



January 8, 2020

Peter Zorba  
Project Director  
Santa Susana Field Laboratory  
5800 Woolsey Canyon Road  
Canoga Park, CA 91304

by email to: [msfc-ssfl-eis@mail.nasa.gov](mailto:msfc-ssfl-eis@mail.nasa.gov), [peter.d.zorba@nasa.gov](mailto:peter.d.zorba@nasa.gov)

Re: Comments on Draft Supplemental Environmental Impact Statement for Soil Cleanup Activities at Santa Susana Field Laboratory

Dear Mr. Zorba:

The National Aeronautics and Space Administration (NASA) has recently issued a Draft Supplemental Environmental Impact Statement (DSEIS) for remediation of its portions of the Santa Susana Field Laboratory (SSFL). The new cleanup alternatives put forward in the DSEIS would violate the Administrative Order on Consent (AOC) that NASA executed with the California Department of Toxic Substances Control (DTSC) in 2010; the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §6901 *et seq*; and other legal requirements, as well as commitments made by NASA. The DSEIS itself also is at variance with the National Environmental Policy Act (NEPA), 42 U.S.C. §4321, *et seq*.

NASA's action is unlawful in terms of process and substance. If the agency were to follow the course of action it proposes in the DSEIS, Californians would be harmed and meaningful cleanup would be foreclosed for future generations. The decision by the Trump Administration NASA to issue this DSEIS sets the stage for abandoning huge amounts of chemically hazardous material and would consign this important land in Southern California, set in the midst of millions of California residents, to never be cleaned up. Collectively, the undersigned Natural Resources Defense Council, Committee to Bridge the Gap, and Physicians for Social Responsibility-Los Angeles urge NASA to withdraw the DSEIS and to immediately commence working with the State and the public to quickly reach compliance with the AOC that the agency signed nearly a decade ago.

## Background on the NEPA History of SSFL

On July 6, 2011, NASA published in the Federal Register a Notice of Intent to conduct scoping for and prepare an Environmental Impact Statement (EIS) related to demolition and environmental cleanup activities at the portions of SSFL it administers. (76 Fed. Reg. 39,443). NASA also solicited scoping comments in that notice.

The Director of DTSC wrote to the NASA Project Director for SSFL on September 19, 2011, directing that the “scope of the alternatives that NASA is proposing to evaluate in its EIS must be modified because all but one of the current alternatives are inconsistent with the AOC.”<sup>1</sup> This letter cited language in the AOC specifying that NEPA review be on “*how to conduct the cleanup to background defined in this Agreement*,” and thus that “[i]n order for NASA to continue in its commitment under the AOC, and to ensure that NASA’s NEPA documents are useful to the public, NASA must designate alternatives that exist, are plausible and are consistent with the AOC.”<sup>2</sup>

Concerned by NASA’s disagreement with DTSC on this issue, Senator Barbara Boxer convened a meeting with NASA Director Charles Bolden, DTSC Director Deborah Raphael, Cal-EPA Secretary Matt Rodriguez, and the Chair of the Council on Environmental Quality (CEQ) Nancy Sutley. As NASA would not otherwise conform its actions to address California’s concerns, it was agreed that CEQ would review the matter and issue a determination.

By letter dated June 19, 2012, CEQ Chair Sutley wrote with CEQ’s conclusion that NEPA does not require consideration of alternatives that are not feasible, and that alternatives that would violate the AOC thus need not be considered in the EIS, with the exception of the standard “no action” alternative.<sup>3</sup> Thereafter, on July 18, 2012, NASA issued a public statement from Project Director Allen Elliott, stating that in light of the input from Senator Boxer and CEQ, NASA would restrict its consideration of alternatives in the EIS to cleanup to background and the no action alternative.<sup>4</sup>

Thus, in July 2013 NASA issued a Draft EIS and in March 2014 a Final EIS for Proposed Demolition and Environmental Cleanup Activities at SSFL. Both the Draft and Final EIS complied with the AOC, directives from DTSC, and the guidance from CEQ, and considered as formal alternatives only the AOC cleanup to background and the no action alternative.

Now, NASA has published a Notice of Intent to prepare a Supplement EIS on soil remediation. (84 Fed. Reg. 13,725, April 5, 2019). Unlike the Notice of Intent for the original EIS, in this instance there was no opportunity provided to submit scoping comments. On October 25, 2019, NASA issued its Draft Supplemental EIS (DSEIS), the subject of the present comments. In this

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<sup>1</sup> Letter from Debbie Raphael, DTSC Director, to Allen Elliott, SSFL Project Manager, NASA, September 19, 2011 (Exhibit 1 hereto).

<sup>2</sup> *Id.* (emphasis added by DTSC).

<sup>3</sup> See Letter from CEQ Chair Nancy Sutley to Senator Barbara Boxer, Chairman, Committee on Environment and Public Works, June 19, 2012, (Exhibit 2). Also available as Appendix A to NASA’s March 2014 Final Environmental Impact Statement for Proposed Demolition and Environmental Cleanup Activities at Santa Susana Field Laboratory.

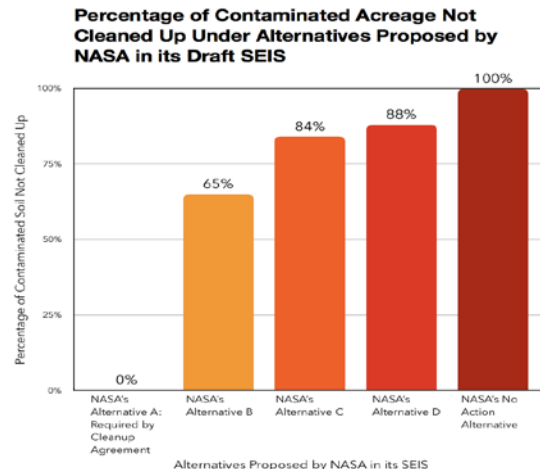
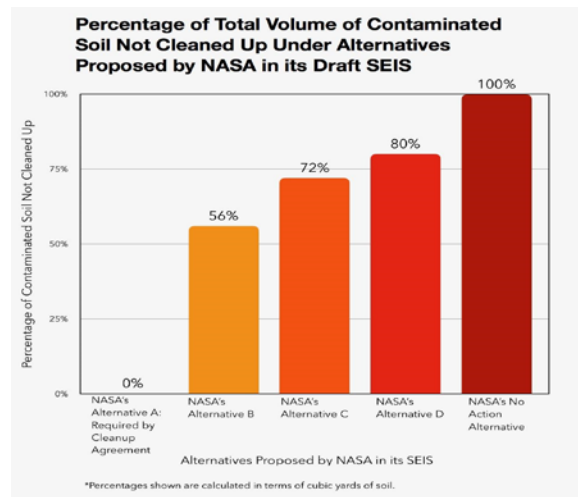
<sup>4</sup> Exhibit 3.

DSEIS, NASA ignored CEQ’s directive that alternatives that would violate the AOC need not be considered, broke the commitments described above, and proposed three new alternatives, each of which would be in breach of the AOC, as discussed below.

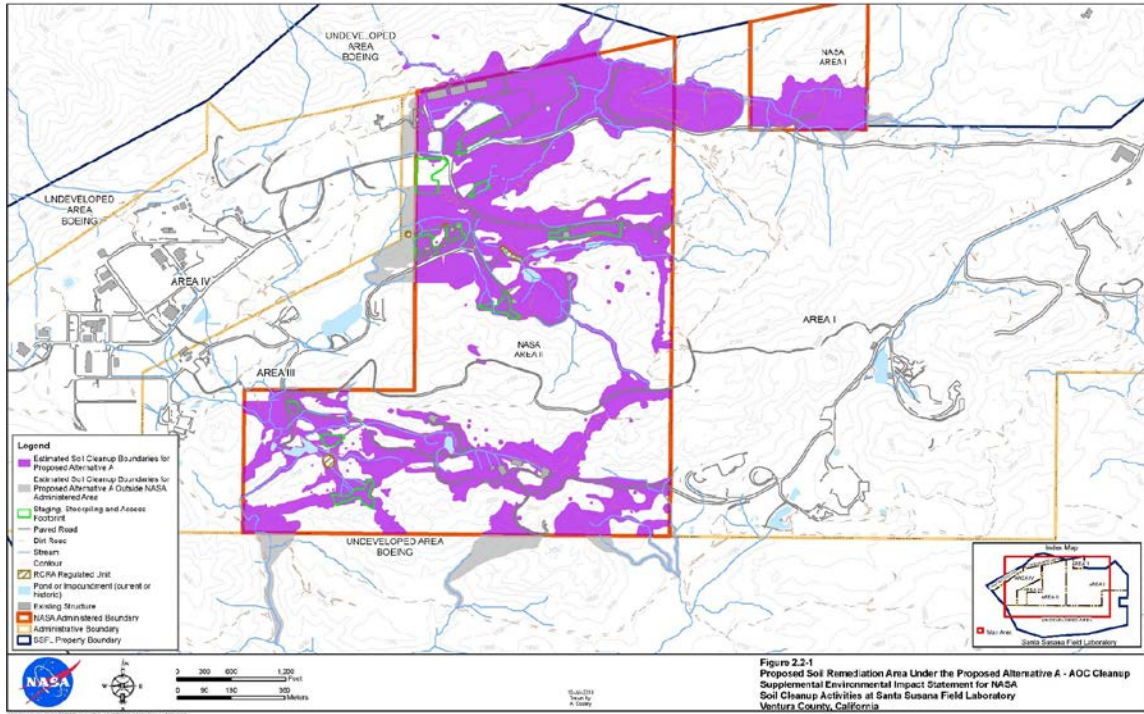
The New Alternatives Presented in the DSEIS Would Violate the AOC

The AOC requires cleanup to local background. (AOC §§1.7.2, 2.1). “Leave in place” alternatives are barred from consideration under the agreement. (AOC §1.7.2.2, Attachment B, p. 2). Contrary to these requirements, NASA now proposes three alternatives in the DSEIS that would leave the majority of the contaminated soil not cleaned up and thus violate the legally binding AOC. NASA does not have the authority to take any action that does not comply with the AOC. Yet only Alternative A would comply with the AOC; all others would violate it.

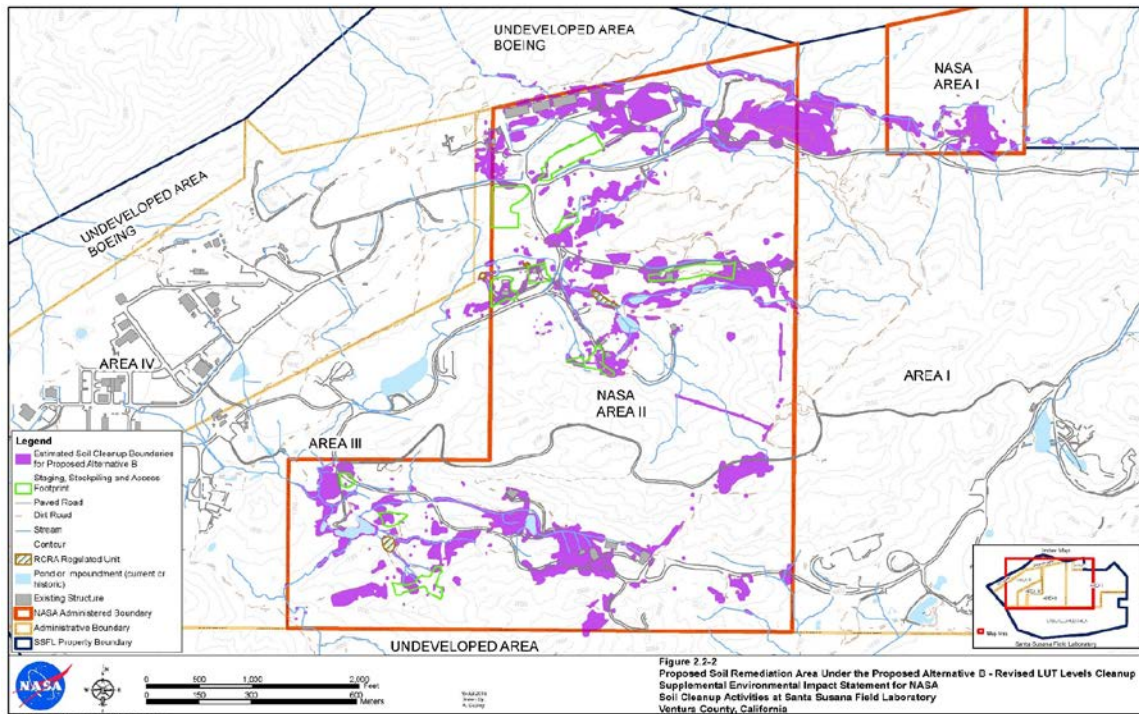
By NASA’s estimates, Alternative B would leave 56% of the contaminated soil by volume and 65% by acreage not cleaned up; Alternative C would abandon 72% by volume and 84% by acreage; and Alternative D would walk away from remediating 80% of the contaminated soil volume and 88% of the contaminated acreage. (DSEIS Table ES-2).



The amount of contaminated soil that NASA now proposes to walk away from can be seen in maps prepared by NASA. The purple area in the map below shows how much soil NASA admits it contaminated in its parts of SSFL and that it promised to clean up:

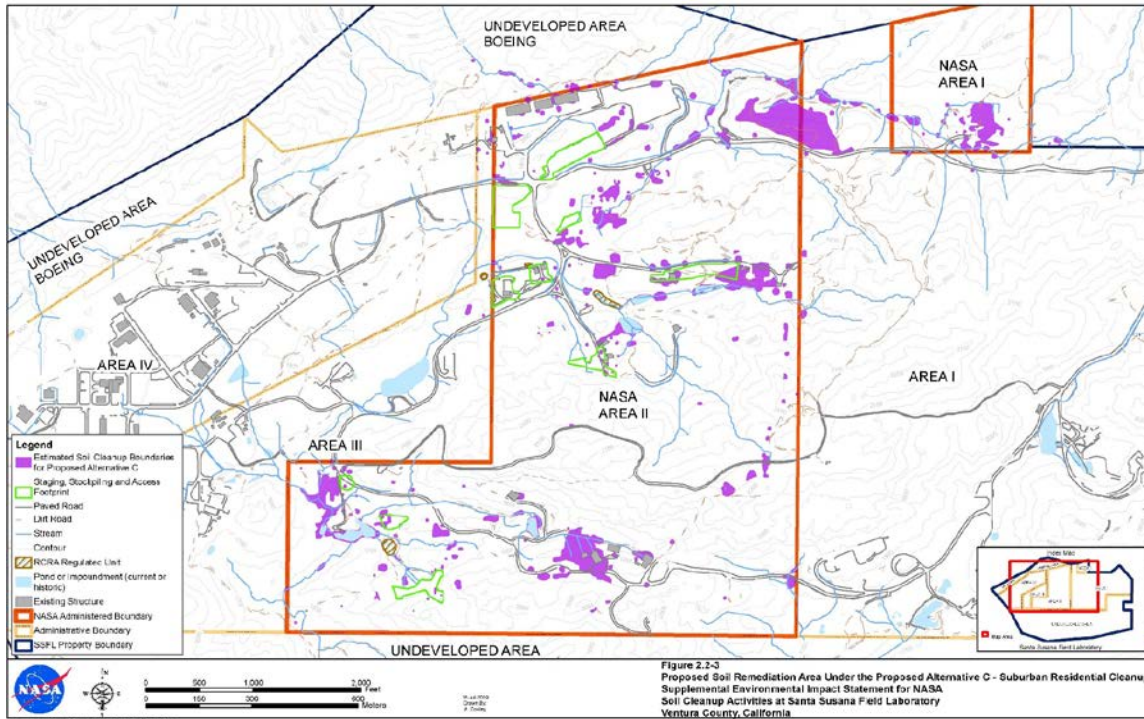


The next map shows how much would be cleaned up under its Alternative B:

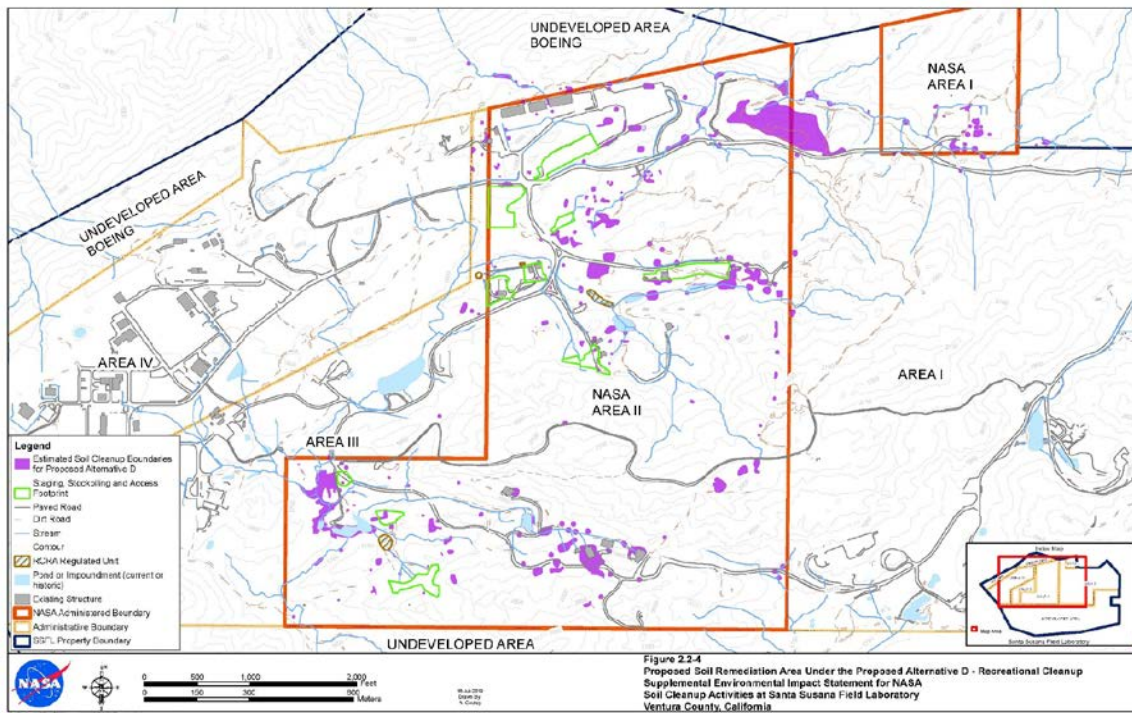




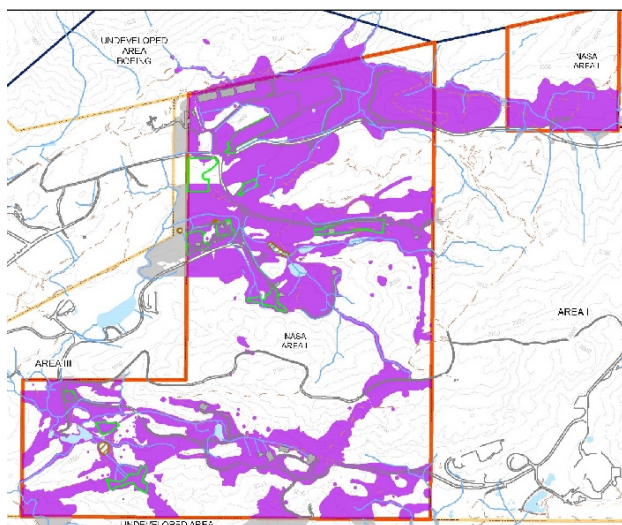
The next shows how much would be cleaned up under NASA's Alternative C:



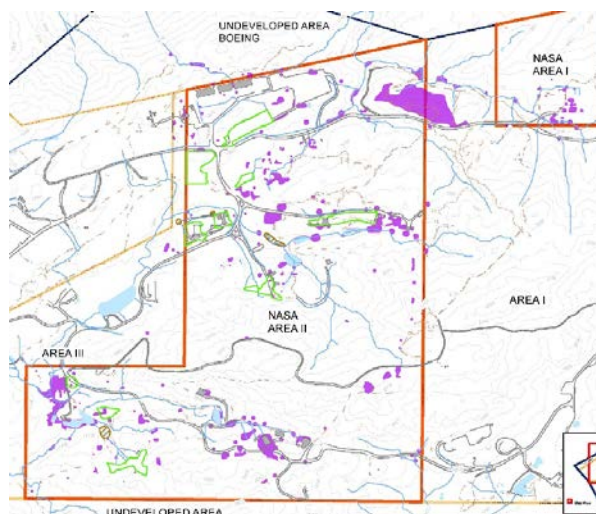
And the last option, Alternative D, would clean up only this amount:



To understand the magnitude of the contamination NASA is proposing to walk away from, compare what it promised and is legally bound to do (Alternative A, the AOC) and what it now is contemplating (Alternative D):



**What NASA Promised (Alt. A)**



**What NASA is Now Considering (Alt. D)**

Even Were There No AOC, NASA Does Not Have the Authority to Decide How Much of Its Pollution It Will Clean Up – That Power, Under RCRA, Rests with DTSC

Had NASA not executed a legally binding cleanup agreement with DTSC, it still would have no power to determine how much of the contamination it created it will have to clean up. Under RCRA, that authority belongs to the regulatory agency that implements RCRA. In California, that is DTSC. NASA, as the polluter, does not set the cleanup standards for the pollution for which it is responsible. Even absent the AOC, NASA still could not legally do what it proposes in the DSEIS—functionally abandon the cleanup obligations established by its regulator, DTSC.

