and from leaving it not cleaned up. The public – and decision-makers -- are not informed how much against risk-based levels the contamination would remain under the various options being considered. On one side of the ledger in the PEIR is a parade of horribles, exaggerated claims about impacts from the cleanup; but on the other side of the ledger, the impacts of the radioactive and toxic chemical contamination and of not cleaning it up, the ledger is empty. And not because of a lack of risks, but the opposite, and a complete failure to disclose those impacts, a failure that goes to the heart of the transparency and disclosure requirements of CEQA.

The PEIR puts forward vague proposals to exempt from cleanup unspecified but clearly very large amounts of contaminated soil . But nowhere does it tell the public how much of which particular contaminants are in those areas that wouldn't get cleaned up, nor by how much they exceed risk-based levels. This is a fundamental failure.

2015, by elected officials to DTSC Director Barbara Lee about these extremely high estimated risks.

[82] In response, Boeing refused the DTSC direction and instead submitted a proposed SRAM revision that would remove the suburban residential exposure scenario (and rural residential as well) completely from the SRAM.

The PEIR Fails to Include Any Analysis of the Ecological Health Risks from Leaving Contamination Not Cleaned Up—No Comparison of Levels of Contamination Proposed to be Left in Place Against Appropriate Ecological Risk Based Screening Levels

Just as the PEIR fails to provide any information about potential impacts on public health from its proposals to leave in place large amounts of contamination, not cleaned up, it similarly fails to perform any analysis or make any disclosure about the ecological effects of the contamination and of failing to clean up all or part of it. The PEIR does provide in Appendix B various Ecological Risk Based Screening Levels (EcoRBSLs), but remarkably, nowhere in the PEIR is there disclosure of the particular contaminants or their concentrations in the places proposed to not be cleaned up, nor any comparison of those levels to the appropriate EcoRBSLs. From what limited information can be gleaned from other sources, it would appear that the contamination proposed to be left in place would often greatly exceed the EcoRBSLs. The failure to provide this information in the PEIR is a fundamental failure, violating a central purpose of CEQA.

The argument given in the PEIR for leaving in place large amounts of contamination, despite the AOCs' prohibition on leave-in-place alternatives, is that the cleanup would purportedly harm biological receptors. But a key purpose of the cleanup is to undo the decades of damage to those biological receptors from the radiological and toxic chemical contamination. This is never addressed. Nor is the degree to which the contamination proposed to be left in place would exceed the EcoRBSLs which purportedly define the pollution levels at which those biological receptors would be harmed.

The cleanup levels considered in the PEIR for the Boeing property, the supposed 25% garden, also described as EPA defaults (both of which characterizations are, as shown, above, a misrepresentation), far exceed the appropriate EcoRBSLs for many of these contaminants. The difference is often a factor of hundreds or thousands. See attached Tables.

In Appendix K, without disclosing the decision or any basis for it, the wrong EcoRBSLs are considered. The original ecological ecological screening levels of the SRAM were based on EcoRBSLs supposedly based on No Observable Adverse Effects Levels – i.e., contaminant levels expected to produce no adverse effects on the biological receptors. Boeing asked in a SRAM revision to also include, "for informational purposes," a second set of EcoRBSLs, based on concentrations that would purportedly produce mid-level adverse effects. It called these "High Toxicity Reference Value" (High TRV) EcoRBSLs. Somehow, just as the far less protective "for informational purposes only" mischaracterized "EPA default" suburban residential garden ended up in the PEIR being used instead of the officially approved "SRAM-based suburban residential garden," Appendix B gives both sets of EcoRBSLs, but Appendix K ends up using the High Toxicity Reference Value EcoRBSLs, which are based on significant adverse effects, rather than the required Low Toxicity Reference Value EcoRBSLs which

are based supposedly on NO observable adverse effects. This questionable decision is not called out in the PEIR, nor is any basis given for it. The values used in Appendix K are often hundreds or thousands of times less protective than the Low TRV, No Observable Adverse Effects Levels, from Appendix B and the SRAM. See attached Table.

The attached tables compare the difference between the two EcoRBSL sets. One sees that the High TRV EcoRBSLs Boeing put forward for informational purposes only in the SRAM, and which are nonetheless used in the PEIR rather than the Low TRV EcoRBSLS, are far less protective than the Low TRV EcoRBSLs that should have been used. Furthermore, as one can see in Appendix B, for many contaminants, in addition to to Low and High TRV EcoRBSLs which are put forward for mammals and avian species, EcoRBSLs are also enumerated for terrestrial plants and soil invertebrates and sometimes those RBSLs are also lower (more protective) than the values used in Appendix K. In addition to the use of both human health and EcoRBSLs that are far higher (less protective) than appropriate, Appendix K also arbitrarily assumes that contamination above even those RBSLs will not be cleaned up, exempting from cleanup soil that is 2-3 times the weak, non-protective RBSLs used therein.

For the NASA and DOE portions of the property, there are no comparisons provided in the PEIR of the contamination levels in areas proposed to be exempted from cleanup against the EcoRBSLs (and those should be the lowest, most protective RBSLs). The argument that one is avoiding cleanup in order to protect biological features rings hollow if there is no disclosure how doing so would result in contamination levels far above the levels DTSC estimates would harm those very biological receptors.

For the Boeing portions of the property, there similarly are no comparisons to the appropriate protective EcoRBSLs provided for the contamination levels in areas proposed to be exempted from cleanup (either by use of the extraordinarily weak cleanup standards proposed or by additional contemplated exemptions from even those standards). The purported harm from cleanup is discussed at great length, whereas the real harm to biological receptors from contamination by plutonium-239, strontium-90, cesium-137, perchlorate, dioxins, PCBs, heavy metals etc. is not analyzed at all.

As was the case with the human health RBSLs discussed earlier, not only is there no comparison of the contamination levels to be left in place against any RBSLs, and not only are the wrong set of RBSLs employed, but the RBSLs reported in Appendix B, reprinted from the SRAM, appear scientifically questionable and insufficiently protective. The High Toxicity Reference Value EcoRBSLs, at times inappropriately called in the SRAM low observable adverse effects levels (LOAEL), sometimes described as medium effects, appear based on effects as high as 50% mortality or 50% reduction in reproductive capacity. Using as a cleanup value levels that are estimated to kill half of those exposed or reduce their reproduction by 50% cannot possibly be justified.