NASA is bound to follow DTSC’s cleanup directives, which the agency failed to acknowledge in the DSEIS and fails to adhere to in its actions.

NASA Is Not Required to Analyze These Alternatives

NASA asserts its DSEIS is written per the requirements of the AOC. (DSEIS p. 1-1). That is not correct. The AOC acknowledges NASA shall employ NEPA in analyzing “*how* to conduct the cleanup to background defined in this Agreement.” (§4.2.1, emphasis added). It does not authorize consideration of *whether* to comply with the AOC requirement of cleanup to background.

Similarly, NEPA does not force consideration of alternatives that would breach the AOC. As discussed above, CEQ expressly found that NASA was not required by NEPA to analyze alternatives that were not feasible, and that alternatives that breached the AOC were not feasible. In NASA’s 2013 Draft and 2014 Final EIS on Proposed Demolition and Environmental Cleanup Activities at SSFL, NASA complied and did not consider alternatives that did not comply with

the AOC; now, in the DSEIS, it is going in an opposite direction, with neither AOC nor NEPA providing the requirement that NASA now claims.

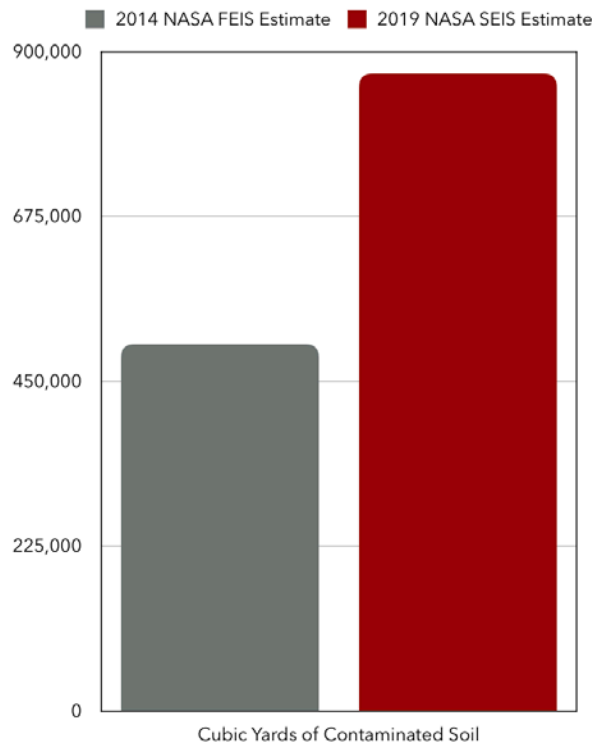
### NASA Has No Discretion as to How Much of Its SSFL Contamination It Will Clean Up

NEPA is triggered by *discretionary* federal agency actions which can have a major effect on the human environment. In the present case, NASA has no discretion as to the amount of polluted soil it will remediate. It is bound by the AOC to a full cleanup; and even if the AOC didn't exist, authority over the extent of cleanup required rests solely in the hands of NASA's regulator under RCRA, DTSC. Simply put, NASA does not have the authority to choose among the alternatives which its DSEIS now proposes.

### The Supposed Basis for Conducting a Supplemental EIS Put Forward by NASA Does Not Bear Scrutiny

NASA asserts it is preparing this Supplemental EIS because of "significant new information"—primarily that it has discovered that it is responsible for much more contamination than it previously estimated. (DSEIS cover sheet). NASA now says it has belatedly discovered that there is 75% more contaminated soil than it had thought in 2014 when NASA published the Final EIS. One would think that such a discovery of more pollution would result in *more* cleanup. However, NASA has instead proposed to radically reduce the amount of cleanup it does, even as it admits that it contaminated the property more than it had previously realized. The use of purported new information of increased contamination as the excuse for an DSEIS proposing to clean up much less is arbitrary and capricious.

**NASA's Increasing Estimates of How Much Soil it Contaminated at SSFL**



## NASA Inflates Soil Cleanup Volumes so as to Be Able to Push for Weaker Cleanup Standards

NASA asserts in its DSEIS that large volumes of soil would need to be excavated to meet the cleanup requirements in the legally binding agreement it entered into with the state in 2010. Seemingly in order to try to build a case for breaking that agreement, NASA has heavily inflated those figures. It has done so with an indefensible assumption: that wherever there is soil contamination on the surface, soil would have to be removed down to bedrock or up to 20 feet below ground surface (BGS). So, wherever there are measurements showing the contamination is just at the surface, NASA nonetheless assumed all the soil above bedrock or down 20 feet would have to be removed. Where there are no measurements showing contamination beneath the surface, NASA again assumes all soil down to bedrock or up to 20 feet BGS would be removed.

NASA admits that the DSEIS volume estimates are inflated: “These numbers ... represent *the upper levels* of expected excavated soil quantities....” (DSEIS, p. 2-12, emphasis added). Yet it uses these inflated numbers to create the false impression that a full cleanup would require “moonscaping” the site to bare rock and the neighborhoods having to tolerate huge numbers of trucks, all to the end of trying to get out of cleaning up the contamination its environmentally reckless operations at SSFL created and which it is bound to remediate by the AOC cleanup agreement it executed with the state in 2010. NASA fails to consider the option of taking more measurements to carefully delineate the contaminated areas so as to not remove soil that is, in fact, not contaminated.

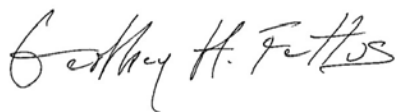
### Conclusion

NASA is legally bound by the AOC it executed with DTSC to clean up to background. Even were there no AOC, NASA has no authority to decide how much or little of its contamination to clean up; that authority rests with its regulator, DTSC. NASA’s new alternatives, presented in the DSEIS, would breach the AOC and the regulator’s insistence on cleanup to the AOC standards. NASA should reverse course and only consider alternatives that would comply with the AOC.



Detailed additional comments on the SSFL DSEIS are attached.

Sincerely,



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Geoffrey H. Fettus  
Senior Attorney  
Natural Resources Defense Council  
1152 15<sup>th</sup> St. NW, Suite 300  
Washington D.C. 20005  
(202) 289-2371  
[gfettus@nrdc.org](mailto:gfettus@nrdc.org)



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Daniel Hirsch  
President  
Committee to Bridge the Gap  
P.O. Box 4  
Ben Lomond, CA 95005  
(831) 336-8003  
[dhirsch1@cruzio.com](mailto:dhirsch1@cruzio.com)

Electronic Signature

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Caroline Reiser  
NRDC Legal Fellow  
Natural Resources Defense Council  
1152 15<sup>th</sup> St. NW, Suite 300  
Washington D.C. 20005  
(202) 717-8341  
[creiser@nrdc.org](mailto:creiser@nrdc.org)



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Denise Duffield  
Associate Director  
Physicians for Social Responsibility - LA  
617 S. Olive St., Ste. 1100  
Los Angeles, CA 90014  
(213) 689-9170  
[dduffield@psr-la.org](mailto:dduffield@psr-la.org)

cc: CalEPA Secretary Jared Blumenfeld  
DTSC Director Meredith Williams

# Detailed Comments on NASA Draft Supplemental Environmental Impact Statement for Soil Cleanup Activities at Santa Susana Field Laboratory

## **I. Summary of Comments**

NASA's action is unlawful in terms of process and substance. If the agency follows the course of action it proposes in the Draft Supplemental Environmental Impact Statement (DSEIS), Californians would be harmed and meaningful cleanup would be foreclosed for future generations. The decision by the Trump Administration NASA to issue this DSEIS sets the stage for abandoning huge amounts of chemically hazardous material and would consign this important land in Southern California, set in the midst of millions of California residents, to never be cleaned up. Collectively, the undersigned City of Los Angeles, the Natural Resources Defense Council, Committee to Bridge the Gap, and Physicians for Social Responsibility-Los Angeles urge NASA to withdraw the DSEIS and to immediately commence working with the State and the public to quickly reach compliance with the AOC that the agency signed nearly a decade ago.

In the following pages we detail (II) the failure of NASA to make available for review key documents in a timely fashion; (III) that NASA's claims of "significant new information" requiring preparation of a supplemental EIS do not survive scrutiny; (IV) NASA inflates the amount of and impacts from trucks necessary for excavation and fails to consider reasonable alternatives; (V) NASA falsely claims suitable replacement soil for the cleanup is not available; (VI) NASA erroneously asserts Boeing's parts of SSFL will be cleaned up to recreational standards and that would justify NASA breaking its own cleanup agreement; (VII) NASA falsely claims that the cleanup levels it agreed to are too protective for human health; and (VIII) NASA misrepresents the alternative standards it proposes to use that would breach its cleanup agreement.

## **II. NASA Fails to Make Publicly Available Key Documents Upon Which the DSEIS is Based, Impairing Meaningful Public Review and Comment**

When NASA published the DSEIS on October 25, 2019, approximately two-thirds of the documents it referenced and relied upon ("DSEIS References") were not made public. Even after NASA claimed to have fixed the problem and posted all DSEIS References, many of the documents were in fact still not accessible. Further, NASA failed to even identify sources to provide a basis for many claims in the DSEIS.

Such failures have legal consequences. NEPA's fundamental objective is twofold: both that agencies will "consider every significant aspect of the environmental impact of a proposed action," *Vermont Yankee Nuclear Power Corp. v. Natural Resources Def. Council, Inc.*, 435 U.S. 519, 553 (1978), and also ensure "that the relevant information *will be made available to the larger audience* that may also play a role in both the decisionmaking process and the

implementation of that decision.” *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989) (emphasis added); see also 40 C.F.R. § 15001(b) (“NEPA procedures must insure that environmental information is *available to public officials and citizens before decisions are made* and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and *public scrutiny* are essential to implementing NEPA.”).

“The information included in and referenced by [an] EIS [must] allow the public to ‘play a role in both the decisionmaking process and the implementation of that decision.’” *WildEarth Guardians v. Montana Snowmobile Ass’n*, 790 F.3d 920, 927-28 (9th Cir. 2015) (citing *Methow Valley*, 490 U.S. at 349). Therefore, to comply with NEPA’s public disclosure requirement, an agency either must provide the public with the underlying data from which it determines its conclusions, or it may incorporate a “publicly available document” by reference so long as “it is reasonably available for inspection by potentially interested persons within the time allowed for comment.” *Id.* (citing 40 C.F.R. §§ 1502.21, 1502.24).

Here, NASA failed to comply with NEPA’s mandate of public information and participation in the decisionmaking process by both failing to make documents with underlying data available and also simply not referencing what underlying data it relied on at all. We now proceed to explain these failures in detail.

**a. When NASA released the DSEIS on October 25th for public review and comment, NASA failed to make available the majority of DSEIS References.**

Approximately two-thirds of the DSEIS References were not immediately made public when NASA published the DSEIS in October of 2019. After numerous public complaints, NASA eventually posted on its website links purportedly to all of the DSEIS References,<sup>1</sup> but not until December 11, 2019, about seven weeks after issuance of the DSEIS for comment and three weeks after the November 20-21, 2019 public hearings NASA held to take public comments. Thus, any early comments were made without the benefit of access to the majority of DSEIS References. NASA should held additional public hearings after making all DSEIS References documents publicly available.

**b. Despite NASA’s claim that it eventually posted all the DSEIS References on its SSFL website, critical documents are still not provided, or the links now given for them do not work.**

The following are examples of full DSEIS References NASA never made publicly available.

- i. National Aeronautics and Space Administration (NASA). 2017b. NASA Soil Data Summary Report for Santa Susana Field Laboratory, Ventura County, California.*

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<sup>1</sup> See December 11, 2019 email from NASA-SSFL-Communications, “Notice of Update to NASA SSFL Website,” stating that “the Supplemental Environmental Impact Statement (SEIS) References” had been “added to the NASA SSFL Website”; Exhibit 04.

*Prepared for National Aeronautics and Space Administration, Marshall Space Flight Center, Alabama. February. (“2017 SDSR”)*

The 2017 SDSR is perhaps the most critical document upon which NASA relied in its DSEIS,<sup>2</sup> however, the link on the NASA website to this document leads to a file on the DTSC Document Library that is missing many of its appendices.<sup>3</sup> Despite repeated requests to remedy this problem, there has been a continuing failure to do so. Thus, during the entire comment period for the DSEIS, numerous appendices of this most critical document have not been available for public review.

The following set of exchanges, while excruciating to recite in detail (and set forth in Attachment A, a pdf of the relevant emails), illustrate both the lengths to which the public constructively engaged with the NEPA process and the failure of NASA to adequately meet its responsibilities to provide a meaningful opportunity for review of its significant federal actions.

In an email dated December 3, 2019, CBG’s Ms. Taylor Altenbern wrote to Ms. Michelle Banks-Ordone, DTSC Public Participation Specialist for SSFL,<sup>4</sup> explaining that “Appendices E through J are not included in the body of the text of the Soil Data Summary Report, and are not available on the document library... Sharing these missing documents promptly is essential for people to make meaningful comments on NASA’s draft SEIS. Please make these documents available.”<sup>5</sup>

Ms. Banks-Ordone responded on December 3, stating that she would forward the email to Ms. Lori Manes, the NASA SSFL Community Outreach Officer. Manes subsequently emailed Altenbern on December 5, but did not respond to the request that the incomplete posting of this critical document be remedied; she merely asserted that all appendices are available for review on CDs at the SSFL information repositories. She provided a link to a webpage that she stated would list the repository location and times, but when clicked, it gave an error message.<sup>6</sup> As discussed below, when two of the repository locations were eventually found, the missing documents were not available there.

Altenbern responded to Manes the same day, requesting once more that NASA ensure that the full SDSR document with all appendices be promptly posted online. On December 10, 2019,

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<sup>2</sup> See, e.g., DSEIS pp. ES-3, ES-6, 1-10, 2-7, 2-8, 2-12, 3-60.

<sup>3</sup> The full document is also not available on DTSC’s electronic library for SSFL documents, and requests to DTSC to post it in full have also been unsuccessful to date.

<sup>4</sup> Because NASA’s SEIS Reference webpage linked to DTSC’s Document Library for the SDSR, Altenbern’s initial email was to DTSC staff, which promptly forwarded it back to NASA. The rest of the email chain that followed was with NASA.

<sup>5</sup> Taylor Altenbern, “Missing Appendices NASA’s SSFL Soil Data Summary Report,” December 3, 2019. Exhibit 05. The rest of the email chain is included in this exhibit.

<sup>6</sup> See December 5, 2019 email from Manes, and Exhibit 06, a screen shot of error message. Manes indicated that the appendices are large files, on CDs, and Altenbern responded that there is no reason why the electronic files can’t be broken up into smaller files for posting on NASA’s website, a standard practice.



Manes responded, stating that “NASA has formally requested that DTSC post all of the Final Data Summary Report Appendices to the SSFL Document Library.”<sup>7</sup>

On December 13, 2019, Altenbern emailed Manes again, asking once more when the full SDSR document would be posted, given the impending deadline for DSEIS comments. On December 17, 2019, Manes said that she would get back to Altenbern by the end of that week, December 20, with news when the missing material would be posted. She did not do so.

Finally on December 31, 2019, DTSC posted on its Document Library links to SDSR Appendices E through J, the appendices that had previously been missing.<sup>8</sup> But clicking on each of the links for those appendices does not produce the appendices but a notice saying “Document or Record not Available on DTSC SSFL Website.”<sup>9</sup>

Despite this, on January 3, 2020, Manes emailed Altenbern stating, “I wanted to let you know that the DTSC has advised NASA that the entire DSR[S] is electronically available on its website, subject to certain space limitations regarding some Appendices.”<sup>10</sup> What she failed to mention is that every single missing appendix that Altenbern originally requested was still missing; every link for those appendices produced a notice saying the appendix was not available.

On our own we found the location for the document repositories. Neither the Simi Valley nor Platt repositories possessed the critical 2017 NASA SDSR.<sup>11</sup>

The failure to make available the full 2017 SDSR is a NASA responsibility, not DTSC’s. It is a NASA document, which NASA relied heavily upon it in *its* DSEIS, and which NASA promised (and has a legal obligation) to post on *its* website links to all of *its* DSEIS References. Despite repeated requests to NASA to fulfill that promise and post on its DSEIS website the full document it relies upon for its DSEIS, NASA still has not done so.

Thus, during the entire comment period for the DSEIS, Appendices E through J, perhaps the most critical document upon which NASA relied in its DSEIS, have been shielded from public

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<sup>7</sup> December 10, 2019 email from Lori Manes to Taylor Altenbern.

<sup>8</sup> See December 31, 2019 screen shot of the DTSC Document Library page for the NASA Soil Data Summary Report. Exhibit 07.

<sup>9</sup> See December 31, 2019 PDFs and screen shots of “Document Missing” pages, Exhibits 08A-K. The appendices’ notices of unavailability also state, “To review a copy of this file, please contact the Department of Toxic Substances Control through the Santa Susana Field Laboratory Public Involvement webpage using the following link.” That link takes one to a general public involvement webpage that does not provide the missing documents or any way to access them. It also includes a contact email if “you have suggestions on the Web site or have questions” for Michelle Banks-Ordone, the person who was initially contacted when the effort to have the full document posted began.

<sup>10</sup> January 3, 2020 email from Lori Manes to Taylor Altenbern.

<sup>11</sup> The libraries did possess a May 2019 Soil Data Summary Report, but it is not cited in the DSEIS at all. Many key assertions in the DSEIS reference the 2017 SDSR, the majority of which is missing from the copy posted online.

review despite NASA’s promises to post on its website all the DSEIS References and despite repeated requests for it to make the missing documentation available. Such action contradicts NEPA.

- ii. *National Aeronautics and Space Administration, George C. Marshall Space Flight Center, The Boeing Company, and U.S. Department of Energy, Energy Technology and Engineering Center (NASA, Boeing, and DOE). 2015. Transportation and Road Agreement, Santa Susana Field Laboratory, Ventura County, California (“Transportation and Road Agreement”)*

NASA relies on this document for its claim in the DSEIS that the cleanup will take far longer than it had estimated in its FEIS because “NASA is limited to 16 round-trip truckloads (32 trucks total) per day, 250 days per year.”<sup>12</sup> However, the link to the document on the NASA SSFL website doesn’t work—it takes one to a webpage that shows a “403 - Forbidden: Access is Denied” error code.<sup>13</sup> NASA’s claim about the supposed truck limit is important to its claim — and, as we show later, false—and having the document upon which the statement is said to rest unavailable for review is inappropriate.<sup>14</sup>

- iii. *National Aeronautics and Space Administration (NASA). 2015a. NASA Soil Data Summary Report for Santa Susana Field Laboratory, Ventura County, California. Final. Prepared for National Aeronautics and Space Administration, Marshall Space Flight Center, Alabama. February. (“2015 SDSR”)*

The DSEIS makes a number of critical and questionable assertions about the purported unavailability of replacement soil. The DSEIS refers to a 2014 investigation of five sites from which replacement soil can be obtained, citing to the 2015 SDSR.<sup>15</sup> However, the link NASA provides to that reference on its website takes one to the 2017 SDSR, which appears to have no discussion of a potential replacement soil investigation. We have separately located the 2015 SDSR and it also appears to not have any such investigation reported. It seems that NASA may have meant to cite to the 2015 soil investigation by CH2M HILL, but has not made that critical document available.<sup>16</sup> The missing document apparently confirms that there are adequate supplies of replacement soil, contradicting the claim NASA now makes in the DSEIS.

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<sup>12</sup> DSEIS, p. ES-6.

<sup>13</sup> See January 8, 2020 screenshot, Exhibit 09.

<sup>14</sup> Other DSEIS References posted by NASA that are linked to DOE’s website are also not available and produce the same error message.

<sup>15</sup> DSEIS pp. 2-2.

<sup>16</sup> CH2M HILL, *Field Laboratory Borrow Pit Sampling for Santa Susana Field Laboratory*), August 26, 2015, cited in CH2M HILL, *Comparison of Native Soil and Imported Backfill Material Conditions for Future Restoration Activities, Santa Susana Field Laboratory, Ventura County, California*, prepared for NASA, November 21, 2017, p. 1, hereafter cited as 2015 CH2M HILL 2015 and 2017CH2M HILL respectively.

**c. No references are identified for many of the central assertions made in the DSEIS, making review and comment difficult if not impossible.**

Along with missing appendices, non-working links, and elusive studies, NASA has also made several critical assertions in the DSEIS without meaningful or supportive references. Such actions are contrary to NEPA and NASA should withdraw this document for substantial revision in the manner we set forth above.

*i. Soil volume calculations*

NASA asserts in its DSEIS that the fundamental reason it is performing the Supplemental EIS is because of new information showing that an additional 370,000 cubic yards of soil need to be removed in order to comply with the AOC agreements compared with the soil volume estimate established in the FEIS.<sup>17</sup> This substantial increase in the amount of soil supposedly requiring excavation is crucial to the rationale upon which the DSEIS was drafted and the claims it makes.

Again, the public made extensive efforts to locate the pertinent material to little or no avail. On December 17, 2019, Taylor Altenbern requested that NASA make the soil volume calculations publicly available, asking “if the actual soil volume calculations for the various alternatives are not in fact in the [S]DSR, then where are they?” NASA responded, saying that “soil volume estimates for Alternative A (AOC LUT cleanup) are *based on data from the NASA Soil Data Summary Report,*” but that “*the actual calculations have not been published to date.*”<sup>18</sup>

Altenbern requested that these calculations be added to the public record, stating, “NASA needs to make available the material that it is basing its assertions on in the [D]SEIS. Doing this will allow meaningful public review.”<sup>19</sup> NASA has continued to refuse to make the soil volume calculations available for review, despite repeated requests.

The repeated claims in the DSEIS that DTSC had confirmed NASA’s soil volume estimates also appear to be of little substance, as it appears that DTSC also has not seen the soil volume calculations.<sup>20</sup> In a December 20, 2019 email, NASA’s Lori Manes said that DTSC had been provided the 2017 SDSR; however, the 2017 SDSR does not contain the soil volume calculations.

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<sup>17</sup> NASA DSEIS, pp. 1-1, 2-7

<sup>18</sup> Email chain with Lori Maines, NASA SSFL Community Outreach Officer, Exhibit 05 (emphasis added).

<sup>19</sup> Email chain with Lori Maines, NASA SSFL Community Outreach Officer.

<sup>20</sup> We requested from NASA whatever calculations it may have provided DTSC and any document comprising DTSC’s evaluation of those calculations, if either exist, and have not received a response; neither the calculations nor any review of them has been posted on the NASA SSFL website. Although, as discussed earlier, Appendices E through J of the 2017 SDSR have not been made available, despite repeated requests, they do not appear to contain the soil volume calculations. See the content of those Appendices as described in the 2017 SDSR Table of Contents. Also, NASA’s Lori Maines, in the email chain described above, states that the calculations have not been published.

The importance of the material NASA is shielding from review should not be underestimated. The primary basis NASA gives for performing the Supplemental EIS is new calculations supposedly showing significant increase in the amount of soil needing remediation, and “verification” by DTSC of those calculations.<sup>21</sup>

However, at this juncture NASA has not shared these calculations with the public, and the supposed “verification” of those conclusions by DTSC apparently has also not been based on review of the calculations either. The failure to produce for public review the stated rationale for performing the additional SEIS work in the first instance is troubling and in contravention of the law.

- ii. *Analysis and calculations for Human Health Risk Assessment (Human Health RA) and the Ecological Risk Assessment (Ecological RA) cleanup levels for the Suburban Residential or Recreational standards*

NASA has also not disclosed the analysis and calculations that they performed to produce the proposed Human Health RA Suburban Residential and Recreational cleanup levels and the Ecological RA cleanup levels. These are key, weakened standards for the cleanup now proposed by NASA and failure to disclose the basis of its analysis violates basic public disclosure and review tenets of NEPA.

For example, Appendices 2C and 2D of the DSEIS merely list in tables its proposed Human Health RA cleanup levels. Next, NASA proposes for scores of individual contaminants Ecological RA values, *but NASA does not provide documentation showing the actual derivation of these numbers*. NASA merely states, “This alternative would use site-specific risk-based cleanup levels for contaminants in soil at SSFL that have been developed based on standard risk assessment procedures and equations provided in the DTSC-approved Standardized Risk Assessment Methodology (SRAM), EPA risk assessment guidance (RAG), and Cal EPA RAG.”<sup>22</sup> However, NASA does not disclose the actual calculations and assumptions it used to reach these conclusory numbers. the values NASA proposes differ markedly from both the human health and ecological Risk-Based Screening Levels from the DTSC-approved SRAM, as we show below. Thus, vague statements that NASA developed its numbers using unspecified procedures and equations from the SRAM and other agencies’ RAGs and similarly unspecified site-specific inputs are insufficient to allow scrutiny of how NASA came up with its questionable values. NEPA does not tolerate such games of “hide-the-ball.”

- iii. *Ecological risk assessment*

NASA claims in the DSEIS that cleanup Alternatives C and D would be protective of ecological receptors,<sup>23</sup> stating as its basis for that assertion, “An ecological risk assessment was conducted in accordance with the ecological risk assessment guidance developed for the DTSC-approved

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<sup>21</sup> See DSEIS Cover Sheet.

<sup>22</sup> DSEIS p. ES-5.

<sup>23</sup> DSEIS p. 2-11.



SRAM, Revision 2 Addendum (MWH, 2014b).”<sup>24</sup> However, NASA has not made available the “ecological risk assessment” it says it produced. SRAM 2 is cited by NASA merely for its assertion that NASA’s evaluation was done in accordance with guidance found in SRAM 2, but of course does not contain the ecological risk assessment NASA claims to have performed consistent with that guidance. Furthermore, we note that the ecological risk assessment values NASA proposes in Appendices 2C and 2D for individual contaminants are contradicted by the actual ecological risk-based screening levels (EcoRBSLs) in the SRAM 2 Addendum.

The DSEIS states, “Alternative C is protective of ecological receptors such as plants, invertebrates, birds, and mammals that may live or forage on this site” and that “It has been confirmed that the soil cleanup under Recreational Scenario (Alternative D) is also protective of ecological receptors.”<sup>25</sup> However, the ecological risk assessment NASA says it conducted and which supposedly supports its DSEIS claims that Alternatives C and D would protect ecological receptors has not been made available to the public for review. Reliance on conclusory statements about an ecological risk assessment that NASA refuses to make available for review strikes at the heart of NEPA public comment rights.

*iv. Detection limits*

In the DSEIS, NASA makes contradictory claims regarding detection limits, a key basis given for its supposed need to prepare a Supplemental EIS and propose alternatives that would violate the AOC. NASA states that DTSC determined the Lookup Table (“LUT”) values based on measured background levels and “the method reporting limits (MRLs) of laboratory equipment.”<sup>26</sup> Therefore, when background concentrations were lower than what a laboratory could detect, the MRLs were used in their place, ensuring that soil samples could be classified as contaminated (or not) with a high level of certainty.<sup>27</sup> However, on the very next page, the DSEIS states as one of the key reasons for preparing the DSEIS that “The AOC LUT values are significantly below conventional laboratory capabilities.”<sup>28</sup> No citation is given to provide a basis for this assertion.

On October 30, 2019, just a few days after the DSEIS was issued, Briana Jahnsen noted this discrepancy and emailed NASA SSFL Project Manager Peter Zorba asking for documentation of NASA’s claim. She wrote:<sup>29</sup>

In NASA’s “Draft Supplemental Environmental Impact Statement for Soil Cleanup Activities at Santa Susana Field Laboratory” there are inconsistent

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<sup>24</sup> DSEIS, p. 2-10.

<sup>25</sup> DSEIS p. 2-11.

<sup>26</sup> DSEIS p. ES-2.

<sup>27</sup> DTSC, *Chemical Soil Background Study Report*, December 2012, p. 1 – 2. Exhibit 10.

<sup>28</sup> DSEIS p. ES-3.

<sup>29</sup> Briana Jahnsen, “*Draft SSFL DEIS*,” email, October 30, 2019, Exhibit 11. Emphasis added. The exhibit includes the entire email chain.

statements regarding chemical detection levels for toxic materials with which NASA has contaminated its portion of SSFL. At one point in the DSEIS, NASA says that DTSC set the Lookup Table (LUT) values based on measured background levels and “the method reporting limits (MRLs) of laboratory equipment”(p. ES-2). However, on p. ES-3, the draft SEIS proceeds to say, “The AOC LUT values are significantly below conventional laboratory capabilities.” No citation to any source is given for this assertion, and no explanation is provided as to the apparent discrepancy with the prior statement that the LUT values are based on laboratory MRLs. *Could you please provide the documentation supporting NASA’s assertion and which explains the apparent discrepancy with the statement one page prior that the LUTs are based on MRLs of laboratory equipment?*

19 days passed without a response. Jahnsen emailed Zorba again, saying:

I have not had the courtesy of a response to my email of October 30. . . I asked specific questions about apparently inconsistent assertions in the draft SEIS, requested the basis for the questionable assertion (no source was cited to support the claim) . . .

With the public hearing only two days away, the lack of response suggests a continued coverup of the information requested, demonstrating NASA’s lack of concern regarding the community involved.

In order to provide proper public comment at this event and in the short time remaining for written comments, it is essential that . . . assertions made in the SEIS be backed up with sources. I urge you to cease stonewalling—it creates the clear impression that NASA has something to hide and that its claims cannot bear scrutiny. Please answer my questions and make publicly available the SEIS references.<sup>30</sup>

On November 20, 2019, Zorba responded with a vague statement that “NASA is committed to providing the public information related to its Draft Supplemental Environmental Impact Statement (SEIS).” He promised to post the DSEIS references by the end of the following week, *i.e.* by November 29. NASA missed that self-imposed deadline.

Jahnsen wrote back to Zorba on December 2, 2019, expressing concern once again that NASA had still failed to make available the documentation it had promised.<sup>31</sup> When NASA finally did respond on December 4, 2019, almost seven weeks after the release of the DSEIS, Zorba continued to not answer Jansen’s repeated requests for documentation explaining the basis for

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<sup>30</sup> Briana Jahnsen, “*Draft SSFL DEIS*,” email, October 30, 2019 in Exhibit 11.

<sup>31</sup> Briana Jahnsen, “*Draft SSFL DEIS*,” email, December 2, 2019 in Exhibit 11. (“Although you stated in your response of Nov. 20 to my email of Nov. 18 that NASA is committed to providing the public with the documents on which the draft SEIS relies, I have dwindling faith that the commitments of NASA are being fulfilled as promised.”).

NASA's critical claim about detection limits and the apparent discrepancy with what NASA elsewhere said about the matter. So, at present, NASA has still refused to make public any documentation that forms the basis for this critical detection limit issue that it claims forms one of the key bases for having to produce an SEIS.

v. *Effectiveness of soil treatment techniques*

NASA fails to reference or make available any source for its claim that significant new information demonstrates that soil treatment techniques are ineffective and incapable of reducing contaminant concentrations to levels required by the AOC. In its 2014 FEIS, NASA discussed numerous technologies by which contaminated soil could be treated *in situ* or *ex situ*—in other words, on site treatment that would markedly reduce the volume of soil that would have to be trucked offsite for disposal.<sup>32</sup> Indeed, NASA estimated in the FEIS that 180,000 of the 500,000 cubic yards of soil it estimated needed remediation could be treated on site, requiring only 320,000 cubic yards to be disposed of offsite.<sup>33</sup>

In its latest DSEIS, however, NASA now claims that there is significant new information that supposedly shows treatment technologies cannot work:

NASA has evaluated multiple onsite treatment options for use at SSFL. Although some treatment options are viable under the site conditions at SSFL, the LUT values are so much lower than conventional cleanup levels that most treatments are largely unproven to meet the remedial goals for SSFL and are not expected to meet AOC LUT cleanup criteria.<sup>34</sup>

No citation is provided for this supposed NASA evaluation of “multiple onsite treatment options for use at SSFL.” Nor is any citation provided to a single study, let alone a range of studies, to support the assertion of significant new information contradicting NASA’s representations in its FEIS on the treatability issue. Nor is the NASA evaluation or any supporting treatability study included in the DSEIS References or posted on the NASA DSEIS References page on its website.

We have on our own found a copy of NASA’s report evaluating soil treatment technologies for SSFL contamination, comprising nearly 700 pages of detailed analysis of half a dozen primary soil treatment technologies.<sup>35</sup> The report includes review of large numbers of case studies, plus bench scale and field tests at SSFL. As discussed later in these comments, in Section III.e., this recent and comprehensive report by NASA itself on these soil treatment technologies reaches precisely the opposite conclusion than that claimed by NASA in its DSEIS.

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We are 10 single space pages into a long document and we could continue in this vein for several more pages. But we will spare NASA and other relevant readers and simply note that this same

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<sup>32</sup> FEIS pp. 2-20 - 2-21.

<sup>33</sup> FEIS pp. 2-21 - 2-28.

<sup>34</sup> DSEIS p. ES-2.

<sup>35</sup> NASA, “Soil Treatability Studies Summary,” May 2018, Exhibit 12



pattern is repeated throughout the DSEIS. NASA refuses to make available for public review key documents relied upon for critical claims in its DSEIS, or it fails to even identify the sources that supposedly provide the basis for the claims. When one is able to find some of the documents, it turns out that they illustrate facts contrary to NASA's assertions or simply state the opposite of what NASA claims in its DSEIS. A clear question arises whether NASA is shielding the fundamental documents on which the DSEIS rests because, if those documents were subject to public scrutiny, the NASA DSEIS claims disintegrate. NASA should withdraw the DSEIS.

### **III. NASA's Claims of "Significant New Information" Requiring Preparation of a Supplemental EIS Do Not Survive Scrutiny**

NASA's assertion that it is required by NEPA to conduct this Supplemental EIS for soil cleanup stands on two shaky legs: (1) "there has been a significant increase in the expected soil remediation area and volume as determined by the follow-on field work" and (2) that those calculations of increased area and volume have undergone "verification by the California Department of Toxic Substances Control in its draft Programmatic [sic] Environmental Impact Report [{"draft PEIR"}]."<sup>36</sup>

It must be emphasized that even if it were true that there were significant new data showing substantially *more* contamination than previously realized, that of course would not justify an SEIS proposing substantially *less* cleanup than previously promised. More contamination should result in more cleanup, not less.

However, as our analysis will demonstrate, NASA's claims are spurious. What has actually increased substantially is not the amount of soil proven to require remediation, but rather NASA's efforts to get out of the cleanup commitments it made in 2010. Virtually every statement in the passage from the DSEIS quoted above is either false or misleading. There are *no* measurements in the "follow-on field work" showing contamination in the great majority of the areas NASA now claims to have discovered need cleanup. And as far as the public is aware, DTSC apparently not yet seen, let alone fully reviewed and approved via a public process NASA's soil volume calculations that NASA now claims DTSC has "verified."

- a. Despite its claims to the contrary, NASA has no new measurements to support its claims that significantly greater volumes of soil must be excavated to meet AOC requirements.**

NASA claims that the basis of the Supplemental EIS is that there is new, significant information that proves that there is much more contaminated soil requiring excavation than previously anticipated.<sup>37</sup> Yet in truth there are no new data to support NASA's claim.

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<sup>36</sup> DSEIS Cover Sheet. Note that the Cover Sheet identifies no other bases for having to conduct a Supplemental EIS.

<sup>37</sup> DSEIS, Cover Sheet

NASA's official estimate in its 2014 FEIS of the amount of soil requiring excavation and disposal was 320,000 cubic yards with on-site treatment and 500,000 cubic yards if there were no such treatment employed.<sup>38</sup> NASA also estimated in the FEIS that 105 acres of land would need remediation of one sort or another.<sup>39</sup> NASA now claims there are significant new measurements that show that in fact, in order to meet the AOC, 870,000 cubic yards will have to be excavated and disposed of offsite, and the acreage supposedly requiring excavation has now increased to 220 acres.<sup>40</sup> Thus, NASA now claims that the soil volume requiring excavation has nearly tripled compared to what it estimated in the FEIS with treatment, and increased by 70% if one ignored the potential for treatment; NASA's claimed acreage requiring excavation has now doubled.

The primary way that NASA inflated area estimates, and thus soil volume projections, was by tacking on large areas called "extended remediation areas" (XRAs) to the original "Estimated Remediation Areas" (ERAs), upon which the NASA FEIS had been based. Over 250,000 cubic yards of the 370,000 additional cubic yards of soil NASA now estimates requires remediation is due to the addition of these XRAs.<sup>41</sup> This is more than two-thirds of the increase in soil volume estimates in the DSEIS, and an even greater fraction of the increase in acreage.<sup>42</sup>

The XRAs are shown in light purple in the map below,<sup>43</sup> adding markedly to the area of the ERAs, which are delineated in dark purple—illustrating clearly the dramatic increase in NASA's contamination estimate.