Additionally, even the Low Toxicity Reference Value EcoRBSLs included in Appendix B and the SRAM do not appear to be true No Observable Adverse Effect Levels (NOAEL). Instead, many are based on taking the level that would produce 50% mortality or reduction in reproductive or other key functions and merely assuming that at $1/5^{th}$ the concentration there is zero adverse effect. This assumption appears based on no scientific evidence whatsoever, but goes back to a short paper from several decades ago by a DOE employee that used that assumption based on his own "judgment." The High TRV EcoRBSLs should be abandoned, as they involve significant harm to biological receptors, and the Low TRV EcoRBSLs should be substantially tightened, so they truly represent No Observable Adverse Effects Levels.

The situation is even worse for the values given for terrestrial plants and soil invertebrates (the Low and High TRV EcoRBSLS discussed above are limited to mammals and birds.) As DTSC noted in comments on the SRAM[83]:

> Most plant TRVs are not adjusted to a "no effect" level; this is also true for the soil invertebrate TRVs used to calculate the EcoRBSLs. *Most of these are acutely lethal doses*, concentrations such as LC_{50}s [lethal concentration to 50% of the organisms exposed], divided by an uncertainty factor of as little as 5, to estimate a LOAEL. *As such, if these EcoRBSLs are exceeded, it is generally more likely that impacts will occur to these communities than if the low EcoRBSLs are exceeded for mammals and birds,* although there is *also a large degree of uncertainty regarding these TRVs, as they are often based on acute studies which may not be accurate predictors of chronic effects*.

As one can see from perusing the EcoRBSLs in Appendix B, the RBSLs for plants and invertebrates are often given as far higher than the RBSLs for birds and mammals; that is not because the chemicals are less lethal to the former, but because the assumptions used for calculating them are so non-protective.

In summary: (1) the PEIR is deficient in failing to compare contaminant levels proposed to be exempted from cleanup against the appropriate, protective Risk Based Screening Levels for harms to biological receptors, (2) the wrong EcoRBSLs, ones that are non-protective, are used in Appendix K, ones that by definition would produce adverse effects on the biological receptors, (3) and the numerical values for all categories of EcoRBSLs in Appendix B are scientifically questionable and insufficiently protective, with insufficient evidence to support claims that any represent true "no observable adverse effect levels." Whereas the PEIR is premised on the claim that cleanup would harm biological receptors, it is the decades of polluting the SSFL environment that has harmed them and will continue to do so if the contamination is not cleaned up, and the PEIR wholly fails to analyze the impacts on the biological receptors of failing to meet the commitments for a full cleanup of the pollution that has damaged their environment.

[83] SRAM pdf p. 1580, emphasis added

Soil Volume Estimates for DOE and NASA Are Artificially Inflated and for Boeing Artificially Deflated

A central aspect of the PEIR is the estimate of how much contaminated soil there is and how much of it would be remediated. However, most of the key numbers are missing from the PEIR and those that are presented appear to have little validity, and virtually no basis for them is provided. They appear to come not from DTSC but from the Responsible Parties themselves. In the case, of the DOE and NASA portions of the property, the values appear to have been inflated so as to push for breaking out of the AOC cleanup requirements. In the case of the Boeing portion, the proposed cleanup volumes appear to have been dramatically understated, so that the maximum cleanup Boeing would have to do is a tiny fraction of the amount of contaminated soil in their areas.

The estimated soil remediation volumes are found in Table 3-3. The acreage estimates are in Table 3-2 and shown in Figure 3-5. Even a cursory review suggests that the values are highly questionable. For Area IV, the DOE area, virtually the entire area is colored in as contaminated. 92% of that contamination is identified as chemical, rather than radioactive.[84] Yet the SSFL areas that would be expected to be more heavily contaminated with chemicals—the rocket testing Areas I, II, and III—are claimed to have considerably less contamination requiring cleanup. No explanation is given as to how DOE managed to so badly contaminate virtually its entire area, and with which chemicals and where they came from, nor why the other areas which presumably dealt with more chemicals and had more airborne releases that could settle on soil are claimed to have instead significantly less.[85]

Figure 3-5 also suggests almost complete contamination within the Area IV boundaries and generally no contamination on the other side of the line, something which is scientifically quite improbable. See, for example, the southern and southwestern boundaries of Area IV shown on Figure 3-5; on one side, full contamination, on the other, purportedly none.[86] For the boundary with the NBZ, only small traces are colored in on the NBZ side, whereas virtually the entire Area IV on the other side of the boundary is colored in as contaminated. Again, this is highly improbable scientifically.

The bases for these assertions, however, are hidden from public review. The sole sources for the DOE and NASA volume estimates are from DOE and NASA themselves,

[84] Table 3-4 indicates only 91,000 of the 1,260,000 cubic yards of soil estimated in the DOE area is radioactively contaminated, the rest being due to chemicals.
[85] We recognize that part of this difference is due to the grossly non-protective cleanup standard assumed in the PEIR for the Boeing portion of the property, but that does not explain the difference with the NASA portion.
[86] The AOCs require cleanup of contamination that extends across area boundaries.

and DTSC has refused to make them public.[87] The estimate for the DOE volume comes not from DTSC but from DOE, and a single DOE document at that—one which has not been made public. It is listed in the references as an email from a DOE staffperson to DTSC on April 23, 2015, but like virtually all of the information that forms the basis for the PEIR, DTSC has refused to release it. Similarly, the soil remediation volume estimate for the NASA part of the property comes not from DTSC but from NASA. It too is simply an email from a NASA staffer to DTSC, dated June 17, 2015, and again, DTSC has refused to allow the public to see it. There is no way that the public can perform a meaningful review of such important aspects of the PEIR when DTSC shields from public view the very basis for the assertions contained therein. This is one more example of how DTSC has failed to comply with CEQA in this matter.

Given DTSC's shielding from public review the actual bases for the questionable volume assertions, the public is left to infer from other documents the likely causes of the errors. DOE previously issued volume estimates[88]—prepared in fact not by DOE but by Boeing's contractor—which was released by DOE during its scoping proceeding for its EIS. This document was heavily criticized, particularly by the Southern California Federation of Scientists (SCFS).[89] The SCFS critique was totally ignored in the PEIR by accepting without question the DOE (and similarly troubled NASA) estimates.

As SCFS indicated, the estimates appeared significantly inflated by questionable assumptions. DOE assumed contamination went all the way to bedrock, even when there was no evidence that was the case; that it extended laterally through soil until there were rock outcroppings, even when there was no evidence; that entire pond areas were contaminated if there were one or two samples that were positive, even without evidence that the rest was contaminated; and so on. We incorporate herein the SCFS critique.[90]

Additionally, a significant part of the questionable volume estimates seems to be tied to questionable handling of the TPHs. DOE and DTSC themselves have raised questions whether the purported detects of TPHs all represent contamination or whether may represent naturally occurring material unrelated to SSFL, which wouldn't be subject to a cleanup requirement. None of this is addressed in the PEIR. The reader is merely given a conclusory number, with no basis provided, the sources not made public, and the

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[87] The PEIR notes (see fn. 1, p. 3-1) that the information in that chapter was produced "in conjunction" with the Responsible Parties, but in fact, the involvement went much farther. Documents obtained under the Public Records Act indicate that the RPs were allowed to draft, edit and revise much of the PEIR.