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<sup>38</sup> FEIS pp. ES-8, ES-9.

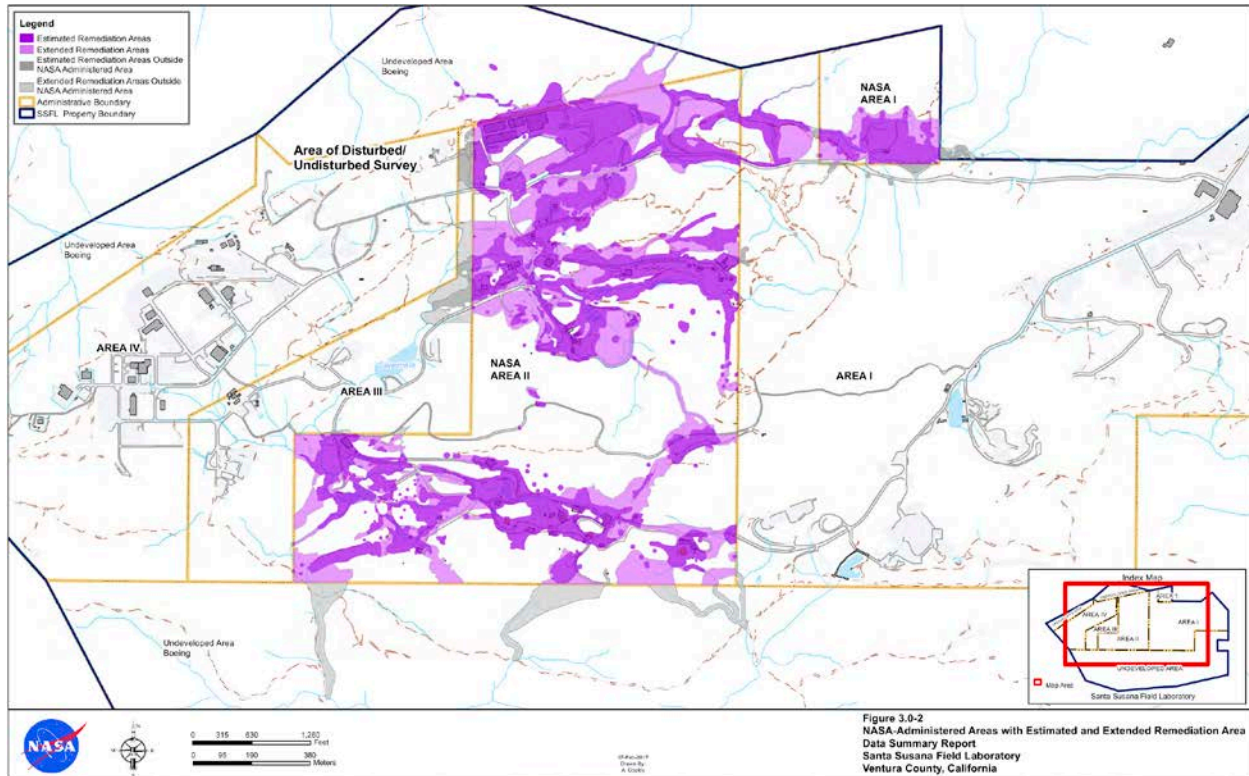
<sup>39</sup> FEIS pp. ES-24.

<sup>40</sup> DSEIS pp. 3-56; Table 2.2-2, pp. 2-12.

<sup>41</sup> Allen Elliot, NASA SSFL Soil Cleanup Backfill Calculations, 2018, a DSEIS Reference.

<sup>42</sup> *Ibid.* 2018, pg 1, footnote 1. (This footnote in the Elliot table states that XRAs are "based on PAHs, TPHs, and dioxins" and "due to the nature of these COCs, a depth of 2' is assumed for the extended footprint." Considering that the maximum soil volume estimates for ERAs increased by 117,689 yd<sup>3</sup> and NASA assumed that Extended Remediation Areas would be excavated deeper, down to bedrock or up to 20 feet, whereas the XRAs added an additional 252,311 yd<sup>3</sup> and are only excavated down to 2 feet, it can be deduced that the factor by which the increase in acreage is due to the XRAs is even larger than the factor by which the volume estimates increased due to the ERAs.)

<sup>43</sup> 2017 SDSR Figure 3.0-2.



Although there are a number of unsupportable assumptions that NASA used to inflate the ERA acreage and volumes, which are discussed later, at least the ERAs were based in part on actual measurements. What the DSEIS does not directly disclose, however, is that the new areas NASA has designated as XRAs and supposedly also require excavation (the light purple areas in the map above) do not contain any soil samples that show actual or potential contamination.

In order to make this determination, we cross-compared two sets of maps from the 2017 SDSR, the Site Identification and Location Maps<sup>44</sup> and the Sample Locations and Estimated Remediation Areas maps.<sup>45</sup> We analyzed if any exceedances (shown as red dots or squares in the SDSR figures) or non-detected concentrations exceeding screening criteria (shown as blue dots or squares) were located within the XRAs.<sup>46</sup> This comparison determined that *no such measurements finding exceedances or potential for exceedances are located in the XRAs.*

In the table below, we have compiled in the second column for each XRA the number of exceedances of LUT levels (red dot/squares in the SDSR) or non-detects involving measurements that employed detection limits higher than LUT values (blue dots/squares in the SDSR).<sup>47</sup> In the third column, we show for each XRA the approximate number of measurements

<sup>44</sup> 2017 SDSR p. 703 *et seq.*

<sup>45</sup> 2017 SDSR p. 705 *et seq.*

<sup>46</sup> We discuss later the problem of NASA utilizing detection limits that are too high to detect exceedances above the AOC cleanup levels.

<sup>47</sup> Called in the table “Non-Detects” for short.

showing the soil sample to be “clean” (green dots/squares in the SDSR), *i.e.*, the measurements detected nothing above the LUT limit and had no non-detects where the detection limit exceeded the LUT level. One will see that there are no samples showing actual or potential exceedances of cleanup levels in any XRA, whereas there are numerous samples in the XRAs showing the sample to be clean. However, 81% of XRA sites had at least 1 non-exceedance, or “clean” sample, in the XRAs. Notwithstanding the lack of any measurements to support the action, NASA has gone ahead and assumed that all of the scores of acres and a quarter of a million cubic yards of soil in the XRAs will need to be excavated and disposed of offsite.

Facility/Area	# of Exceedances or Non-detects in XRA Area	Approximate # of Clean Samples in XRA area
Alfa/Bravo Fuel Farm	0	0
Propellant Load Facility Station	0	3
Coca/ Delta Fuel Farm	0	5
Ash Pile/ Sewage Treatment Plant	0	19
Building 204 Area	0	2
Storable Propellant Area	0	7
Skyline Road Area	0	0
Alfa Area	0	5
Bravo Area Station	0	6
Former Liquid Oxygen Plant	0	8
Area II Landfill	0	0
Expendable Launch Vehicle Station	0	29
Coca Area	0	2
Delta Area	0	17
R-2 Ponds	0	2
Hazardous Waste Storage Area	0	1

Roughly half of NASA’s data it claims show soil requiring cleanup are “non-detects.” Despite DTSC having set MRLs for contaminants—based on what laboratories actually could accurately detect during the background study and what a review of multiple laboratories indicated were achievable MRLs for other chemicals—NASA inexplicably took large numbers of measurements using far poorer MRLs than those required and available. Thus, a great many of its measurements are useless. Nonetheless, NASA has used its own failure to use appropriate MRLs to inflate its soil volume, and therefore also truck numbers and cleanup time estimates.

We are keenly aware of the seeming incongruity of this situation and these precise comments. We, collectively, are the public non-governmental entities that have fought most ferociously for a thorough and meaningful cleanup of this site, and we have done so for decades and we have every intention of continuing to do so. So we want to be precisely clear – *this is not to say that there is no contamination in the XRA areas*. There may well be, and any that exists should be cleaned up. However, NASA provides no measurements supporting its claim of newly discovered additional contamination. In seeming contrast to what NASA has done with the supplemental NEPA work, we suggest a careful characterization process for the XRA area that identifies the contamination for cleanup. Such a process has not clearly been disclosed yet.

Indeed, NASA indirectly admits as much. According to the 2017 SDSR, “The XRAs were generated by *looking* at the sites and the facility as a whole and analyzing the potential for occurrence [of contamination] beyond the farthest step-out locations . . . boundaries were determined for the XRAs by *looking* at topography, including slopes, rock outcrops, drainageways, and roads.”<sup>48</sup> “Looking” at topography is, of course, different than sampling soil for contaminants.

It is troubling that, nearly a decade after signing the AOC, NASA still hasn’t taken more than a handful of measurements in these large areas of its site that it concedes could potentially be contaminated. However, NASA’s failure—the *lack* of measurements showing contamination in the XRAs—cannot be used to claim significant new information showing greatly increased areas and soil volumes that require cleanup. And NASA’s mere assertions, unsupported by any meaningful data and analysis, cannot be used to justify the preparation or content of this DSEIS.

**b. NASA also inflates soil volume estimates by assuming all extended remediation areas must be excavated to bedrock or up to 20 feet.**

An additional way that NASA has exaggerated the soil volume estimates is by assuming that soil excavation must extend down to bedrock or up to 20 feet below ground surface.<sup>49</sup> NASA apparently is assuming contamination goes down that far and soil needs to be excavated to that depth even when there are no measurements showing contamination to those depths or measurements show contamination only at the surface.<sup>50</sup> These are unsupportable assumptions.

The 2017 SDSR shows numerous samples where contamination is found at the surface but not in the subsurface, where contamination is found in the subsurface but not all the way to bedrock or 20 feet bgs, or where surface samples have been taken but no subsurface samples have been

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<sup>48</sup> 2017 SDSR p. 3-1 (emphasis added).

<sup>49</sup> DSEIS pp. 2-8, 2-10, 2-11.

<sup>50</sup> The 2018 SDSR shows numerous samples where contamination is found at the surface but not in the subsurface, found in the subsurface but not all the way to bedrock or 20 feet bgs, or where surface samples have been taken but no subsurface samples at all.

taken at all. Most surface sample locations had no subsurface samples taken, as indicated in the table below.<sup>51</sup>

Facility/Area	# of Surface Sample Locations	# of Subsurface Sample Locations	% of Surface Sample Locations Without Any Subsurface Samples
Alfa/Bravo Fuel Farm	94	51	46%
Propellant Load Facility	112	32	71%
Coca/Delta Fuel Farm	144	64	56%
Ash Pile/Sewage Treatment Plant	295	205	31%
Building 204 Area	122	62	49%
Storable Propellant Area	188	75	60%
Skyline Road Area	52	9	83%
Alfa Area	307	111	64%
Bravo Area	260	125	52%
Former LOX Plant	334	121	64%
Area II Landfill	264	91	66%
Expendable Launch Vehicle	500	176	65%
Coca Area	338	58	83%
Delta Area	158	49	69%
R-2 Ponds	61	15	75%
Hazardous Waste Storage Area	41	7	83%

Further, roughly half of the measurements taken in these areas are identified as “non-detect”<sup>52</sup>—but NASA counts them as detections above screening levels because it used poor quality detection limits—much higher than the MRLs required by DTSC and determined by DTSC to be available from laboratories. In other words, NASA is assuming large volumes of soil will have to

<sup>51</sup> This table was compiled from the site description summaries found in Section 3 of the 2017 SDSR. One should note that even for those locations where a subsurface sample was taken, there may have been merely one subsurface sample, or if more than one, they may not have gone down 20 feet or to bedrock. Therefore, even in the minority of cases where a subsurface sample was taken below a surface sample, there may be insufficient data to demonstrate the need to excavate to bedrock or 20 feet below ground surface. (The data presented in the table also do not account for the possibility that in some cases there may be sample locations where subsurface samples were taken but not surface samples.)

<sup>52</sup> 2017 SDSR. On the maps showing sampling, approximately half of the samples are marked as blue, non-detects but with a detection limit higher than the LUT value.

be excavated because of its own failure to use proper detection limits, even though those measurements didn't detect any contamination. Obviously, the correct approach is for NASA to take samples that meet the detection limits required by the AOC and DTSC, and only remove soil that actually exceeds the AOC LUT levels, rather than presuming one will have to excavate vast amounts of soil for which no contaminant was detected but for which NASA failed to use appropriate detection limits.<sup>53</sup>

Again, it is troubling that NASA's characterization work (that the majority of locations where surface samples were taken had no subsurface samples at all) has been so inadequate, years after the commitment to clean up this site. But the failure to have acquired necessary data is not "significant new information" demonstrating larger contamination volumes and justifying a DSEIS, nor can it provide a basis for assuming everywhere there is surface contamination that it goes down to bedrock or up to 20 feet bgs. The absence of data is not evidence of data, particularly when the failure to have acquired the data is NASA's responsibility.

**c. NASA falsely claims that DTSC "verified" NASA's calculations of increased acreage and soil volumes requiring cleanup, when DTSC apparently never even saw them.**

As discussed earlier in Section II.c.i., it appears DTSC has not been provided and thus has not reviewed NASA's soil volume calculations for the increased soil volumes that NASA claims DTSC has verified.<sup>54</sup> The sole source cited by DTSC in its draft PEIR for the NASA soil volumes is a June 29, 2015 email from Peter Zorba of NASA to Paul Carpenter of DTSC and Jason Ricks of ESA (the contractor preparing the PEIR).<sup>55</sup> This email was in response to a June 26 email from Ricks to Carpenter and Wetter at DTSC asking, "Has there been any follow up on whether we should replace NASA's PRAs [Preliminary Remediation Areas] with the final remediation area? Also, we need to confirm whether they are officially revising to 650,000 cy or staying at 500,000 cy." Carpenter forwarded that email the same day to NASA's Zorba, saying, "Pete, Can you get us an update on the FRA [Final Remediation Areas] and the volume estimate question from Jason Ricks? Thanks, Paul C."

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<sup>53</sup> DTSC called attention to this issue in its comments on the 2017 SDSR, stating in comment 88 that the "the site evaluations and limits of remediation areas also depend significantly on samples that were non-detect but had reporting limits that exceeded the screening criteria." Soil Data Summary Report, Response to Comments, 2017, pdf. pp. 2,074. NASA responded, stating that "If the [reporting limit] and [minimum detection limit] both exceeded the screening level, the sample was considered a reporting limit exceedance, meaning that it could potentially have been an exceedance for that parameter if the laboratory methods were able to detect the parameter at the low screening level value." *ibid.* However, NASA shouldn't have used soil analysis methods that couldn't detect contaminants at the levels of concern, especially when DTSC had formally identified much better detection limits readily available and which form the basis of the LUT values in the first place.

<sup>54</sup> NASA Community Outreach Officer declared in a January 3, 2020 email to Taylor Altenbern that "DTSC states in their 2017 Draft Programmatic [sic] Environmental Impact Report (EIR) that it reviewed *NASA's DSR data and determined it was reasonable for estimating soil volume.*" Thus, what DTSC saw was the DSRS, not the soil volume calculations, and what it determined was reasonable was the use of the DSRS data for such calculations, but DTSC didn't see or verify the calculations themselves.

<sup>55</sup> Draft PEIR pp. 1-16, 3-25, citing "NASA 2015d," which on page 9-4 of the Draft PEIR References section is identified as "email from Peter Zorba (NASA) to Paul Carpenter (DTSC) and Jason Ricks (ESA), Subject: NASA Final Remediation Areas, June 29." The full email chain is found at the DTSC SSFL Document Library and is included here as Exhibit 13.



**Carpenter, Paul@DTSC**

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**From:** ZORBA, PETER D. (HQ-AI020) <peter.d.zorba@nasa.gov>  
**Sent:** Monday, June 29, 2015 11:53 AM  
**To:** Carpenter, Paul@DTSC; Jason Ricks  
**Subject:** Re: NASA Final Remediation Areas

Paul/Jason -

We will not have Final remediation areas (FRAs) until SRAIPs and DTSC decision document, so the estimated RAs are based on DSR data. These estimated clean up areas are NASAs most accurate and up-to-date soil estimates.

- Estimate cleanup areas (same as DSR FRAs) ~ 625,558 cy
- Extended RAs estimated at ~ 869,567 cy

Thanks,

- Pete

Above is the entire June 29, 2015 email. As far as the public is aware, NASA provided no calculations for DTSC to review.

What DTSC did in its draft PEIR is merely reported what *NASA's estimate* was, that it “is considered a greatest degree of impact scenario” with any actual volume likely to be less, and that the data in the NASA Soil Data Summary Report were reasonable to use in coming up with soil volume calculations.<sup>56</sup> That is a far cry from independently “verifying” NASA calculations DTSC never saw.

**d. NASA also inflated soil excavation volumes by reversing its own prior position and now falsely asserting no soil treatment technologies could be employed at SSFL.**

In its 2014 FEIS, NASA identified an array of on-site soil treatment technologies that could be used at SSFL and concluded that 36% of the contaminated soil (180,000 of the 500,000 cubic yards) could be treated on-site, rather than having to be disposed of off-site.<sup>57</sup> Now in its DSEIS, however, NASA claims that significant new information has arisen that demonstrates that such soil treatment technologies “are not expected to meet AOC LUT cleanup criteria.”<sup>58</sup> NASA says

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<sup>56</sup> Draft PEIR pp. 1-16, 3-10.

<sup>57</sup> FEIS pp. 2-20 - 2-28.

<sup>58</sup> DSEIS p. ES-2. The DSEIS discussion of soil treatability issues is at times contradictory and slippery. For example, in its listing of significant new information that has supposedly caused it to prepare the DSEIS and question the AOC it signed, NASA suggests in a single sentence, without citing to any factual support, that soil treatment technologies cannot work at SSFL to meet AOC cleanup levels. DSEIS p. 2-7. Elsewhere in the DSEIS, however, NASA discusses at length seven of those very technologies, describing them as “viable,” which it defines as “effectiveness in cleaning up site-specific contaminants under the environmental conditions present at SSFL.” DSIES pp. 2-1, 2-6. There is not a word in those six pages of discussion of the different techniques that indicate they

this claim is based on an evaluation of treatment technologies, but does not cite to any evaluation document or supporting studies, does not include any such evaluation or studies in the DSEIS References, and has not included them on its webpage for DSEIS supporting documents.

We have nonetheless obtained the May 21, 2018 document “NASA Final Soil Treatment Suitability Studies Summary.”<sup>59</sup> *Its conclusions are precisely the opposite of what NASA claims in the DSEIS*; the studies show various soil treatment technologies can successfully treat soil and reduce contaminant concentrations to AOC LUT limits.

In its 2018 document, NASA examined six treatment options in the “NASA Final Soil Treatment Suitability Studies Summary.” Here, we quote the key conclusions<sup>60</sup> of NASA’s own soil treatment suitability report for those six treatment technologies:

- **Thermal Desorption**
  - “This technology can effectively achieve reductions in COC [Contaminants of Concern] concentrations to the applicable criteria (LUT values...)”<sup>61</sup>
  - “Post-treatment COC concentrations for the high temperature test indicated effectively 100 percent removal.”
  - “From an efficacy standpoint, the potential implementation of a full-scale version of the process makes this technology practical.”
  