[88] Rough Order of Magnitude Estimates for AOC Soil Cleanup Volumes in Area IV, and Associated Truck Transport Estimates based on DTSC Look-up Table Values – DRAFT, memo from David Collins, Mark Sherwin, Dixie Hambrick (MWH) to John Jones and Stephanie Jennings of DOE, September 4, 2013

[89] March 1, 2014 Statement at DOE Scoping Hearings

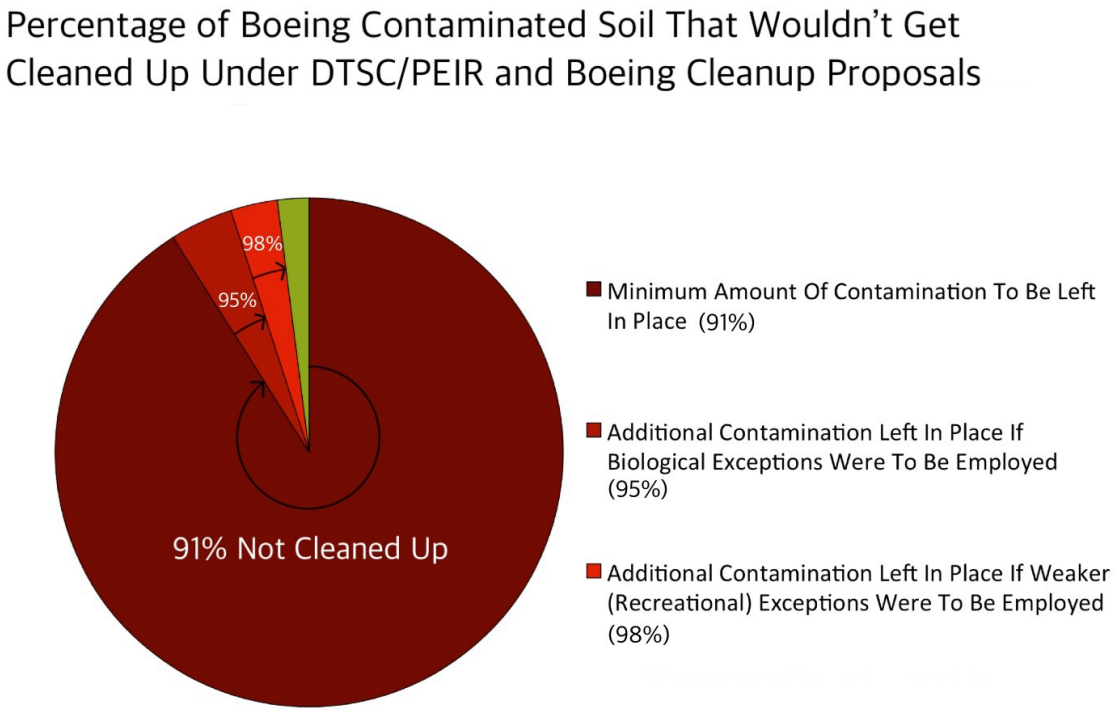
[90] *id.* One issue raised by SCFS, that of inappropriately counting fluffing of soil when estimating volumes, appears partially addressed in terms of volume estimates (but not clearly so regarding trucks).

past criticisms not addressed. Furthermore, no basis is provided for the claim that one side of the boundary lines is virtually completely contaminated and the other side clean or nearly so. In short, the volume estimates for the DOE and NASA areas are questionable and without any basis provided that can be publicly reviewed. They appear designed primarily for polemical purposes—to attempt to scare the public about numbers of trucks necessary or amount of land that would be affected on the one hand and to make it seem there is virtually no offsite contamination on the other, and therefore support breaking out of the AOC cleanup commitments.

As to the Boeing portion of SSFL, none of the tables or figures, or the PEIR text itself, gives any data as to the extent of contamination in the Boeing areas, a principal failure of the PEIR and at odds with CEQA's disclosure and environmental analysis requirements. The PEIR fails to disclose how much contamination, with what contaminants, and at what levels and locations. This omission makes it impossible to determine how much contamination, of what kind and concentration, the PEIR proposes to exempt from cleanup. One cannot evaluate the environmental impacts without knowing what contamination is proposed to not be cleaned up.

One can make some very approximate estimates by assuming that for the operational areas, Areas I through IV, the percent of Boeing acreage that is contaminated is similar to that of the DOE area[91] and comparing then the estimated cleanup acreage and excavation and disposal volumes in the Boeing areas in Table 3-2 to the total Boeing acreage volumes, taking into account the suggested biological exemption areas shown in Figure 3-6. This would very roughly suggest that the *maximum* Boeing cleanup being proposed in the PEIR would leave about 95% of the contamination not cleaned up.[92] Furthermore, the PEIR suggests that the final cleanup could be considerably less, as the acreage and volume estimates in Tables 3-2 and 3-3 are said to represent maximum volume estimates and that final cleanup standards could be even less protective.[93] The actual Boeing cleanup could thus end up leaving as much as 98 or 99% of the contamination not cleaned up.[94] It is, however, a central failure of the PEIR that this absolutely critical information is not disclosed and thoroughly discussed in the PEIR.

[91] This assumes the accuracy of the DOE volume estimates.
[92] Similar rough estimates of the amount proposed to not be cleaned up are reached based on the soil excavation estimates in Table 3-3 adjusted for the overall acreages involved.
[93] see footnote B, Table 3-3,
[94] Boeing is pushing for cleanup to an even less protective standard than the claimed 25% residential garden standard used for the volume estimates, which as shown earlier, is itself about 60 times weaker than the true residential garden standard. Its proposal is for what it calls a "recreational" standard, which is very much less protective than even the residential garden standard. See attached Tables.



The Boeing volume estimates included in Table 3-3 are misleading. To make it seem as though the Boeing soil cleanup volumes are larger than they in fact are, Boeing includes an estimate for how much soil would be subject to soil vapor extraction. Note that the DOE and NASA columns do not include such numbers. Vapor extraction doesn't remove contaminated soil; it merely sucks up toxic vapors from below ground surface, while leaving contaminated soil in place. Additionally, it is inappropriate to include in the soil volume estimates in this table estimates for *in situ* and *ex situ* treatment, as they don't involve excavation and offsite disposal, again making it appear that there is more volume requiring trucking than is the case; although such techniques should be encouraged. The PEIR doesn't explain why it includes *ex situ* and *in situ* treatment for Boeing soils but not DOE and NASA; such techniques should be used more on the Boeing property and encouraged across the site, and that is an alternative not considered in the PEIR.