- **SVE (Soil Vapor Extraction)**
  - “Based on well-documented studies and field applications, as well as NASA’s bioventing study . . . , SVE is a technology that is feasible at some locations throughout SSFL.”
  - “The expectation that SVE could meet the AOC cleanup requirements is reasonable to a high degree of confidence.”

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couldn’t be effective or could not clean up to the AOC LUT values. It appears almost as if two different entities had written the two sections, with the brief separate unsupported claim of ineffectiveness being pulled out of thin air.

Additionally, in that single sentence on DSEIS p. 2-7 where the claim is made that the technologies “are not expected” to be able to clean up to AOC LUT levels, the basis given for this is that “*most* treatments are *largely unproven* to meet the remedial goal.” (emphasis added). If there were, say, ten possible treatment technologies and four had been “proven” to meet the remedial goals, that statement would still be true. If the bench-scale and field tests of the other six of the possible treatment technologies showed success in meeting the cleanup goals, but NASA somehow felt they weren’t yet full “proof” they could meet the goals, and there was no proof that they wouldn’t work, the same vague statement would also be true. But as indicated in the discussion above, NASA in fact did do actual tests on these treatment technologies and found them to successfully reduce contaminants of concern to the AOC LUT levels. In the converse, NASA has no “proof” that none of the treatment technologies won’t work.

<sup>59</sup> Exhibit 12.

<sup>60</sup> NASA Final Soil Treatability Studies Summary, Section 12, Conclusions, pp. 12-1 - 12-2.

<sup>61</sup> The sentence, and similar ones quoted below, continues to list other standards that are also met, in addition to the Lookup Table values: “(LUT values or QAPP RLs, EPA Region 9 RSLs, and SRAM RBSLs).” Because the issue is whether the technology can clean up to the LUT values, for brevity’s sake and to avoid repetition, we have shortened the quoted sentences.

- **Soil Washing**
  - “Based on documented results of the soil washing bench scale TS [Treatability Study] conducted on contaminated soil from the CCDf [Coca/Delta Fuel Farm], this technology can effectively achieve reductions in COC concentrations to the applicable criteria (LUT values . . . .”
- **ISCO (In Situ Chemical Oxidation)**
  - “Based on field observations and laboratory analytical results of the final soil samples collected following ISCO operations in the Bravo Skim Pond TTZ [Target Treatment Zone], this technology can effectively achieve reductions in COC concentrations to the applicable criteria (LUT values . . . .”
- **Bioventing**
  - “Based on field and laboratory analytical results of the bioventing field scale TS conducted on contaminated soil at the Bravo Skim Pond, this technology can effectively achieve reductions in COC concentrations to the applicable criteria (LUT values . . . .”
- **Landfarming**
  - “Landfarming has been demonstrated for the classes of petroleum compounds and for some related PAH [Polycyclic Aromatic Hydrocarbon] and pesticide compounds found at SSFL. This review found that landfarming led to the successful reduction of TPH [Total Petroleum Hydrocarbons] concentrations to levels that may not meet LUT values but that have been reduced significantly.”

Thus, NASA’s own soil treatment study concluded that five of the six technologies examined could reduce soil concentrations of Contaminants of Concern to the levels required by the AOC (LUT values). And there was no evidence that the sixth technology (landfarming) couldn’t reduce soil concentrations, as it didn’t involve either bench or field tests at SSFL and the studies it reviewed weren’t designed to address the question of whether LUT levels could be achieved.<sup>62</sup>

In contrast to a few of the other reports cited above, we did find evidence that DTSC reviewed NASA’s draft soil treatability studies summary report and approved its release as a final report. DTSC noted that the report concluded that landfarming, SVE, and thermal desorption should be

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<sup>62</sup> DTSC, in its review of the NASA draft report, pointed out that the external case studies examined for Landfarming had been focused on meeting an active remedial goal higher than the LUT value, but it should be considered at SSFL with lower remediation goals. The review of the sixth technology, unlike that of the other five, was restricted to a literature review of case studies elsewhere, none of which apparently was designed to see if the technique could achieve LUT levels. The soil treatment study also noted some challenges involving air flow and other matters with the bioventing field scale test and factors such as uniformity in the distribution of the ISCO solution in the ISCO field test, suggesting that others of the treatment technologies might be better choices. It also indicated that because of the multi-year drought that was occurring when the soil washing tests were conducted, other techniques examined might be preferable.

considered for use in the SSFL cleanup.<sup>63</sup> DTSC also noted that there were difficulties with the ISCO and bioventing studies that “hamper complete interpretations of those methods, and make firm conclusions about their applicability difficult (as the Draft Summary Report concludes).” NASA had, DTSC said, concluded that ISCO and bioventing were “not *as effective or widely applicable* as landfarming, SVE, and Thermal Desorption technologies.”<sup>64</sup> DTSC goes on to say, however, that ISCO and bioventing should not be discounted.<sup>65</sup> Thus, DTSC and NASA agreed that three techniques were effective, and two others were also effective but not as effective as the first three, with DTSC saying they should nonetheless be included in upcoming Soil Remediation Action Implementation Plans.

NASA’s claim in the DSEIS that its evaluation showed that soil treatment techniques “are not expected to meet AOC LUT cleanup criteria” is thus flatly contradicted by the citations above. In fact, the NASA soil treatability studies summary report—which it did not cite or make available on its DSEIS website—concludes exactly the opposite. NASA basing its decision to do a Supplemental EIS on this supposed new information is arbitrary and capricious.

**e. NASA also falsely claims that laboratories can’t detect contaminants at the cleanup levels.**

Another reason NASA asserts it must prepare a Supplemental EIS and breach its AOC cleanup obligations is new information purportedly demonstrating that laboratories *cannot* detect contaminants at the AOC cleanup levels. This is false, and indeed is contradicted by NASA itself in the DSEIS and by DTSC.

NASA identifies “Laboratory Screening Limitations” as one of the key reasons for the Supplemental EIS, asserting, “AOC LUT values are significantly below conventional laboratory capabilities; for example, levels of polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPHs), and dioxins are so low that laboratories cannot distinguish potential ‘contamination’ releases from natural ‘background’ concentrations of these types of constituents.”<sup>66</sup> However, just one page before this, NASA says, “Three years after the signing [of the AOC], DTSC developed LUT values based on a DTSC chemical background study *and the method reporting limits (MRLs) of laboratory equipment* (DTSC, 2013).”<sup>67</sup> So, on one page NASA admits the LUT values are based on what laboratory equipment can detect, and on the very next page claims laboratory equipment can’t detect those levels.

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<sup>63</sup> Letter from Paul Carpenter of DTSC to Dr. Keith Thomson of NASA, *DSTC Comments on NASA Draft Soil Treatability Study Report*, May 2018, Exhibit 14, p. 1.

<sup>64</sup> DSTC, *Comments on NASA Draft Soil Treatability Study Report*, Exhibit 14, p. 2. (emphasis added).

<sup>65</sup> For some reason, DTSC failed to mention the 6th technique examined, soil washing. There are also two treatment technologies identified in both the FEIS and DSEIS that are not analyzed in the NASA Soil Treatability Studies Summary, and one identified in the Studies Summary that is not included in the FEIS and DSEIS. Thus, there may be several additional technologies useful for treatment that have not been fully reviewed.

<sup>66</sup> DSEIS p. ES-3

<sup>67</sup> DSEIS, p. ES-2. (emphasis added). The citation is to DTSC’s Chemical Look-Up Table Technical Memorandum; included herein as Exhibit 15.

As discussed earlier, NASA provides no citation to any source as support for the latter claim, identifies no reference in the References, and provides no document in support on its webpage for SSFL DSEIS supporting documents. It is an unsupported and unsupportable assertion. The AOC values are *not* below laboratory capabilities—they were *set* by DTSC based on what laboratories could reliably detect, as NASA admits in the DSEIS.<sup>68</sup>

The AOC states that, “Upon completion of the DTSC-led chemical background study, a ‘look-up’ table of the chemical cleanup levels will be prepared, which will include both local background concentrations as well as *minimum detection limits for specific contaminants whose minimum detection limits exceed local background concentrations.*”<sup>69</sup> When detection limits exceed local background, an exception to the requirement to cleanup to background applies.<sup>70</sup> In those circumstances, the LUT defaults to the detection limit. The AOC defines minimum detection limits for chemicals as the “method reporting limit (or MRL), which is the lowest concentration at which an analyte can be confidently detected in a sample and its concentration can be reported with a reasonable degree of accuracy and precision.”<sup>71</sup>

In preparing the “look-up table” (LUT), DTSC conducted a background study, which included determining laboratory method detection and reporting limits for each chemical considered.<sup>72</sup> As stated in DTSC’s background study, “A rigorous laboratory evaluation was conducted to identify laboratories that could consistently produce high-quality, defensible analytical data with the lowest achievable reporting limits (RLs) within a commercial laboratory environment.”<sup>73</sup>

The subsequent LUT was based on background threshold values (BTVs) for chemicals for which MRLs were lower than the measured background values, MRLs for chemicals in the background study where MRLs exceeded background, and for the chemicals not in the background study, MRLs determined by DTSC based on a review of multiple lab’s capabilities.<sup>74</sup> As DTSC described its multi-lab study for determining MRLs, “DTSC reviewed and evaluated the MRLs from several different laboratories and from the results of recent and current investigation work conducted on the site (multi-lab MRL study). For all the chemicals that were not part of DTSC’s chemical background study (e.g., volatile organic compounds), the Look-Up Table value is the

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<sup>68</sup> DSEIS, cover sheet p. 2, ES-2.

<sup>69</sup> AOC Appendix B, p. 2 (emphasis added). See also Department of Toxic Substances Control, Chemical Look-Up Table Technical Memorandum, June 11, 2013, Exhibit 15, p. 2.

<sup>70</sup> AOC Appendix B, p. 1.

<sup>71</sup> AOC §1.7.3.1.

<sup>72</sup> Department of Toxic Substances Control, Chemical Soil Background Study Report, December 2012, Exhibit 10, p. ES-2.

<sup>73</sup> *Ibid.*, p. ES-2.

<sup>74</sup> See DTSC Chemical Look-Up Table Technical Memorandum, June 11, 2013, Exhibit 15, particularly the table itself on pdf pp. 8-13, showing the basis for each chemical’s LUT value.

chemical-specific MRL from the multi-lab study.”<sup>75</sup> DTSC concluded that “the multi-lab *MRLs are routine and practicable.*”<sup>76</sup>

The actual Look-Up Table, in addition to giving the LUT value for each chemical of concern, identified the basis for the cleanup level for each contaminant: BTV (Background Threshold Value), BG-MRL (the Method Reporting Limit for the background measurements, if higher than background), and M-L MRL (the Multi-Lab MRLs from DTSC’s survey of the capabilities of multiple laboratories, employed when the chemical wasn’t part of the background study).<sup>77</sup>

Thus, there are no LUT values at concentrations that laboratories cannot detect, DTSC has formally determined that to be the case, and NASA in its DSEIS admits it. Yet, nonetheless, NASA elsewhere in the same DSEIS claims, without basis or citation, the opposite to be true.<sup>78</sup>

#### **IV. NASA Inflates the Amount of and Impacts from Trucks Necessary for Excavation**

By inflating the number of trucks supposedly necessary for the remediation to address the contamination NASA created at SSFL, the question arises whether NASA is exaggerating the number of trucks and length of cleanup required so as to create an argument for breaking the cleanup agreement it signed. However, the extraordinary increase in its estimates seems to have no factual basis.

##### **a. The FEIS and DSEIS both found a “negligible increase in traffic” from cleanup truck trips.**

In its FEIS, NASA calculated the increase in daily truck trips that would be caused by the cleanup project and found that “project-related truck trips represent a negligible increase in traffic on the study roadways.”<sup>79</sup>

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<sup>75</sup> *Ibid.*, p. 5.

<sup>76</sup> *Ibid.* (emphasis added).

<sup>77</sup> See DTSC Chemical Look-Up Table Technical Memorandum, June 2013, attachment “DTSC Chemical Look-Up Table for DOE NASA at SSFL,” Exhibit 15, pdf pp. 8-13.

<sup>78</sup> NASA in passing also questions many of its own detections of TPH, PAHs, and dioxins, since they were found in “areas with no known *source* of contamination.” DSEIS p. ES-3 (emphasis added). That, however, is precisely the point—contamination has migrated from the sources (e.g., rocket test stands) by airborne dispersion, surface water migration, etc. to pollute soil outside the immediate operational areas.

<sup>79</sup> FEIS pp. 4-72, 4-73 (citing to Table 4.5-5).

TABLE 4.5-5  
**Percentage Increase in ADT (Truck Trips)**  
*NASA SSFL EIS for Proposed Demolition and Environmental Cleanup*

Roadway	Average Daily Trips						
	Existing	Demolition		100% Excavation / Disposal (500,000 yd <sup>3</sup> )		Excavation/Disposal plus Onsite Treatment (320,000 yd <sup>3</sup> )	
		Truck Trips	Percentage Increase in ADT	Truck Trips	Percentage Increase in ADT	Truck Trips	Percentage Increase in ADT
SR 118, near Topanga Canyon Boulevard	126,000	20	0.02%	58	0.05%	36	0.03%
U.S. 101, near Topanga Canyon Boulevard	228,000	30	0.01%	86	0.04%	56	0.02%
Topanga Canyon Boulevard	47,500	50	0.11%	144	0.30%	92	0.19%
Roscoe Boulevard	6,450	50	0.78%	144	2.23%	92	1.43%
Valley Circle Boulevard	10,600	50	0.47%	144	1.36%	92	0.87%
Plummer Street	4,200	0	0.00%	0	0.00%	0	0.00%
Woolsey Canyon Road	1,500	50	3.33%	144	9.60%	92	6.13%
Box Canyon Road	4,000	0	0.00%	0	0.00%	0	0.00%
Santa Susana Pass Road	5,200	0	0.00%	0	0.00%	0	0.00%

Source: FEIS p. 4-73 (highlighting added)

If onsite treatment were employed for soils to reduce excavation/transportation amounts, NASA in its FEIS estimates traffic would increase<sup>80</sup> on:

- State Route 118 by 0.03%,
- US Highway 101 by 0.02%,
- Topanga Canyon Boulevard by 0.2%,
- Roscoe and Valley Circle Boulevards by approximately 1% each, and
- Woolsey Canyon Road by 6%.

Even assuming that no onsite treatment is conducted at all, and all contaminated soil must be trucked out for disposal, NASA estimated an increase in traffic on:

- State Route 118, near Topanga Canyon Boulevard, by 0.05%,
- US Highway 101, near Topanga, by 0.04%,
- Topanga Canyon Boulevard by 0.3%,
- Valley Circle Boulevard by 1%,
- Roscoe Boulevard by 2%, and

<sup>80</sup> NASA should disclose the traffic data for when SSFL was fully operational.



- Woolsey Canyon Road, the short private road that is the primary access to the site, by 9.6%.

The largest increase in traffic would be on Woolsey Canyon Road, a short private road which for decades has served as the main access to the field lab. The second highest increase in traffic would be a mere 2% under the full excavation and 1% under the onsite treatment plan. Truck traffic, by NASA's own admission, is therefore a "negligible" concern.

Even the above-cited numbers from NASA's FEIS are likely over-estimates. For example, for these calculations, NASA assumed all truck traffic entering and leaving the site would take Woolsey Canyon Road down to Valley Circle Boulevard to Roscoe Boulevard and from there head either north to State Route 118 or south to US Highway 101 on Topanga Canyon Boulevard. If there were efforts to disperse the traffic to reduce impacts in any one location, these numbers for several of the routes would be even lower. Additionally, NASA assumed that trucks leaving the site with soil for disposal would return empty, and entirely separate set of trucks would additionally enter the site with replacement soil and go back empty, whereas if one is trying to reduce truck impacts and save money, one would have trucks that hauled soil offsite return with replacement soil. One shouldn't add the trips of trucks hauling soil out and hauling soil in; they should be the same roundtrips.<sup>81</sup>

In the DSEIS, NASA reduced the daily number of truck trips assumed to 16 round trips daily, claiming it was limited to that amount.<sup>82</sup> Were NASA correct, and trucks could only do 16 daily round trips to SSFL, then the increase in traffic from those trucks should be even lower than the increase NASA found in the FEIS, when it assumed more trucks per day. The DSEIS doesn't acknowledge such a reduction, in part because of two assumptions made. First, the DSEIS includes not just the trucks for hauling soil but also the cars for the SSFL workers.<sup>83</sup> Secondly, NASA multiplies each truck by a factor of 2.5 and adds that figure to the workers' cars total.<sup>84</sup> So NASA is not really estimating the increase in traffic due to the trucks, but to all cars that would access the site during remediation.

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<sup>81</sup> The FEIS assumed, for the situation where there is on-site treatment of part of the contaminated soil, 68 one-way trips (i.e., 34 roundtrips) daily for soil removal, 22 (11 roundtrips) for backfilling, and 2 (1 roundtrip) for deliveries. FEIS p. 2-21. If a fraction of the trucks used for hauling soil off were used on the return trip to bring replacement soil, the total number of trucks departing the site would be almost identical to the amount allocated to NASA in the Transportation Agreement, even if DOE and NASA were using their allocations at the same time.

In the 100% removal case (no onsite treatment), NASA assumed in the FEIS 106 individual trips (i.e., 53 roundtrips) daily for taking soil offsite, and added separately 36 one-way trips (i.e., 18 roundtrips) for bringing in replacement soil, and 2 one-way (i.e., 1 roundtrip) trips for deliveries, for a total of 144 one-way trips or 72 roundtrips. FEIS p. 2-20. Thus, the increases in traffic estimated in the FEIS, already admitted by NASA to be "negligible," would be even smaller if one, as one should, combined the trucks carrying off soil for disposal and had the same trucks return with replacement soil.

<sup>82</sup> DSEIS p. 3-113.

<sup>83</sup> DSEIS p. 3-115 (There obviously were far more of these during the years SSFL operated.).