The Boeing soil estimates are found in Appendix K, which in turn is based, it says, on an analysis submitted by Boeing and supposedly reviewed by DTSC. However, the Boeing analysis and DTSC review thereof have not been made publicly available, despite repeated requests to do so, and the public is unable to scrutinize the basis for many of the conclusory claims made in the Appendix. But buried in the Appendix (as opposed to being explicitly disclosed in the main PEIR itself) are indications of extraordinarily significant purported cleanup decisions, and in so doing, DTSC fails the CEQA requirements of making its proposals and their implications clearly disclosed. The Appendix is characterized as merely the basis for soil volume estimates in the main

body of the PEIR, but it is far more. One of the most fundamental issues of the PEIR – what cleanup standard will Boeing have to meet, at most – is buried in the Appendix.

We have discussed at length earlier how the claim in the main PEIR that Boeing would clean up to a suburban residential standard based on residents consuming 25% of their produce from a backyard garden is completely false, and we will not repeat it here. Suffice it to say that hidden deep in Appendix K, cleanup standards that are often 60 or 70 times less protective than ones based on actual consumption of homegrown produce are put forward.

There are numerous other aspects of Appendix K that improperly weaken cleanup standards, without disclosing what is really being done. For example, the PEIR states that the cleanup levels assumed for the Boeing property will be the human health RBSLs from Appendix B, which in turn come from the SRAM, yet Appendix K doesn't use those values but uses different, often even less protective numbers. The EcoRBSLs employed, as discussed previously, are the wrong EcoRBSLs, far higher than the ones from Appendix B and the SRAM that should be used. Even more critically, Appendix K proposes that only 71 chemicals have any limits at all, out of about three hundred chemicals for which RBSLs which are provided in Appendix B. In other words, Appendix K, without letting anyone know, in essence is proposing that more than 200 chemicals (about three quarters of the chemicals for which limits are identified in Appendix B) no longer have *any* limit, i.e., not be cleaned up no matter how high the concentration. This is an extraordinary change to make without revealing it to the public.

Other undisclosed weakenings of environmental and public protections are similarly buried deep in Appendix K without revealing they have been done. For example, despite the claim that the standards are risk based, the Table in Appendix K does not use risk-based levels at all for key chemicals and instead puts forward cleanup levels that turn out to be orders of magnitude higher than risk based levels. For example, monomethylhydrazine (MMH), one of the key chemicals from the rocket testing and one of the primary risk drivers for the contamination, is given a cleanup level that turns out to be 1.7 million times higher than the SRAM-based suburban residential garden standard.[95] (see Table attached) For n-Nitrosodimethylamine (NDMA), also associated with the rocket testing and extremely toxic, Appendix K provides a cleanup level that turns out to be more than 10,000 times higher than the SRAM-based suburban residential garden standard. PCB and dioxin cleanup levels are also provided that are not risk-based at all but are actually hundreds or thousands of times higher than the appropriate RBSLs. What has been done apparently – although no basis or detail is provided – is that Boeing

[95] Where monomethyl hydrazine has been detected, above these extremely high detection limits, Boeing estimated extremely high risks. It tried to dismiss the findings because of lack of other detects, but, as seen here, Boeing is using a detection limit that would make it impossible to detect it even at levels vastly about health and ecological risk levels. Furthermore, because of the high detection limits used, MMH contamination is likely to exist at many other places at the site that are not identified and which would also pose large risks.

has set extremely high reporting limits for the chemicals that are among the primary risk-drivers, i.e., set limits of detection so high that it can't "see" the contaminants at all unless the concentrations is hundreds, thousands, or even millions of times higher than the level estimated to produce a significant risk.[96] In so doing, the vast majority of the most dangerous chemicals would never get cleaned up; risks far higher than acceptable would remain; but Boeing would be allowed to save a lot of money by having to clean up only a tiny proportion of the chemicals.

MMH and NDMA were identified in the federally-funded SSFL epidemiological study by the UCLA School of Public Health as likely significant contributors to the excess cancers found among the exposed workers. PCBs and dioxins are also extremely toxic and among the main contaminants at SSFL. But by suggesting cleanup levels for these main contributors to SSFL risk that are orders of magnitude above risk based levels, and by using reporting limits vastly above risk based levels as well, large amounts of extremely toxic contamination would remain, with extremely significant risk levels.

In addition to not disclosing the use of reporting limits and cleanup levels far too high to capture contaminant concentrations that pose a significant human health or environmental risk, the PEIR fails to disclose that the actual Boeing measurements for all contaminants were based on Soil Characterization Levels (SCLs) that came from suburban residential RBSLs *without* a garden at all, levels orders of magnitude higher (less protective) than the required SRAM-based suburban residential standard with garden. In other words, the SCLs were based merely on getting a bit of soil on your hands or other similar direct contact, with no ingestion whatsoever of fruits or vegetables from the contaminated ground. DTSC has directed that the garden pathway must be included. The PEIR furthermore states that the alternative of cleanup to a standard without a garden has been removed from consideration, and that a significant fraction of one's overall produce consumption must be presumed to be from a contaminated garden. Yet the SCLs used to characterize the contamination at the Boeing property were orders of magnitude higher than ones necessary to characterize contamination at a suburban residential garden level. So the entire dataset on which the PEIR sections on Boeing are based is erroneous, leaving out potentially very large amounts of contamination from consideration, even though it would have exceeded the risk based levels supposedly being used.

None of this is disclosed in the PEIR; the public is not on notice at all. Buried in a table in an appendix are the proposed cleanup levels in fine print, with no revelation of these matters. One is told in the main body of the PEIR that the proposed Boeing standards are risk-based and for suburban residents who gets a significant fraction of their produce from their garden. None of this turns out to be true, but there is no way for the public to know it, as it is not disclosed.

[96] Surely for contaminants that pose significant risk at small concentrations, every effort should be made to employ detection limits that can detect the constituent of concern at the lowest possible levels of concern.

Additionally, even with the extraordinarily non-protective and erroneous cleanup levels assumed in Appendix K, it goes on to then exempt from cleanup contamination that does exceed those levels, not presuming cleanup until the measured value exceeds two or three times the cleanup value. No rational basis for this is provided. And whereas the DOE inflated volume estimates appear to assume contamination all the way down to bedrock in the absence of any measurements that show that[97], Appendix K's volume estimates for Boeing are based on contrary assumptions that minimize soil volume estimates by assuming contamination extends down only 1 or 1.5 feet below the last measurement of contamination. Again, no explanation is provided as to why the assumed depth for the volume estimates for DOE and Boeing should differ, or why contamination on the Boeing land somehow can't go below a foot or so.[98]

No member of the public would ever be on notice that any of this was occurring, and have any meaningful opportunity for review of true alternatives or the impacts of this proposal. And there is no disclosure whatsoever as to how much contamination would thus *not* get cleaned up, nor how much above true health or environmental risk based levels the material not cleaned up would be. This is not the way under CEQA to handle one of the most consequential aspects of the entire project and program.

Adverse Effects of Cleanup Are Exaggerated; Failure to Enhance Possible Mitigation Measures; Assertions that Effects Are Significant Even After Mitigation Are Conclusory, with Little or No Basis Provided

Much of the PEIR is devoted to exaggerated claims about adverse effects of the cleanup. Repeatedly, it is asserted that these effects are significant, even after mitigation. Yet often little or no basis is provided to support these conclusory assertions.

For example, central focus is given to Braunton's milk-vetch (Astragalus brauntonii) and Santa Susana tarplant (Deinandra minthornii). The former is the only federally listed plant at SSFL; the latter is designated "rare" by the state. A thorough analysis by LandIQ, a biological consulting firm, attached hereto, concludes "In our professional opinion, the unavoidable impacts for these species related to soil cleanup to background levels as agreed to in the 2010 AOC can be reasonably mitigated with a combination of specific conservation, restoration, and management measures." The LandIQ analysis provides detailed information about how such mitigation can be carried

[97] As indicated earlier, the PEIR does not disclose the basis for the DOE and NASA volume assumptions, merely referencing emails from them that DTSC has refused to make public; an earlier volume estimate for DOE assumed, however, contamination in various settings extended throughout the soil column even if there were no evidence to support that presumption.

[98] The PEIR also assumes that the depth of contamination in areas proposed to be exempted from cleanup is half as great at the depth for the non-exempted areas; no basis is provided for such an assumption, which can tend to understate the degree to which proposed cleanup exemptions will fail to remediate soil that is contaminated.

out. Rather than repeat that information here, it is incorporated herein by reference.

It is important to note that much of SSFL, particularly the areas where past activities have resulted in contamination, is already disturbed from decades of construction and operation of reactors and test stands, etc. Furthermore, many of the species identified in the PEIR are said therein to thrive in disturbed soils; indeed, as the PEIR notes, the Braunton milk-vetch requires disturbance to trigger germination of dormant seeds. In any case, the treatment of impacts from cleanup appears overstated and under-supported and the identification of mitigation measures should be strengthened.

An extremely important deficiency is that the review of impacts on biological receptors is completely one-sided: much discussion about the negative impacts purported to exist from the cleanup, no discussion of the positive impacts from the cleanup (removal of radioactive and toxic contamination at levels well above the concentrations deemed to harm those receptors) and no discussion of the negative impacts on them from not cleaning up contamination. In particular, as stated earlier, there is no analysis of how exempting contamination from cleanup would result in pollution levels that far exceed the EcoRBSLs, i.e. levels above which there are observable adverse effects.

Failure to Accurately Describe the Project and Alternatives; Failure to Evaluate Appropriate Alternatives; Alternatives Considered Do Not in Fact Meet Project Objectives; Claims of No Impacts from No Project Alternative and Environmentally Superior Impacts from Reduced Cleanup Alternatives are Erroneous

As discussed earlier, the PEIR inappropriately dismisses from consideration alternatives that should have been included; indeed, many of these represent the cleanup standards DTSC had previously committed to employing. DTSC had previously promised, and said its procedures required, cleanup of the Boeing portion of SSFL to the agricultural/rural residential standard, which it said was equivalent to a cleanup to background, which is what the AOCs require. But the PEIR expressly removes from consideration even as an alternative a cleanup of the Boeing land to background, and states in sections other than that on alternatives that a cleanup comparable to the AOC requirements will not occur on that land; this despite past DTSC promises to the contrary. The cleanup to agricultural/rural residential standards, consistent with the County General Plan and zoning designations, also previously promised, is simply ignored. Furthermore, the PEIR removes from consideration cleanup to the SRAM-based residential garden standard, based on the false claim that it was based on 100% of one's produce coming from one's garden. The removal of these cleanup approaches from consideration violates both CEQA and DTSC's past commitments about what its procedures require as a cleanup standard for the Boeing portion of SSFL.

The alternatives that are presented are erroneously set forth. The supposed AOC alternative for DOE and NASA in fact violates the AOCs, which bar "leave in place" alternatives. This alternative as described, however, contemplates leaving in place large amounts of contaminated soil. The AOCs also cover all structures, debris, and

anthropogenic materials and require the disposal of all waste with radioactivity over background at licensed low-level radioactive waste facilities; yet this, and the other alternatives in the PEIR, asserts that the RPs can do whatever they wish with the buildings and their debris, and does not even require monitoring of a large number of the buildings from the nuclear area.

The alternative described as utilizing the AOC biological and cultural exceptions in fact, as shown earlier, proposes breaching the AOCs and employing exceptions that go far beyond those allowed in the AOCs. It therefore is incorrectly described as the AOC exceptions alternatives, when it is not.

The assertion that these alternatives meet the project objectives is false. Since the project objectives include complying with the cleanup agreements, and since all the alternatives put forward violate those agreements, they do not meet the project objectives. Furthermore, leaving in place contamination, in violation of those agreements, also does not meet the objectives of protecting public health and the environment. Since the PEIR, in a fundamental failure to comply with CEQA, analyzes only the supposedly negative impacts from cleanup activities and completely neglects to analyze the negative impacts of the contamination and of not cleaning it up, there is simply no basis for making such an assertion. Indeed, by definition, leaving in place, not cleaned up, large amounts of soil contaminated above background fails to meet the fundamental project objectives as set forth in the AOCs:

> The end state of the site ... after cleanup will be background (i.e., at the completion of the cleanup, no contaminants will remain in the soil above local background levels.[99]

Furthermore, all options considered--for the DOE, NASA, and Boeing portions-- fail to meet the project objective of cleanup sufficient to safely allow all of the land uses permitted under Ventura County General Plan land use designations and zoning. Finally, all options considered, for all of the parts of the property, would leave in place large amounts of contamination at levels in excess of both human health and ecological risk based levels, thus failing to meet the project objectives of protecting human health and the environment.