<sup>84</sup> *Ibid.*

TABLE 3.8-6

Comparison of Peak-Hour Traffic Conditions: Action Alternatives Traffic Impacts for Start of Remediation Year (2020)  
NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura County, California

Roadway	Segment	Project Only Volume	A.M. Peak Hour Volume	P.M. Peak Hour Volume	Daily Peak Volume	A.M. Change over Baseline	P.M. Change over Baseline	Daily Change over Baseline	A.M. Peak Hour V/C Ratio	P.M. Peak Hour V/C Ratio	Daily Peak V/C Ratio	A.M. Peak Hour LOS	P.M. Peak Hour LOS	Daily Peak LOS
Roscoe Boulevard	Woodlake Avenue to Shoup Avenue	18	1,067	1,088	N/A	1.7%	1.6%	N/A	0.43	0.44	N/A	A	A	N/A
Roscoe Boulevard	Shoup Avenue to Farralone Avenue	18	2,252	2,757	N/A	0.8%	0.6%	N/A	0.90	1.10	N/A	D	F	N/A
Valley Circle Boulevard	Woolsey Canyon Road to Chatlake Drive	18	1,328	1,029	N/A	1.3%	1.7%	N/A	1.26	0.98	N/A	F	E	N/A
Plummer Street <sup>a</sup>	Valley Circle Boulevard to Farralone Avenue	18	788	738	N/A	2.3%	2.4%	N/A	0.75	0.70	N/A	C	B	N/A
Woolsey Canyon Road	Valley Circle Boulevard to Knapp Ranch Road	18	242	284	N/A	7.8%	6.6%	N/A	0.23	0.27	N/A	A	A	N/A
Box Canyon Road <sup>a</sup>	Santa Susana Pass Road to Robertson Road	8	542	483	N/A	1.4%	1.6%	N/A	0.52	0.46	N/A	A	A	N/A
Santa Susana Pass Road <sup>a</sup>	Rocky Peak Road to Box Canyon Road	8	391	370	N/A	2.0%	2.1%	N/A	0.37	0.35	N/A	A	A	N/A
SR 27/Topanga Canyon Boulevard	Roscoe Boulevard to Devonshire Street	18	N/A <sup>b</sup>	N/A <sup>b</sup>	4,848	N/A <sup>b</sup>	N/A <sup>b</sup>	0.4%	N/A <sup>b</sup>	N/A <sup>b</sup>	0.92	N/A <sup>b</sup>	N/A <sup>b</sup>	E
SR 27/Topanga Canyon Boulevard	Devonshire Street to SR 118	18	N/A <sup>b</sup>	N/A <sup>b</sup>	4,116	N/A <sup>b</sup>	N/A <sup>b</sup>	0.4%	N/A <sup>b</sup>	N/A <sup>b</sup>	0.84	N/A <sup>b</sup>	N/A <sup>b</sup>	D
SR 118	SR 27 to De Soto Avenue	18	N/A <sup>b</sup>	N/A <sup>b</sup>	13,575	N/A <sup>b</sup>	N/A <sup>b</sup>	0.1%	N/A <sup>b</sup>	N/A <sup>b</sup>	0.60	N/A <sup>b</sup>	N/A <sup>b</sup>	A
US 101	SR 27 to Canoga Avenue	18	N/A <sup>b</sup>	N/A <sup>b</sup>	23,875	N/A <sup>b</sup>	N/A <sup>b</sup>	0.1%	N/A <sup>b</sup>	N/A <sup>b</sup>	1.33	N/A <sup>b</sup>	N/A <sup>b</sup>	F

## Notes:

<sup>a</sup> Heavy truck trips were assumed not to use these roadways; passenger trips only.

<sup>b</sup> A.M. and P.M. peak volumes were not available for these roadways, so daily peak-hour volumes are shown.

Source: DSEIS pp. 3-118 (highlighting added)

In the DSEIS, NASA estimates, at peak traffic hour and even with including the workers' cars and multiplying each truck by a factor of 2.5, that the project would increase traffic on:

- Roscoe Boulevard in one direction by 0.6% - 0.8% and in another direction by 1.6% - 1.7%,
- Valley Circle by 1.3% - 1.7%,
- Topanga Canyon by 0.4%, and
- State Route 118 and 101 Freeways by 0.1%.<sup>85</sup>

These are all in the same range that NASA found in its FEIS, and again the DSEIS describes the impact as a “negligible increase in traffic.”<sup>86</sup>

<sup>85</sup> DSEIS Table 3.8-6. Note that Plummer, Santa Susana Pass Road, and Box Canyon are included in NASA's table, but its footnote “a” indicates that trucks were assumed not to use those roadways; the only traffic considered on them is from SSFL workers in their cars.

<sup>86</sup> DSEIS p. 3-100.

**b. While the increase in daily traffic is still assessed as negligible by NASA, it inflates the number of truck trips and years necessary to complete its cleanup.**

NASA in its FEIS estimated cleaning up all the contamination on its part of SSFL would take 23 months and could be completed by 2017, the date promised in the AOC.<sup>87</sup> NASA now makes the spectacular new claim in the DSEIS that it will take more than 25 years of truck shipments to complete the cleanup.<sup>88</sup> NASA now says it was wrong in its own FEIS, and that its error was not a few percent, or a factor of two, but that it will take more than thirteen times as long to conduct the shipments as it stated in its FEIS. The extraordinary claim, however, falls apart under scrutiny. As explained below, NASA, by inflating the amount of soil that requires excavation, and using a number of other sleight-of-hands efforts, has dramatically inflated the amount of trucks supposedly necessary to complete the cleanup to AOC requirements.

*i. False claim of 16 truck round trips a day*

One of the ways in which NASA inflated the number of years it would take to do the cleanup is by falsely claiming that it is limited to 16 round trips a day: “A transportation and road agreement signed in 2015 [(the “Agreement”)]<sup>89</sup> limits the maximum number of daily truck trips associated with the project to 48 round trips per day. It is assumed that this quantity will be equally shared among the three responsible parties for the site, namely, Boeing, NASA, and DOE.”<sup>90</sup> NASA repeatedly asserts in the DSEIS that it “is limited to 16 round-trip truckloads (32 trucks total) per day, 250 days per year.”<sup>91</sup> However, the Agreement states that, “truck traffic will be staggered to allow a maximum of 96 truckloads departing the Site per day.”<sup>92</sup> Thus, NASA’s nominal share would be 32 round-trips daily, not 16 as it claims.

The Agreement further states “If one Party does not need its total number of Trucks that day, the other Parties are allowed to use those trips.”<sup>93</sup> Therefore, NASA is not even limited to the 32 round trips, given that it is unlikely that all three Parties will be conducting all of their cleanup

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<sup>87</sup> FEIS pp. 2-20, 2-21.

<sup>88</sup> DSEIS, p. 2-12.

<sup>89</sup> Boeing, NASA, DOE, “Transportation and Road Agreement,” 2015, Exhibit 16, pg. 2. As indicated earlier, the link NASA has posted for this document on its website for DSEIS References currently does not work. We previously obtained the document, but others wishing to comment on the DSEIS will not be able to review this critical document which is misrepresented in the DSEIS.

<sup>90</sup> DSEIS p. 2-13, (citing the “Transportation and Road Agreement”). See also DSEIS p. 3-54.

<sup>91</sup> DSEIS p. ES-6 (citing TRA p. ES-6 ; DPEIR p. 2-13). “The daily maximum number of trucks visiting the site for export and import of materials would be 96 round trips (resulting in 192 total trips) in total for all RPs combined.” Draft PEIR p. 1-20; see also p. 3-29 and Appendix H, p. 21. NASA states on page 3-114 “truck trips will be evenly divided over an 8 hour work day.” However, the Transportation and Road Agreement does not limit the truck trips to an 8 hour window. Exhibit 16. The Agreement states on pg. 2 that “Trucks will be dispatched from Site between 6am and 7pm,” allowing the RPs a 13-hour window for truck trips.

<sup>92</sup> Transportation and Road Agreement, 2015, Exhibit 16, p. 2.

<sup>93</sup> *Ibid.*

activities simultaneously and thus at least some days NASA will be able to use more than 32 round-trips because another Party wouldn't be using their full allotment during that time.

NASA calculated the time required for cleanup by assuming 16 truckloads of soil would leave the site per day, 250 days per year. Using these numbers and NASA's inflated soil volume estimates, NASA asserted that remediation would take 25 or more years. However, this is an exaggeration based on a false claim. If NASA used the correct estimate of 32 truck loads of soil per day, the estimated length of time required could be cut in half, all other factors remaining constant. That is to say, even with NASA's inflated soil volumes, and correcting no other misrepresentations NASA has made in the DSEIS, cleanup would not take longer than approximately 12 years.

ii. "Expansion Factor"

NASA has additionally inflated its truck and cleanup time estimates by assuming that, despite 19 cubic yards of soil being a truck's actual capacity, a single truck could only hold 13.3 cubic yards. NASA says, without providing any support: "The truckload capacity is assumed to be 19 yd<sup>3</sup>; however, due to the expansion factor for excavated soil, 13.3 yd<sup>3</sup> of excavated soil is equivalent to 1 truckload."<sup>94</sup> This assumption alone artificially increases the number of trucks and the time for cleanup by 43%, a factor of 1.43 (19/13.3=1.43).

As the Southern California Federation of Scientists showed in its DOE EIS scoping hearing testimony in 2014,<sup>95</sup> this makes no sense because the soil would be compacted back to its normal density as it is put into the trucks.<sup>96</sup> Subsequently, DOE, in its Final EIS, noted that NASA had not assumed an expansion factor in estimating the number of trucks needed, and that "the three parties [DOE, NASA, and Boeing] agreed to present soil volumes using the in situ quantities and not to apply an expansion factor."<sup>97</sup>

NASA also, in both its DEIS and FEIS, correctly used no expansion factor—it assumed each truck could carry 19 cubic yards of soil and used the "estimated volume of soil requiring excavation."<sup>98</sup> But NASA has now tried—without providing an explanation for the change—to

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<sup>94</sup> DSEIS p. 2-12, fn. b.

<sup>95</sup> Statement of The Southern California Federation of Scientists at DOE Scoping Hearing for the Draft Environmental Impact Statement for the Santa Susana Field Laboratory March 1, 2014, Exhibit 17.

<sup>96</sup> One would do this in part just on economic grounds alone, reducing the number of trucks and thus shipping costs markedly.

<sup>97</sup> DOE Final EIS Appendix D, p. D-72. See also DOE FEIS D-43.

<sup>98</sup> NASA DEIS p. 2-18, NASA FEIS p. 2-18. We have checked the calculations and NASA in both cases assumed 19 cubic yards of soil per truck and *in situ* soil volumes (i.e., with no expansion). For example, NASA estimated on p. 2-37 of the FEIS that it would take 26,461 truck shipments for 500,000 cubic yards of soil remediated, which in fact is ~19 cubic yards per truck. See NASA DEIS p. 2-18, -35, 4-90 and NASA FEIS p. 2-18, -37, 4-94 (e.g., "The number of trucks required for soil removal or backfill was estimated based on the soil removal or backfill volume and a truck capacity of 19 yd<sup>3</sup>.").

quietly alter this input into the calculations and use a large expansion factor in its DSEIS.<sup>99</sup> NASA is arbitrarily decreasing the soil carrying capacity of each truckload.

*iii. Additional areas of inflation*

NASA's own DEIS and FEIS assumed that with some use of on-site treatment techniques, 320,000 cubic yards of soil would need to be transported offsite for disposal; with no on-site treatment, the figure was 500,000. In either case, NASA estimated 23 months for completion.<sup>100</sup>

NASA now claims there will be 870,000 cubic yards of soil that will have to be hauled off-site, taking 99,098 truck trips and more than 25 years under the AOC cleanup.<sup>101</sup> It bases this claim on several indefensible assumptions.

- Additional 250,000 cubic yards of soil to be removed in areas where no contamination has been found.

In the DSEIS, NASA added 252,311 cubic yards of soil in areas it has now designated as Extended Remediation Areas (XRAs),<sup>102</sup> even though, as we demonstrated above, NASA has not a single measurements in those areas showing contamination. Indeed, all the measurements in those areas show no exceedances.

- Assumes all soil down to bedrock or 20 feet must be removed, even if there is no evidence of contamination beneath the surface.

For the Estimated Remediation Areas (ERAs), NASA indefensibly assumed that soil would be excavated to bedrock or up to 20 ft below ground surface, even if measurements show contamination only on the surface or if there are no subsurface measurements at all.<sup>103</sup>

- NASA assumes that all contaminated soil will have to be excavated and disposed of offsite, despite *in situ* and *ex situ* soil treatment technologies.

In its FEIS, NASA identified a number of technologies that would allow contaminated soil to be treated on site, reducing substantially the amount of soil that would have to be

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<sup>99</sup> Note that NASA in its DSEIS has not only inflated the number of trucks and time for cleanup by using an expansion factor—which was not done in its DEIS and FEIS—but it has also inflated the expansion factor, using 43% rather than DOE's previous assumption of 30% or Boeing's previous assumption of 25%. Ultimately, the three parties agreed not to use an expansion factor. (DOE, Draft EIS, Appendix D, p. 63 and Final EIS Appendix D, p. D-72)

<sup>100</sup> NASA DEIS, 2013, pp. 2-19, 2-20; NASA FEIS, 2014, pp. 2-20, 2-21.

<sup>101</sup> NASA DSEIS p. 2-12.

<sup>102</sup> NASA, Backfill Calculations from Allen Elliot, 2018.

<sup>103</sup> DSEIS p. 2-10.

trucked off-site for disposal. In its FEIS, NASA assumed that more than a third (36%) of the contaminated soil on its property at SSFL could be treated on site and not have to be disposed of offsite—with treatment employed, 320,000 cubic yards of soil would be transported offsite; without treatment, 500,000 cubic yards.<sup>104</sup>

- Dramatically increases the amount of backfill assumed.

NASA claims in its DSEIS it will need 448,000 yd<sup>3</sup> of backfill to be trucked in, as much as four times as much as set forth in its FEIS.<sup>105</sup> There is no new information presented to justify this; NASA is merely changing its assumptions used in its calculations to further exaggerate the truck trips. In the DSEIS, NASA markedly inflates the backfill amount by assuming that all excavated soil at depths greater than two feet would require 100% replacement soil, whereas its own FEIS assumed one-third.<sup>106</sup> There is no basis given for this change; indeed, it is not even identified as a change, but merely hidden in a footnote.<sup>107</sup> Overall, NASA now assumes more than half of excavated soil will need to be backfilled, rather than the original estimate of 33%. Further, as discussed earlier, it has now inflated the amount of soil excavated, which also inflates the amount of backfill assumed. These unjustified increases in backfill estimates result in further overstatement of truck trips to and from the site and the amount of time it will take to complete remediation activities.

- Double-counts trucks for removing contaminated soil and replacing with clean soil.

NASA assumes trucks leaving the site with contaminated soil for disposal would return empty, and trucks going to the site with replacement soil would likewise come back down empty.<sup>108</sup> Even just on an economic basis, this makes no sense, let alone if one is trying to minimize truck impacts. Trucks carrying soil off-site for disposal should return carrying replacement soil to the extent needed.

### **c. Correcting for NASA's Errors.**

#### *i. Correcting for Actual Number of Truck Shipments Allowed Daily*

If one were to calculate the length of time it would actually take NASA to achieve a full, AOC-compliant cleanup using its own equations and numbers from its own table, and merely uses the

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<sup>104</sup> FEIS pp. 2-20, 2-21.

<sup>105</sup> DSEIS p. ES-6, Table ES-2. In its FEIS, NASA assumed that one-third of excavated soil would be backfilled, amounting to 106,667 yd<sup>3</sup> if in situ remediation technologies were employed, and 167,000 yd<sup>3</sup> if in situ technologies were not used and all contaminated soil was excavated. FEIS, pp. 2-20, 2-21.

<sup>106</sup> DSEIS p. ES-6, fn. c; FEIS pp. 2-20, 2-21.

<sup>107</sup> DSEIS p. ES-6, fn c.

<sup>108</sup> NASA DSEIS, p. 2-12, NASA gives two separate counts for trucks in Table 2.2-2, 65,414 for Off Haul Truckloads and 33,684 for Backfill Import Truckloads. It then combines these for a total of 99,098 Truckloads, effectively double counting the number of necessary trucks in its calculations.

actual daily 32 roundtrips (64 one-way) allocated to NASA, rather than the erroneous 16 roundtrips, one gets a cleanup duration of:

$$\left(\frac{99,098 \text{ trucks} \div 32 \text{ trucks/day}}{250 \text{ days/year}}\right) = \left(\frac{3,096 \text{ days}}{250 \text{ days/year}}\right) = 12.39 \text{ years}$$

ii. *Correcting for Actual Capacity of the Trucks*

If NASA were to, as it accurately did in its FEIS, calculate based on the 19 cubic yard capacity of the trucks, rather than the 13.3 cubic yards/truck it erroneously used in the DSEIS, the total number of truck shipments for offsite disposal and to bring replacement soil would be  $(13.3 \div 19) \times 99,098$ , or 69,368 trucks, and the time required would be:

$$\left(\frac{69,368 \text{ trucks} \div 32 \text{ trucks/day}}{250 \text{ days/year}}\right) = \left(\frac{2,168 \text{ days}}{250 \text{ days/year}}\right) = 8.67 \text{ years}$$

iii. *Correcting for the Double-Counting of Truck Trips*

NASA is currently assuming that all truck trips are empty in one direction (i.e., that trucks taking contaminated soil offsite for disposal all return empty, and that trucks bringing replacement soil up to the site all come back down empty). If NASA were to assume, as it should, that trucks carrying replacement soil up to the site would not go back down empty but would take contaminated soil for offsite disposal, the total number of truck round-trips would be reduced from the 69,268, as above, to 45,790<sup>109</sup>, and the time required reduced to 5.7 years:

$$\left(\frac{45,790 \text{ trucks} \div 32 \text{ trucks/day}}{250 \text{ days/year}}\right) = \left(\frac{1,431 \text{ days}}{250 \text{ days/year}}\right) = 5.72 \text{ years}$$

iv. *Correcting for Actual Soil Volume Requiring Excavation*

If the new Extended Remediation Areas (XRAs)—for which there is not a single measurement showing contamination—were removed from the volume excavation estimates, the amount of excavated soil would be decreased from 870,000 to 617,689 yd<sup>3</sup>.<sup>110</sup> This would reduce the total number of truck shipments to 32,510  $[(617,689 \div 870,000) \times 45,790 = 32,510]$  and the time to four years. If all the prior corrected assumptions were taken into account: the equation would look like this:

<sup>109</sup> In the DSEIS, NASA claims it will require 65,414 truck loads to haul excavated soil offsite and 33,684 truck loads to bring new backfill onsite. NASA DSEIS, p. 2-12. If NASA were to instead have the 33,684 truckloads that deliver soil take soil away as well, it could reduce the number of necessary trucks by 33,684. Accounting for this factor, and further correcting for the “fluff factor”, NASA would need 45,790  $[(13.3 \div 19) \times 69,368]$  trucks.

<sup>110</sup> The volume estimates for the XRA and ERA are found in DSEIS Reference NASA 2018c.



$$\left(\frac{32,510 \text{ trucks} \div 32 \text{ trucks/day}}{250 \text{ days/year}}\right) = \left(\frac{1,015 \text{ days}}{250 \text{ days/year}}\right) = 4.06 \text{ years}$$

In its DSEIS, NASA also inflated soil volumes by assuming for the Estimated Remediation Areas (ERAs) that all soil contamination went down to bedrock or up to 20 feet, even when measurements showed contamination only at the surface or there were no measurements below the surface. This unsupported assumption appears to have been largely responsible for increasing the estimate for these areas from the 500,000 yd<sup>3</sup> in the FEIS to 617,689 yd<sup>3</sup> used in the DSEIS.<sup>111</sup> Using the more reasonable estimate from the FEIS reduces total truck trips to 26,316 [(500,000÷617,689) x 32,510 = 26,316] and time to approximately three years.

$$\left(\frac{26,316 \text{ trucks} \div 32 \text{ trucks/day}}{250 \text{ days/year}}\right) = \left(\frac{822 \text{ days}}{250 \text{ days/year}}\right) = 3.23 \text{ years}$$

Finally, in its DSEIS, with no new information relied upon to base its changed position, NASA now asserts no onsite treatment of contamination can be used, whereas in its FEIS it had identified numerous such treatment techniques and presumed they could reduce offsite shipments of soil for disposal by more than a third, to 320,000 yd<sup>3</sup>. Assuming the same use of such treatment approaches—which should be embraced to the maximum extent possible, as they reduce and mitigate offsite and onsite impacts—that NASA assumed in its FEIS, total truck shipments would be reduced to 16,836 [(320,000÷500,000) x 26,316 = 16,842] and cleanup time to approximately two years. This is the same timeframe as NASA itself estimated in its FEIS, but here assuming a daily truck limit that didn't exist when the FEIS was issued.

$$\left(\frac{16,842 \text{ trucks} \div 32 \text{ trucks/day}}{250 \text{ days/year}}\right) = \left(\frac{526 \text{ days}}{250 \text{ days/year}}\right) = 2.11 \text{ years}$$

After correcting for the many erroneous claims NASA makes in the SEIS, it is clear that the cleanup could, in fact, take roughly 23 months, as the original FEIS predicted. The claim that the cleanup will take 25+ years is based on misrepresentations and should be dismissed. Again, we note the incongruity of the environmental advocates suggesting that cleanup can be dramatically shortened as compared to the federal agency responsible for the contamination. But we stress for the record of this proceeding, the thorough cleanup necessary for this site was set out in the 2010 AOC and this DSEIS is simply a transparently misguided attempt to break out of the agreement.