The PEIR fails to identify as the proposed project what it is supposed to be: a cleanup to background for the DOE and NASA properties and a cleanup to agricultural/rural residential standards, equivalent to background, for the Boeing property. This is what the 2010 AOCs require for DOE and NASA and what DTSC stated at the time that its regular requirements mandate for Boeing. But not only is that not the proposed project, it is not even an alternative in the PEIR.

Furthermore, the proposed project should be a cleanup to the DTSC's own officially approved SRAM-based suburban residential garden standard for the Boeing land, which should be the proposed project if there were some basis, which there is not, for ignoring the

[99] AOCs, Appendix B, p. 1

agricultural/rural residential standard. But it is not. Indeed, it is not even an alternative considered in the PEIR. These are fundamental defects.

The assertions about the environmentally superior alternatives are fully in error. The PEIR asserts that the No Project Alternative (no cleanup whatsoever of the radioactive and toxic chemical contamination) is the environmentally superior alternative and that it involves no adverse environmental impacts whatsoever. This is of course absurd. There is no basis whatsoever provided in the PEIR for this extraordinary claim, because in fact there is no consideration whatsoever of the negative impacts of the contamination or of not cleaning it up.

CEQA Guideline §15126.6(e)(1) states regarding the no project alternative:

> The specific alternative of "no project" shall also be evaluated along with its impact. The purpose of describing and analyzing a no project alternative is to allow decisionmakers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project.
>
> (emphasis added)

CEQA Guideline §15126.6(e)(2) continues:

> The "no project" analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved....
>
> (emphasis added)

The PEIR thus fails completely to meet the CEQA guidelines. It does not analyze at all what the adverse impacts of not cleaning up the contamination would be, what the existing contamination conditions are, or what would occur in the future regarding that contamination if the cleanup did not occur. The assertion that not cleaning up the radioactive and chemically toxic pollution would be the environmentally superior alternative and would have no impacts is incomprehensible and completely unsupported. The PEIR simply defaulted on analyzing any negative impacts; DTSC cannot use its failure to consider the harm from the contamination to defend a claim that there are no impacts from failing to clean it up.

Compounding this error, the PEIR similarly asserts that the alternative involving leaving in place vast but unspecified amounts of the contamination, in large measure by purported exceptions that go far beyond those allowed in the AOCs, is environmentally superior to what it purports to be an AOC cleanup. The more contamination left behind the better, claims the PEIR. This too has no basis in the PEIR—there is no analysis whatsoever of the environmental effects of the contamination proposed to not be cleaned up. Under these illogical assumptions, there would never be clean up of toxic and

radioactive contamination, anywhere. It is the contamination that poses the environmental impacts; it is the failure to clean it up that poses the risks; and the PEIR simply ignores entirely any analysis of the impacts from the contamination and that would ensue if DTSC allowed the RPs to walk away from their obligations to clean up the pollution for which they are responsible.

Furthermore, sensible alternatives are not even considered. For example, one could reduce truck and other impacts of cleanup by assuring that one does not remove clean soil. By requiring considerably more measurements to more accurately define the vertical and horizontal margins of contaminated areas, one could make sure that the only soil being removed is contaminated and non-contaminated soil is left in place. Furthermore, DOE and DTSC have raised questions about whether some Total Petroleum Hydrocarbons (TPH) measurements are inaccurate, measuring naturally occurring organic material unrelated to SSFL. If one could accurately resolve that matter it might also result in avoiding removal of soil that isn't in fact contaminated.

One could similarly reduce impacts by requiring far greater emphasis on less intrusive techniques such as *in situ* treatment of soils (whereby, for example, soils are treated to enhance biological decomposition of organic toxic chemicals in place). Only 15,000 cubic yards of soil are contemplated in the PEIR for such treatment, and an additional 15,000 cubic yards for *ex situ* treatment, according to Table 3-3, all in the Boeing area. This represents only about 1% of the soil estimated in the PEIR to be excavated and shipped. There is no explanation why such less intrusive *in situ* approaches cannot be relied on more heavily, nor why they cannot also be employed in the DOE and NASA areas.

Transportation Alternatives Not Adequately Addressed

The consideration of transportation alternatives (Appendix J) is similarly flawed. Sensible alternatives are dismissed out of hand or not even considered, while ones that make little sense are put forward. Cost and time estimates appear heavily inflated.

One questionable alternative put forward in Appendix J is to build a conveyor down Edison Road—to then put the soil onto trucks.[100] But taking the soil down Edison Road on trucks employing bimodal canisters and then simply transferring to train cars at rail locations close by is not even considered. Bimodal cannister options are rejected out of hand by the assertion trucks would still have to travel down Woolsey Canyon to get to the train (PEIR p. 6-9); but as we have shown, they could instead travel down Edison Road.[101]

[100] The PEIR at p. 6-9 rejects as an alternative conveyor to truck options, even though Appendix J uses it as one of its alternatives.

[101] Indeed, all truck to train options are rejected out of hand, for no defensible reason. PEIR p. 6-10.

The only conveyor alternatives considered are the afore-mentioned Edison Road to transfer to trucks, and something along North American Cutoff to a railspur. But the far shorter Middle Routes A and B and Western Conveyor Route identified in Figure 3 as initial routes considered were all dropped from consideration with no adequate reason. It is said that these don't go to the "preferred" rail site, but no basis whatsoever is given for asserting any deficiency for the rail location to which they do go.[102] Indeed, it appears that that rail site is not even considered. The one they prefer is preferred for no reason; others are not considered. It is said the land through which the conveyor would go is relatively undisturbed, but the conveyor uses very little land. And in order to avoid the impacts claimed from the truck traffic, and given that the conveyor could be an aerial one

[102] No reason whatsoever is given for failing to consider the Western Conveyor Route. There are generalized claims for not wishing to consider conveyors where there is no existing road, but there seems no basis for such a rejection of consideration.

with very limited ground footprint, and that any conveyor would be removed after use, this seems an unconvincing basis for refusing to even consider it.

Similarly, taking trucks down Edison Road to highway 118, passing few if any homes in the process, is considered but then declared environmentally inferior based on what appears a flimsy claim regarding impacts from improving the road. There is already a road there, Southern California Edison uses it to service the power towers along it, and it would appear overall impacts from transport would be reduced compared to the route proposed as the project. Additionally, the option of dispersing trucks along several routes so no one route gets all the traffic is not seriously considered. And, as indicated above, the options of bilmodal trucks down Edison Road to nearby rail and of conveyors down to rail via Middle Routes A or B or the Western Conveyor route are all either not considered at all or rejected out of hand. Finally, the consideration of the North American Cutoff conveyor options to rail seems to not evaluate the time or cost accurately. Given the cost for the cleanup itself, efforts to reduce impacts from truck traffic should not be given serious consideration, which the PEIR does not do.

The cost and time estimates appear inflated. For example, assuming over a million dollars to install lights at the rail loading location seems excessive. Much of the time presumed is said to come from CEQA review. However, this PEIR claims to be a Program EIR covering precisely these alternatives. Furthermore, the Consent Order was signed in 2007 and the AOCs in 2017; there is no reason that steps to put in place transportation alternatives were not taken long ago, given the extent to which the impact of trucks has been hyped as part of the effort to derail the cleanup. The environmental impacts of improving Edison Road or employing a conveyor to rail system seem minimal and readily reversible, and should be seriously considered if serious about trying to minimize transportation impacts.

One glaring deficiency in the PEIR transportation analysis is the failure to do a title search to determine what rights of way SSFL landowners may already have. For example, what easements already exist to the North American Cutoff, which was, though not disclosed in the PEIR, the main road into SSFL in the early days, named for North American Aviation, the predecessor owner and operator of SSFL. Does SSFL have any rights of way over Edison Road, the Runkle Haul Road, or Arness Fire Road, for example? Edison Road is for maintenance of the power lines that go up to and down from SSFL. What rights does S. Cal. Edison have to allow other use of that road? Does SSFL have any rights of way over any of the lands surround it? These questions are not addressed in the PEIR. It is assumed in the PEIR that SSFL would have to buy land through which these alternative routes pass. No consideration is given for simply buying temporary rights of way, or whether those rights of way are already possessed.

The analysis in Appendix J does nonetheless indicate the feasibility of trucks down Edison Road to the 118 Freeway and conveyors down the North American Cutoff to the railroad. It also indicates that aerial conveyors are considerably less expensive and have a smaller footprint than ground-based ones. So, with the options that were

considered and additional options that should have been, alternatives that can mitigate truck impacts seem credible and should be addressed more seriously.

A review of transportation alternatives was included in the report, *Preliminary Overview of Alternative Transportation Options for Santa Susana Field Laboratory Cleanup* by SSFL TRANSPORTATION OPTIONS TASKFORCE*,* August 7, 2014. It was provided numerous times to DTSC yet is not considered nor even referenced in the PEIR. We attach it here and incorporate its analysis herein by reference.

Boeing Easement

The PEIR notes that Boeing recently filed a conservation easement that it had entered into with the North American Land Trust. The PEIR rightly does not change the stated DTSC longstanding commitment and policy to require cleanup to all of the land uses allowed by Ventura County's General Plan designations and zoning, which, as we have discussed and Ventura has made clear, permit a wide range of agricultural and residential uses. Although we understand that Boeing has reversed its longstanding commitment to a suburban residential cleanup standard and is now pushing for cleanup to a far less protective recreational standard,[103] the PEIR rejects that as an alternative. Since it is not proposed as either the project or an alternative, we do not comment on it here. And were DTSC to subsequently reverse itself and propose that far weaker standard, or anything similar, we would strenuously object, as doing so would violate past DTSC commitments and policy and would be outside the matters evaluated in the CEQA review.

We do wish to make clear that we would oppose any use of that contaminated land as open space or park if that resulted in cleanup less than the promised cleanup to background. As DTSC itself noted, the lands surrounding SSFL entail a wide range of residential and agricultural uses. Not cleaning up the source of the contamination that can migrate offsite to the people who live and work nearby would result in continuing risk to them, irrespective of whatever use the site itself may be put to. The standard set forth in the PEIR, that DTSC relies on the local government's land use designations, is critical. Otherwise, every polluter would try to get out of its cleanup obligations by declaring the land it polluted as too polluted to use for anything except open space. The purpose of cleanup is to restore land so that all the uses which local government designations allow can in fact be safely undertaken.

We also note that the California Congressional sponsors of the Rim of the Valley legislation removed SSFL from Rim of the Valley proposed open space area because of the contamination there and to make clear Congress didn't want consideration of SSFL as open space so long as the promised full cleanup had not been completed.

[103] See letter from elected officials criticizing the Boeing reversal

[On a related matter, we wish to clarify for DTSC one matter related to who represents the people living and working near SSFL. We understand that DTSC may hear from one of more "neighborhood councils" purporting to be the elected representatives of people in the City of Los Angeles who live near SSFL. Neighborhood councils are, however, purely advisory bodies, established to provide advice to the Los Angeles City Council. It is the LA City Council which consists of the elected representatives of the residents of the City; the neighborhood councils (of which there are 96) merely provide advise the City Council, but it is the City Council that decides whether to take that advice, and it is the City Council, acting as here on legal matter through the elected City Attorney, that represents the City on all matters related to SSFL.]

Building Demolition and Disposal

The AOCs require cleanup of all soil to background and disposal of all wastes with radioactivity in excess of background at licensed low-level radioactive waste (LLRW) sites. "Soil" is defined in the AOCs are including all structures, anthropogenic materials, and debris. Buildings thus must be cleaned up to background and all debris above background from their demolition must be disposed of in LLRW disposal sites. The AOCs cover all soil, as so defined, in all of Area IV (the nuclear area), irrespective of who owns it (i.e., DOE has taken responsibility for the cleanup of all of Area IV, even though Boeing owns it.) Therefore, all buildings in the areas the AOCs cover must be cleaned up to background and all wastes above background disposed of at LLRW sites.

However, Boeing for some years was submitted to DTSC requests for approval to demolish buildings and dispose of their debris at other than licensed LLRW sites, even though the waste exceeded background. These actions were challenged in the Sacramento Superior Court in an action alleging, *inter alia,* CEQA violations in that these actions occurred without any CEQA review. The court has issued a temporary injunction barring DTSC from giving any further approvals, which remains in force at the present time.

In the PEIR, DTSC generally asserts that the cleanup and disposal of the contaminated buildings is outside the scope of the contemplated actions and outside its authority and will not be evaluated in the PEIR, aside from some general description. DTSC asserts it has no authority over or responsibility for the cleanup, demolition and disposal of the buildings, with a few limited exceptions, ignoring the express language in the AOCs including the buildings and all of Area IV.

Additionally, the PEIR suggests that DOE will take no measurements for radioactive contamination in many buildings and will treat them as non-radioactive even if there are no data to make that determination. Given the sketchy process history information from activities going back to the 1940s, and the widespread contamination in Area IV that is in no way restricted to buildings that DOE now designates as key radiological facilities, the determination to allow teardown and non-LLRW disposal of those potentially contaminated structures is a deficiency in the PEIR.