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<sup>111</sup> *Ibid.*

#### **d. Sensible Transportation Alternatives That Would Reduce Truck Impacts Are Ignored.**

NASA estimated in its FEIS and in the DSEIS that cleanup to the AOC requirements would entail about two or three trucks per hour.<sup>112</sup> That is likely less than the truck traffic in and out of SSFL during the decades of its operation.

Nonetheless, there are ways to reduce truck impacts, but NASA has consistently refused to consider them. One is an enclosed conveyor system that would take the soil down to a rail spur north of SSFL for loading on trains, without passing a single house. The DSEIS eliminated this from consideration, despite its own conclusion that it was “technically feasible.”<sup>113</sup>

The main argument given against a conveyor system is that it would take time to put in place, similar to the argument made in NASA’s 2013 DEIS, which stated, “The time required to complete the prerequisite surveys, studies, and engineering/designs to support applications for required permits is a potentially significant constraint in terms of meeting the cleanup requirement date for SSFL.”<sup>114</sup> There is no small irony in this claim, since the 2017 deadline has come and gone, without soil cleanup even beginning. Had the process begun then to put the conveyor in place, it could be operational now and the cleanup close to done. NASA in the DEIS estimated trucking the soil would take 23 months. Now it claims more than 25 years. Constructing a conveyor system could get the cleanup done in a fraction of that time, avoiding the trucking issues.

A second option is to use Edison Road, which comes out of the western part of SSFL, taking the shipments either to State Route 118, or to a railroad spur and loading intermodal canisters onto trains, in either case passing near only a few homes. NASA also failed to consider this alternative.

A third alternative it refused to consider is to disperse the trucks over several routes, reducing impacts to any individual area. These alternatives are discussed in more detail in the SSFL Transportation Options Taskforce report, attached.<sup>115</sup>

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<sup>112</sup> NASA FEIS p. 2-21; NASA DSEIS p. 3-114; assumes 13 hours allowed for trucks each day, per NASA, Boeing, and DOE, “*Transportation and Road Agreement*,” 2015, p. 2.

<sup>113</sup> DSEIS pp. 2-24 - 2-25. See FEIS Figure 2.4-1 (showing possible conveyor routes NASA identified).

<sup>114</sup> NASA, “*Draft Environmental Impact Statement for Proposed Demolition and Environmental Cleanup Activities at Santa Susana Field Laboratory*,” July 2013, p. 2-41.

<sup>115</sup> SSFL Transportation Options Taskforce, *Preliminary Overview of Alternative Transportation Options for Santa Susana Field Laboratory Cleanup*, August 7, 2014, Exhibit 18.

## **V. NASA Falsely Claims Suitable Replacement Soil for the Cleanup is Not Available**

NASA gives as one of its primary reasons for preparing a Supplemental EIS that since the preparation of the FEIS in 2014, there has been “an identified lack of suitable replacement soil.”<sup>116</sup> This simply isn’t true: the two investigations performed for NASA by its contractor CH2M HILL since the 2014 FEIS both identified multiple sources of suitable replacement soil.

The first study, *Field Laboratory Borrow Pit Sampling for Santa Susana Field Laboratory* (“2015 CH2M HILL Report”), CH2M HILL issued in August 2015. As discussed earlier, NASA referred to this investigation in its DSEIS,<sup>117</sup> but failed to correctly cite it or to release it. However, the second CH2M HILL report, *Comparison of Native Soil and Imported Backfill Material Conditions for Future Restoration Activities, Santa Susana Field Laboratory, Ventura County, California* (“2017 CH2M HILL Report”), summarizes the purpose and conclusions of the 2015 CH2M HILL Report’s examination of five potential sources of backfill materials:

The overall goal of the investigation was to identify potential backfill source areas capable of supplying large quantities, up to 600,000 cubic yards (yd<sup>3</sup>), of suitable backfill materials for the implementation of soil remedial actions at the Santa Susana Field Laboratory (SSFL) in Ventura County, California. Clean backfill material delivered to SSFL will be required under the Administrative Order on Consent (AOC) to meet the 2013 California Department of Toxic Substances Control (DTSC) chemical Look-Up Table (LUT) values (DTSC, 2013). *Based on the results of soil samples collected at each site during the June 2014 investigation, two source areas (Grimes Rock and Vulcan Materials) were considered as possible sources of backfill materials suitable for use at SSFL, because samples collected from both of these locations did not exceed AOC LUT values of chemical constituents and would be able to supply the large quantity of material* (CH2M HILL, 2015).<sup>118</sup>

Based on these findings, the 2017 CH2M HILL Report examined the characteristics of the soil and vegetation at various locations at SSFL that have been identified by NASA as needing remediation and compared those characteristics to those of replacement soils from Grimes and Vulcan. Like the 2015 CH2M HILL Report, the 2017 Report again deemed soils from those sources suitable replacement soils: “*In most instances, the backfill material has properties similar to the native, undisturbed soil and can be used for re-vegetation purposes without*

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<sup>116</sup> DSEIS p. ES-1.

<sup>117</sup> DSEIS p. 2-2.

<sup>118</sup> CH2M HILL, *Comparison of Native Soil and Imported Backfill Material Conditions for Future Restoration Activities, Santa Susana Field Laboratory, Ventura County, California*, prepared for NASA, November 2017, p. 1 (emphasis added) (citing the 2015 report for NASA, *Field Laboratory Borrow Pit Sampling for Santa Susana Field Laboratory*) (hereinafter “2017 CH2M HILL”).

*augmentation.*”<sup>119</sup> The Report noted that the Vulcan soil was lower in calcium and thus slightly preferable to the Grimes soil, but “both [the Vulcan and Grimes] backfill materials are acceptable for use in re-vegetation on the NASA-administered properties at SSFL.”<sup>120</sup>

The 2017 CH2M HILL Report examined the soil types and nutrient concentrations at SSFL and found:

*the undisturbed soil is low in many nutrients, which is common with native sandy soil. Sand-dominated soil does not have sufficient silt or clay particles to retain nutrients, so the nutrients tend to leach to levels below the root zone with precipitation infiltration. Vegetation native to this type of soil has adapted to the nutrient-poor environment. Low nutrient levels increase the importance of soil organic matter, which is a nutrient source that becomes available to plants through decomposition. In the low-plant-density chaparral and Venturan coastal sage scrub vegetation types sampled in this study, organic matter input is low, as shown in the organic matter content (0.93 to 1.93 percent) in the samples.*<sup>121</sup>

The study also found that:

The texture of the Vulcan Materials backfill material most closely matches the texture of the undisturbed soil. Organic matter is lower than in the undisturbed soil. The backfill materials are generally slightly higher in nutrient content than the averages in native soil but not high enough to raise concerns.<sup>122</sup>

And concluded:

*The nutrient concentrations of either acceptable backfill material will support the target native vegetation types.* With the exception of organic matter, nutrient amendments are not recommended because they would encourage the growth of undesirable invasive vegetation. A high-fiber, low-nutrient organic source such as composted leaves would provide a good source of organic compounds without supplying readily available additional nutrients. This type of organic matter will improve soil tilth, provide exchange sites to retain nutrients in the soil rooting zone, and hold water for longer periods of time. Many municipalities have sole-

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<sup>119</sup> 2017 CH2M HILL, p. 6.

<sup>120</sup> 2017 CH2M HILL, pp. 6-7 (emphasis added). The report recommended that if Grimes backfill were used, it would be important to blend it from different locations in the stockpile, because the calcium content was higher and lower in different samples.

<sup>121</sup> 2017 CH2M HILL, p. 6 (emphasis added).

<sup>122</sup> *Ibid.*

source leaf collection and mulching programs that could provide a source for this type of material.

The 2017 CH2M HILL Report found both Grimes and Vulcan replacement soil to be physically similar to the onsite native soil. Although the replacement soil is low in natural nutrients, the native soil is as well, and thus the low nutrient levels were actually helpful in providing the appropriate environment for the native vegetation and preventing growth of unwanted non-native species.<sup>123</sup> As to nutrient content, the replacement soil was somewhat higher in nutrients than the native soil, but not enough to be a concern.<sup>124</sup>

In short, the two CH2M HILL Reports found that both Grimes and Vulcan could provide the replacement soil needed, in quantities larger than even the inflated amounts now proposed in the DSEIS, meeting the LUT levels.<sup>125</sup> The “significant new information” since the FEIS is that there *is* suitable replacement soil. The soil was comparable in composition to that of the native soil at SSFL, met the LUT values, and could support the native vegetation.

The CH2M HILL studies, performed for NASA, actually found. Virtually every assertion NASA has made on the matter is wholly inaccurate and/or misleading. Here is the NASA section describing what it claims is the significant new information requiring a Supplemental EIS and breach of its AOC obligations,<sup>126</sup> and our responses:

- NASA: “Availability of Suitable Replacement Soil: NASA will require approximately 448,000 yd<sup>3</sup> of backfill and topsoil to meet the 2010 AOC LUT values and support native revegetation and habitat restoration. This volume equates to excavating approximately 10 feet deep across 21 football fields. NASA tested soil from multiple potential offsite backfill locations.”<sup>127</sup>

RESPONSE: False. NASA estimated in its FEIS that 106,667 y<sup>3</sup> of replacement soil would be needed if it employed on-site treatment techniques for some of the cleanup and 167,000 y<sup>3</sup> would be needed even if no treatment were used.<sup>128</sup> As discussed previously, NASA has inflated the replacement soil estimate by inflating the excavation volumes and by changing the fraction of soil beneath two

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<sup>123</sup> 2017 CH2M HILL, p. 6.

<sup>124</sup> *Ibid.*

<sup>125</sup> *Ibid.*, p. 1

<sup>126</sup> DSEIS p. 2-7.

<sup>127</sup> DSEIS p. 2-7.

<sup>128</sup> FEIS pp. 2-20 - 2-21.

feet needing fill replacement from 1/3 to 100%, without indicating it had done so or providing any basis for doing so.

- NASA: “However, the only backfill materials that complied with the AOC contained predominately sand and gravel mixtures, which lack the soil structure or nutrients needed to revegetate the excavated areas.”<sup>129</sup>

RESPONSE: False. There is not a word in the 2017 CH2M HILL Report that indicated replacement soil was a gravel mixture or lacked the soil structure or nutrients necessary to revegetate the SSFL remediation areas. To the contrary. CH2M HILL analyzed the SSFL main soil types and found “Based on the sampling results, the undisturbed soil has a sandy loam texture and neutral pH,” and the replacement soil was similar.<sup>130</sup> It wasn’t, as NASA claims, that the only soils that met the AOC were soils that were a poor match for SSFL; just the opposite: “the backfill material has properties similar to the native, undisturbed soil and can be used for re-vegetation purposes without augmentation.”<sup>131</sup> The two soil types that were a good match for SSFL met the AOC LUT values. As to nutrients, 2017 CH2M HILL Report states, “The nutrient concentrations of either acceptable backfill material will support the target native vegetation types.”<sup>132</sup>

- NASA: “California State University studies have shown that amending backfill materials to produce soil that is capable of supporting the SSFL ecosystem would result in soil with chemical nutrient levels that exceed the AOC LUT values.”<sup>133</sup>

RESPONSE: False. The report from researchers at Cal State San Diego did not examine whether the composition of potential soil amendments would exceed AOC LUT values.<sup>134</sup>

- NASA: “DOE observed that even store-purchased topsoil fails to meet the AOC LUT values (DOE, 2018).”<sup>135</sup>

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<sup>129</sup> DSEIS p. 2-7.

<sup>130</sup> 2017 CH2M HILL, pp. 5-6.

<sup>131</sup> 2017 CH2M HILL, p. 6.

<sup>132</sup> 2017 CH2M HILL, p. 7.

<sup>133</sup> DSEIS p. 2-7.

<sup>134</sup> Richard Hillary et al., *NASA Santa Susanna [sic] Field Laboratory Replacement Soil Testing*, November 2017

<sup>135</sup> DSEIS p. 2-7.

RESPONSE: Misleading at best. The cited DOE source does not indicate that what was tested was “store-purchased topsoil.” Instead it states that what was tested were “commercially available soil *amendments* commonly used by residential gardeners,” because revegetation of SSFL might “require soil amendments to facilitate revegetation.”<sup>136</sup> No indication is given what those amendments were, for example, high concentration artificial chemical fertilizers. In any case, the actual measurements reported were almost exclusively values below the Method Reporting Limit used for the analyte, where the MRL exceeded the LUT value, and where the laboratory indicated that there was no confidence in the concentration reported.<sup>137</sup> Furthermore, the issue is not the level in the concentrated amendment material, but the concentration that would result when diluted in the replacement soil, and the DOE report does not indicate that the replacement soil with such amendments would exceed LUT values. Even if there were such an exceedance, the AOC allows it; DTSC has the authority to approve its use.<sup>138</sup> Lastly, NASA’s own study, performed by CH2M HILL, recommends not adding nutrients to the replacement soil, as the existing SSFL soil is low in such nutrients and “vegetation native to this type of soil has adapted to the nutrient-poor environment,” and “the backfill materials are generally slightly higher in nutrient content than the averages in native soil but not high enough to raise concerns.”<sup>139</sup> Further, “higher nutrient levels tend to encourage the growth of undesirable vegetation, such as weeds. The backfill materials do not have sufficient nutrients to favor weed growth over native vegetation.”<sup>140</sup> Thus, CH2M Hill recommends merely adding some readily available leaf mulch to increase the organic content of the soil. NASA provides no evidence whatsoever that replacement soil with some leaf mulch would exceed LUT values.

- NASA: “The implications of being unable to obtain suitable backfill materials in the necessary volumes are significant. Native plant establishment would be greatly hindered, resulting in potentially devastating effects to the natural environment at SSFL, as the site would remain barren in areas where gravel was used, and non-native plants could become established where native species are currently dominant.”<sup>141</sup>

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<sup>136</sup> DOE FEIS, Appendix D, p. D-60

<sup>137</sup> DOE FEIS Appendix D, Table D-13; most highlighted values are coded “J,” indicating they are below the MRL and are estimates; the only exceptions for Product 1, for example, were three Extractable Fuel Hydrocarbons, In the same FEIS, DOE asserted that there are measurement difficulties for such TPHs and that the measurements may be picking up organic molecules and not TPHs. DOE FEIS p. S-29 - S-30

<sup>138</sup> NASA AOC, §2.1.1, referencing DOE AOC Attachment C, p. 4

<sup>139</sup> 2017 CH2M HILL p. 6

<sup>140</sup> *ibid.*

<sup>141</sup> DSEIS p. 2-7.



RESPONSE: NASA’s own studies by CH2M HILL, both in 2015 and 2017, have determined that suitable backfill materials are available in volumes greater than even the inflated estimate NASA now has put forward. The CH2M HILL work does not conclude establishment of native plants would be hindered, that there would be devastating effects, or the site would remain barren in areas where gravel was used—CH2M HILL concludes just the opposite, that there is available replacement soil, similar to that of SSFL, meeting LUT values, in the quantities needed, that can result in revegetation of the native species. No use of gravel is ever suggested in its report, but rather use of replacement soil that has the same sandy loam consistency as the native soil being replaced.

Elsewhere in the DSEIS, NASA tries to discount the findings of its own studies. However, NASA then argues that for Vulcan “it is uncertain whether the chemical characteristics of the fill material would be consistent with the 2014 sampling results.”<sup>142</sup> NASA has no information showing Vulcan replacement soil would exceed LUT values; its only data show the opposite. The “significant new information” since the FEIS is that there *is* suitable replacement soil. NASA’s only data were positive.

NASA argues against its own findings on Grimes soil as well. It admits, “The alternative preferred source is Grimes Rock, Inc. in Fillmore, California. The Grimes Rock pit has *adequate supply and met the chemical requirements for general backfill at SSFL.*”<sup>143</sup> NASA then goes on to argue, “However, Grimes Rock material differs from the onsite native soil physically, and it is unknown whether the fill material is adequate to support vegetative restoration. Initial analyses indicated relatively low levels of natural nutrients.”<sup>144</sup> However, the CH2M HILL study had found both Grimes and Vulcan replacement soil to be similar to the onsite native soil physically, and although low in natural nutrients, so was the native soil, and thus the low nutrient levels were actually helpful in providing the appropriate environment for the native vegetation and preventing growth of unwanted non-native species.<sup>145</sup> (As to nutrient content, the replacement soil was actually somewhat higher in nutrients than the native soil, but not enough to be a concern.<sup>146</sup>)

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<sup>142</sup> DSEIS p. 2-2

<sup>143</sup> *ibid.*

<sup>144</sup> *ibid.*

<sup>145</sup> 2017 CH2M HILL, p. 6

<sup>146</sup> *ibid.*

Finally, NASA also briefly discusses—and misrepresents—a report by a team from San Diego State University (“SDSU”).<sup>147</sup> The SDSU study first examined the microbial community in a sample provided to it by NASA of replacement fill and of SSFL soil. The DSEIS asserts that the best replacement soil was from Grimes and that it was Grimes fill that NASA provided to SDSU.<sup>148</sup> However, elsewhere in the DSEIS NASA states that Vulcan is the preferred replacement soil.<sup>149</sup> It is thus unclear why NASA would provide SDSU with the less preferred soil type, nor how old (and dried out) the sample may have been; if it were a sample from the 2014 sampling event, comparing it to soil newly taken from an SSFL vegetated site would not be a proper comparison. In any event, SDSU found, not unexpectedly, a different microbial environment in the two samples sets.

SDSU also compared the germination results from replacement soil with that of potting soil in a greenhouse. For reasons not explained, SDSU did not use seeds from plants from Santa Susana but rather plants from the San Diego area. For the six species tested, two species planted in replacement soil had *higher* germination rates at the end of the test than those in potting soil; two had identical rates; and three had lower rates.<sup>150</sup> The study found, “*In general, the greenhouse trials showed that native seeds could germinate in the replacement soil as well as, or in some cases, better than in the standard greenhouse potting mix.*”<sup>151</sup> Number of leaves and height were generally somewhat greater in the potting soil. This is unsurprising—that is why people grow seedlings in potting soil in greenhouses. Remarkably, SDSU did not conduct the most vital comparison—that of germination and growth rates for seeds in replacement soil vs. SSFL soil.

The conclusion of the SDSU report is: “if intact areas of native soil could remain on the site to serve as a source of inoculum, and if suitable organic matter were added so that native plants and microbes could develop, then the backfill material might eventually attain a community more typical of native soils, and would lose its urban/anthropogenic characteristics.”<sup>152</sup> That is, of course, precisely what is to happen if NASA were to comply with the AOC. The remediation would only affect part of the site; undisturbed soil and vegetation communities would remain near the remediated parts, with their seeds and microbial communities propagating into the remediated areas, with the replacement soil potentially amended with some organic matter (readily available leaf litter mulch) as CH2M HILL recommends, and the damage done to the natural environment by decades of NASA polluting it would be reversed. Revegetation efforts,

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<sup>147</sup> Richard Hillary et al., *NASA Santa Susanna [sic] Field Laboratory Replacement Soil Testing*, November 2017.