The cleanup of contaminated buildings at SSFL is obviously an integral part of the cleanup of SSFL itself. That cleanup and the associated disposal of radioactive and toxic waste is a critical part of what needs to be examined in terms of environmental impacts. Yet there is no analysis whatsoever of the potential impacts of allowing radioactive waste to be disposed of in landfills not designed or licensed for such waste, or to be recycled (e.g., radioactively contaminated metals recycled into the consumer metal supply, where they could end up in all sort of metal products to which the public would be routinely exposed). These are serious deficiencies in the PEIR.

The Program Management Plan is Deficient, and the PEIR Fails to Meet CEQA Requirements for Disclosure and Analysis of the Projects Actually Proposed

The PEIR is described as both a Program EIR and a Project-level EIR. However, almost all detail of the specific cleanup projects has been left out of the EIR. What cleanup standards will end up being employed, what areas will not be cleaned up, what contamination exists in the areas that will be proposed to not be cleaned up, and at what concentrations and how far above RBSLs that contamination will be, and the environmental impacts of not cleaning up that contamination –none of this is to be found in the PEIR. Instead, the public is told that the actual projects will not be disclosed until after closure of the comment period on the PEIR.

Attached to the PEIR is a draft Program Management Plan (PMP), which similarly contains virtually no information on what is in fact specifically proposed to be done. Instead, the PMP, like the PEIR, punts all the actual project proposals to the post PEIR-phase, doing an end run around the fundamental requirements of CEQA. The PMP indicates that the specific cleanup proposals, including what will get cleaned up and what won't, won't be submitted by the Responsible Parties until after the PEIR is finalized. The project proposals will come post-PEIR in the form of Corrective Measure Study submissions by the RPs. The PMP further indicates that DTSC contemplates doing no environmental review of those actual project proposals. It appears DTSC is attempting to issue a PEIR (which it claims is also project-level EIRs) with virtually no disclosure of what is being proposed, approve the hollow PEIR, and only then disclose what projects are being proposed and approve them without CEQA review. The brief discussion of initial activities suggests that what is really intended is to do just the initial activities and no further cleanup; but again, there is no disclosure or analysis of this prospect.

This appears to be part of the reason that the PEIR contains no analysis whatsoever of the impacts of leaving contamination in place. By arguing that the impacts have been enveloped by considering a maximum amount of cleanup, it would appear that DTSC hopes to subsequently be able to decide to instead leave in place very large amounts of contamination, without any disclosure during the CEQA review of those actual project plans nor any analysis of the impacts of not cleaning up that contamination. This would violate the core bases of CEQA – thorough disclosure of what is proposed, a hard look at alternatives, a detailed consideration of all of the environmental impacts from the proposed project and its alternatives, and serious efforts to minimize or mitigate those impacts. Here, the actual projects apparently being contemplated – breaking the

AOCs and the related commitment about full cleanup of the Boeing property, and instead cleaning up only a tiny fraction of the contamination – have been hidden from public review and environmental analysis. They are nowhere to be found in the PEIR. There is no reason for them not to be there; DTSC and the RPs have had many, many years since the agreements were entered into. Instead, there is a kind of bait-and-switch: a PEIR (and supposed project level EIR) released with the actual projects not disclosed, with them to be revealed only after the PEIR is finalized. This is an affront to the requirements of CEQA.

Failure of Transparency and Disclosure

At its heart, a CEQA document is supposed to be an instrument of transparency and disclosure. The public is to be put on notice, clearly and without obfuscation, or precisely what is being proposed. A hard look at genuine alternatives is to be included. The full range of potential impacts from the proposed project(s) and alternatives is to be assessed. An honest effort at identifying ways of mitigating impacts is to occur. The information necessary for review of the EIR is to be included, clearly and without obfuscation, in the EIR itself. Critical aspects of what is proposed are to be highlighted in the body of the EIR, not buried without explanation in obscure tables in appendices. All information necessary for review should be in the EIR, or if based on referenced material, that material should be made readily available for review as well. CEQA is a disclosure and transparency law, as said above; it is not a game of "hide the ball."

In this case, the fundamental project proposals are excluded from the PEIR, to be disclosed only after the comment period expires. How much contamination is proposed not to be cleaned up? Of what kind, and in what concentrations, and at what locations, and with what environmental impact? None of that is revealed in the PEIR. The draft Program Management Plan contains no detail, just generalities; but it does make clear that the actual projects will not be disclosed until after the conclusion of the PEIR comment period, essentially shielding from CEQA that fundamental matters CEQA is supposed to cover. DTSC wants to get the PEIR approved without the program or projects revealed, and only then to let people know what it really proposes to do. At that point, it will be too late; the extraordinary environmental impacts of failing to clean up plutonium-239, strontium-90, cesium-137, perchlorate, PCBs, dioxins, heavy metals, TCE, and hundreds of other very toxic materials will not have been analyzed in the PEIR, nor even will it have disclosed the actual plans to leave those poisons not cleaned up. This is not the way the public is supposed to be protected from toxic substances.

Most of what the PEIR relies upon has been kept hidden. DOE, at least, made available virtually all of its referenced documents as live links simultaneously with the release of its draft EIS for comment. DTSC, despite having an electronic "Document Library" on its SSFL website, did not do so. Requests to DTSC to make those documents available were ignored. The first email request received a response saying DTSC is pleased to make the referenced documents available, but only provided a handful that had already been made public. A follow-up email once again requesting the referenced documents and attaching a list of a subset of them was not even responded to.

California Public Records Act requests for a single referenced document still have not been responded to. One PRA request simply for the contract and MOU under which the PEIR was prepared—so as to see whether it was, as stated in the PEIR, performed for DTSC, or whether the contractor actually was contracted with one of the Responsible Parties—was evaded by DTSC, which said it would not provide the documents until three weeks after the comment period expires on the PEIR. Under CEQA, the documents should have been made readily available when the PEIR was issued, and certainly after requested. No PRA request should even be required. Yet both CEQA and PRA have been ignored, as DTSC attempts to shield from public scrutiny the material upon which the conclusory statements in the PEIR are purportedly based. It is difficult to draw a conclusion other than that the referenced material does not support the claims made in the PEIR and DTSC is actively attempting to frustrate the CEQA requirements of transparency and disclosure in order to prevent the public from discovering that and being able to comment accordingly.

This is not the way CEQA was intended to be carried out. SSFL is one of the most contaminated sites in the state. A full cleanup was promised. DTSC appears now to be breaking its cleanup commitments. And it appears to be evading its CEQA obligations in the process. We respectfully suggest a change of course, a complete reaffirmation of the promises for a full cleanup and rigorous compliance with CEQA.

Note: These comments, and associated tables, are being transmitted electronically via DTSC's comment webportal. A CD with exhibits is being sent separately by mail. For contact: dhirsch1@cruzio.com