<sup>148</sup> DSEIS p. 3-36.

<sup>149</sup> DSEIS p. 2-2, 2017. See also 2017 CH2M HILL pp. 6-7 (the 2017 CH2M HILL also found Vulcan is preferred because of somewhat higher calcium levels in the Grimes soil).

<sup>150</sup> Hillary, Table 3.

<sup>151</sup> Hillary, p. 21, emphasis added.

<sup>152</sup> Hillary, p. 23.

perhaps also with seedlings grown in potting soil as in the SDSU examples, would enhance that restoration.

## **VI. NASA Erroneously Claims Boeing's Parts of SSFL Will Be Cleaned up to Recreational Standards and That Would Justify NASA Breaking its Own Cleanup Agreement**

NASA says that “Boeing has announced that it will clean up soil to a recreational risk-based standard,”<sup>153</sup> and that this poses problems were NASA to live up to its AOC commitments. However, just as NASA as the polluter cannot choose how much of its pollution it will clean up, neither can Boeing. The regulator, DTSC, has that authority, not the Responsible Party.

DTSC has made clear that cleanup of the Boeing-controlled portions of SSFL must comply with the 2007 Consent Order that Boeing signed with DTSC, which requires cleanup plans consistent with the Standardized Risk Assessment Methodology 2 (“SRAM2”)<sup>154</sup>, which includes cleanup to standards of suburban residential with garden.<sup>155</sup> SRAM2 suburban residential with garden Risk Based Screening Levels are lower than background for many chemicals.<sup>156</sup> DTSC has also made clear that the Boeing cleanup must take into account all land uses allowed by Ventura County zoning and General Plan designations, which includes agricultural and residential.<sup>157</sup> Ventura County has repeatedly stated that its land use designations allow a wide range of residential and agricultural uses there and that the site should be cleaned up so it safe for any of those uses.<sup>158</sup>

Thus, it is false to claim, as NASA does in it DSEIS, that there is significant new information that Boeing's part of the property will be cleaned up to a recreational standard, merely because *Boeing* says that is what it wants to do. Boeing doesn't get to decide, DTSC does. And buried

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<sup>153</sup> DSEIS pp. ES-3, 2-7.

<sup>154</sup> 2007 Consent Order §3.2.1.1.

<sup>155</sup> See, e.g., DTSC draft PEIR pp. 1-13 - 1-14; letter from DTSC's Mark Malinowski to Boeing's Mark Zeller, January 16, 2018, Exhibit 19.

<sup>156</sup> Compare the Risk Based Screening Levels for SRAM-based suburban residential garden in the SRAM2 Update (pdf pp. 1071-3) to the Look-Up Table values, DSEIS Appendix 2A. When a Risk-Based Screening Level is below background, the cleanup level defaults to background.

<sup>157</sup> See DTSC Response to Comments on the Agreement in Principle, Volume 1, October 26, 2010, Exhibit 20, pp. 21, 14-15, saying that even absent the AOCs, or SB990 (a SSFL-specific law subsequently struck down), DTSC would require cleanup to the levels sufficient to protect all the land uses allowed by Ventura County zoning and land use decisions, which allow rural agricultural uses and residential. Note that DTSC states in that document that a risk-based cleanup to standards sufficient to protect for all the land uses allowed by County zoning and General Plan designations would functionally be equivalent to a cleanup to background.

<sup>158</sup> See, e.g., letters from Kim Prillhart, Director, Ventura County Planning Division, to Mark Malinowski, DTSC, July 20, 2015, and December 20, 2017, and the Ventura County Board of Supervisors official December 17, 2019, comment letter on the NASA DSEIS. Exhibits 21a, b, and c respectively.

more than a hundred pages later in the DSEIS, NASA admits “As of April 2019, the DTSC had not accepted Boeing’s proposed recreational cleanup levels.”<sup>159</sup>

While NASA further asserts that differing cleanup standards would pose “several seemingly unresolvable issues,”<sup>160</sup> NASA identifies only one such issue, and it is flimsy. NASA claims that if it were to clean up its property as required by the AOC and Boeing cleaned up its nearby property to a recreational standard, contamination could subsequently migrate onto the NASA property, requiring NASA to do further cleanup. However, that is not how the AOC works. Under the AOC, NASA is to clean up its contamination to AOC levels, at which point DTSC certifies the cleanup complete and prepares for NASA an Acknowledgment of Satisfaction. NASA’s obligations under the AOC are then over and NASA would not be responsible for any contamination that migrates onto the NASA property.<sup>161</sup>

There thus is no significant new information about differing cleanup standards that could justify a Supplemental EIS or trying to breach the legally binding AOC. When NASA executed the AOC in 2010, it knew Boeing was not signing a similar AOC and the cleanup standard for its property would be different. Nothing has changed. This is simply one more claim of supposedly changed circumstances that melts away when scrutiny is applied.

## **VII. NASA Falsely Claims that the LUT Values Are Too Protective For Human Health**

NASA made a promise and signed a legally binding agreement to clean the site up to background, the concentration of chemicals that would exist had NASA never contaminated the site. First, it does not matter if the AOC values were more protective than certain risk-based concentrations. NASA made a promise, it signed an agreement, and it needs to be held accountable. Furthermore, some LUT values are actually less stringent than the DTSC suburban residential garden risk based screening levels (RBSLs).<sup>162</sup>

## **VIII. NASA Misrepresents the Alternative Standards it Proposes to Use in Breach of its AOC**

NASA’s final claim of “significant new information” requiring a Supplemental EIS and arguing for breaching the AOC is its assertion that the AOC requirements exceed what would be done under a supposed risk-based cleanup. First, NASA provides nothing new in making this claim;

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<sup>159</sup> DSEIS p. 3-136.

<sup>160</sup> DSEIS p. 2-8.

<sup>161</sup> AOC §7.0. NASA’s only ongoing obligation is record-retention.

<sup>162</sup> See Table 1 below, which shows AOC Look-Up Table Values, and Table 2, which shows DTSC suburban residential garden risk based screening levels. The tables show that in some instances, the AOC LUT values are weaker standards than the SRAM screening levels. For example, the LUT value for Antimony is 0.86 mg/kg, whereas the SRAM-based Suburban Residential with Garden RBSL is 0.138 mg/kg. Similarly, the values for Cadmium, Dioxins/Furans, and PAHs are less stringent in the LUT than in the SRAM suburban residential garden.

everything NASA points to it knew when it signed the AOC. And second, its claims about the cleanup levels that would be required under a risk-based cleanup are inaccurate, as shown below.

**a. Alternative B**

NASA calls its Alternative B “Revised Lookup Table Values.” Lookup Tables are tables setting forth cleanup standards as required in the AOC, based on background values and detection limits. NASA has no authority to revise these values because under the AOC, DTSC—not NASA—sets the “Lookup Tables.” Yet in this alternative, NASA proposes ignoring those legally required cleanup levels and substituting its own, far laxer levels, for seven key contaminants. The differences are large; if NASA were to skirt its AOC obligations with this proposal, it would abandon contaminants in Southern California at levels as much as three million times higher than required by the agreement it signed and to which it is bound.

**Table 1**  
**Comparison of NASA’s Alternative B Cleanup Levels [“Proposed Revised Lookup Table (LUT) Values”] to the Levels NASA Promised to and is Required to Meet Under the AOC<sup>163</sup>**

<b>Contaminant</b>	<b>NASA's Proposed Revised LUT Values (mg/kg)</b>	<b>AOC LUT Values (mg/kg)</b>	<b>How many times higher are NASA's Proposed Revised LUT Values compared to what the AOC requires</b>
Acetone	61,000	0.02	<b>3,050,000</b>
Antimony	30	0.86	<b>35</b>
Cadmium	1.7	0.7	<b>2</b>
Dioxin/Furans	0.0000046	0.000000912	<b>5</b>
PAHs	0.11	0.00447	<b>25</b>
Silver	380	0.2	<b>1900</b>
TPH	1000	5	<b>200</b>

<sup>163</sup> In this and all subsequent tables, the value for Dioxin/Furans is based on the 2,3,7,8-TCDD toxicity equivalent (DIOXTEQ). NASA uses the terms DIOXTEQ, DIOXTEQM, and DIOXINTEQM interchangeably in its DSEIS and accompanying tables; all instances refer back to the 2,3,7,8-TCDD TEQ used in the AOC LUT (see DSEIS p. 2-9, DSEIS Appendix 2B p. 1, DSEIS Appendix 2C p. 1, and DSEIS Appendix 2D p. 1). In this table, the value for PAHs is based on the benzo(a)pyrene toxicity equivalent (PAHTEQ). NASA uses the terms PAHTEQ and PAHTEQM interchangeably in its DSEIS and accompanying tables; all instances refer to the benzo(a)pyrene TEQ used in the AOC LUT (see DSEIS p. 2-9, DSEIS Appendix 2B p. 3, DSEIS Appendix 2C p. 2, and DSEIS Appendix 2D p. 2). NASA does not specify which TPH this value refers to. The AOC LUT only reports a value for TPH EFH (C15-C20), and the limit reported in the DSEIS for the AOC LUT value is indeed the value for TPH EFH (C15-20), so this is the TPH we have assumed NASA is using in its proposed revised LUT.

NASA misleadingly asserts that its proposed revised Lookup Table values are based on EPA Regional Screening Levels (RSLs) and other sources it has cherry-picked, which it claims are designed to protect for unrestricted release.<sup>164</sup> But those don't include the garden pathway, which is supposed to be added in separately for the particular chemicals of concern at a specific site, and which produces markedly lower limits.<sup>165</sup> Below in Table 2 we compare NASA's proposed revised Lookup Table values with the DTSC Suburban Residential Risk-Based Screening Level with SRAM-Based Garden. As one sees, the SRAM Suburban Residential levels are hundreds and thousands of times more protective than NASA's proposed revised LUT values.<sup>166</sup> NASA's Alternative B, thus, not only is vastly weaker than the cleanup it is legally bound to by the AOC, but even if the AOC didn't exist, the standards NASA proposes in this alternative are orders of magnitude less protective than that required by its regulator DTSC to protect residents.<sup>167</sup>

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<sup>164</sup> DSEIS p. 2-9.

<sup>165</sup> EPA RSLs do not at present include the garden pathway for residential exposure (See "Regional Screening Levels – User's Guide", U.S. EPA, November 2019, <https://www.epa.gov/risk/regional-screening-levels-rsls-users-guide>, although it is included in EPA's radionuclide Preliminary Remediation Goal calculator (<https://epa-prgs.ornl.gov/radionuclides/>). EPA officials have said that because there are so many chemicals, it has been a more complicated matter for them to come up with defaults for chemicals for the garden pathway, but EPA is considering doing so. See *Inside EPA*, "Advocates Question Whether EPA Cleanups Are Protective for Gardening," May 9, 2016. In the meantime, the garden pathway is to be added in based on site specific inputs, when a garden is possible. *Ibid*. Similarly, the CHHSL's don't include the garden pathway; see Human-Exposure-Based Screening Numbers to Aid Estimation of Cleanup Costs for Contaminated Soil. January 2005 revision. Office of Environmental Health Hazard Assessment, California Environmental Protection Agency, p. 7 (PDF p. 11), <https://oehha.ca.gov/media/downloads/crn/screenreport010405.pdf>. DTSC's SRAM2 Update does contain Risk Based Screening Levels for suburban residential garden pathway. SRAM2 Update pdf pp. 1071-3. The column one is to use is the SRAM-Based Suburban Residential Garden. Boeing asked to include "for comparison purposes" what it falsely claimed were EPA Default RBSLs; DTSC said they could be included for informational purposes but the SRAM-based values were the ones required to be used. See SRAM2 Update pdf p. 1107 and December 7, 2017 comments of the Southern California Federation of Scientists on DTSC's draft PEIR. Exhibit 22.

<sup>166</sup> In the SRAM, one is to combine the "suburban residential soil" RBSL with the "SRAM-based suburban residential garden" RBSL; see letters by DTSC to Boeing dated August 23 and September 12, 2016, regarding RFI reports; the SRAM identifies the formulas to use to derive the combined RBSLs on pdf pp. 1104-5.

<sup>167</sup> In this and the tables that follow, we present comparisons for a few select chemicals by way of example.

**Table 2**  
**Comparison of NASA’s Alternative B Cleanup Levels [“Proposed Revised Lookup Table (LUT) Values”] to the Suburban Residential Levels in DTSC’s Standardized Risk Assessment Methodology (“SRAM2 Update”)**<sup>168</sup>

<b>Contaminant</b>	<b>NASA's Proposed Revised LUT Values (mg/kg)</b>	<b>DTSC SRAM2 Suburban Residential RBSL w/ Garden (mg/kg)</b>	<b>How many times higher are NASA's Proposed Revised LUT values compared to DTSC's official Suburban Residential levels</b>
Acetone	61,000	7.79	<b>7831</b>
Antimony	30	0.138	<b>217</b>
Cadmium	1.7	0.00165	<b>1030</b>
Dioxin/Furans	0.0000046	0.0000000075	<b>613</b>
PAHs	0.11	0.0000807	<b>1363</b>
Silver	380	1.80	<b>211</b>

**b. Alternative C**

NASA falsely claims its Alternative C is set to Suburban Residential Standards and is based on the DTSC-approved Standardized Risk Assessment Methodology (“SRAM”).<sup>169</sup> In fact, NASA didn’t actually use the DTSC SRAM Suburban values, but employed unspecified equations of its choosing from the SRAM and other sources and its own inputs.<sup>170</sup> The actual derivations of its values are not disclosed. Most importantly, the values it puts forward are often hundreds of times higher (i.e., weaker, less protective) than the SRAM-based suburban residential risk based screening levels. One is required by the SRAM to include in the suburban residential standard the garden exposure pathway, and the SRAM provides screening levels based on the SRAM-based garden pathway. NASA failed to do so, which results in vastly less protective standards than required. Table 3 shows a few examples of the grossly less protective level of contamination NASA proposes to leave behind in its supposed “Suburban Residential” standard compared to the actual suburban residential standard in the DTSC-approved Standardized Risk Assessment Methodology for SSFL.

<sup>168</sup> In this table and the subsequent one, NASA’s value for PAHs is based on the benzo(a)pyrene toxicity equivalent, whereas the DTSC SRAM2 value used in this table is based on the RBSL for benzo(a)pyrene. The SRAM2 does not report a value for benzo(a)pyrene TEQ. Since the benzo(a)pyrene TEQ is supposedly based on the risk for benzo(a)pyrene, the values should be the same.

<sup>169</sup> DSEIS p. 2-10

<sup>170</sup> DSEIS p. 2-10, Appendix 2C



**Table 3**  
**Comparison of NASA’s Alternative C Cleanup Levels (“Proposed Suburban Residential Cleanup Levels”) to the Suburban Residential Levels DTSC in the DTSC-Approved Standardized Risk Assessment Methodology (“SRAM2 Update”)**

<b>Contaminant</b>	<b>NASA DSEIS Proposed Suburban Residential Cleanup Levels (mg/kg)</b>	<b>DTSC SRAM2 Suburban Residential RBSL w/ Garden (mg/kg)</b>	<b>How many times higher are NASA's Proposed Suburban Residential Cleanup Levels compared to the SRAM2 Suburban Residential levels</b>
Anthracene	16000	100	<b>160</b>
Antimony	26	0.138	<b>188</b>
Aroclor 1016	3.8	0.0138	<b>275</b>
Aroclor 1242	0.22	0.000485	<b>454</b>
Benzene	0.33	0.00349	<b>95</b>
Dioxin/Furans	0.0000047	0.000000075	<b>627</b>
Mercury	8.8	0.0502	<b>175</b>
Methylene Chloride	11	0.0106	<b>1038</b>
n-Nitrosodimethylamine	58	0.000000949	<b>61,116,965</b>
PAHs	0.11	0.0000807	<b>1363</b>

NASA’s Alternative C also would allow contaminant concentrations vastly higher than permitted under the legally binding cleanup agreement it signed.

**c. Alternative D**

Alternative D, the supposed “recreational” standard, is the weakest of all. It assumes someone is on the property only a few hours a week, whereas people are living nearby nearly 24 hours a day 7 days a week and would be potentially exposed to migration from SSFL of contamination NASA now wants to not clean up. The cleanup levels proposed by NASA under Alternative D are hundreds and thousands of times higher (less protective) than either the cleanup values NASA is required to meet under the AOC it signed or the DTSC-approved SRAM-based suburban residential levels.

**d. NASA’s proposed cleanup standards would harm ecological receptors.**

NASA asserts in the DSEIS that its supposed suburban residential cleanup standards (Alternative C) and its recreational cleanup standards (Alternative D) would be fully protective of plants and animals at the site, so-called “ecological receptors,” even though both are far weaker than what is required under the AOC. But NASA’s own tables demonstrate that claim to be false.



In Appendix 2D, for example, NASA presents its proposed recreational cleanup levels and its own asserted screening levels for harm to ecological receptors. Over and over again, the contamination levels NASA proposes to leave in place far exceed the levels NASA itself admits would pose risk to the ecological receptors, by factors of hundreds or thousands. We provide a few examples in Tables 4, 5, 6, and 7 below.

**Table 4**  
**Comparison of NASA’s Alternative D Cleanup Levels (“Proposed Recreational Human Cleanup Levels”) to Levels NASA’s Own Alternative D Risk Assessment Admits Would Put Ecological Receptors at Risk**<sup>171</sup>

<b>Contaminant</b>	<b>NASA DSEIS Proposed Recreational Human Cleanup Levels (mg/kg)</b>	<b>NASA DSEIS Proposed Recreational Ecological Risk Levels (mg/kg)</b>	<b>How many times higher are NASA's Proposed Recreational Cleanup Levels than NASA's own risk levels for ecological receptors</b>
4-Methyl-2-pentanone	33,000	45	<b>733</b>
Acenaphthylene	3,300	3.3	<b>1000</b>
Aluminum	75,000	440	<b>170</b>
Anthracene	16,000	25	<b>640</b>
Benzoic acid	240,000	45	<b>5333</b>
Di-n-butyl phthalate	6,100	1.1	<b>5545</b>
Diethyl phthalate	49,000	23	<b>2130</b>
Dimethyl phthalate	49,000	45	<b>1089</b>
Fluorene	2,200	5.4	<b>407</b>
Phenanthrene	16,000	28	<b>571</b>
Zinc	23,000	93	<b>247</b>

<sup>171</sup> In NASA’s Ecological Risk Assessments for Alternatives C and D (seen here in Tables 4, 5, and 6), NASA uses different numbers for some of the metals. For example, under the Recreational alternative, lead would apparently put ecological receptors at risk at a level of 36 mg/kg, whereas under the Recreational alternative, lead would not put ecological receptors at risk until it reached a level of 49 mg/kg. This discrepancy is unexplained in the DSEIS: whether humans are recreating or residing at the site should have no bearing on the levels at which metals are considered toxic to birds and gophers.

**Table 5**  
**Comparison of NASA’s Alternative C Cleanup Levels (“Proposed Suburban Residential Human Cleanup Levels”) to Levels NASA’s Own Alternative C Risk Assessment Admits Would Put Ecological Receptors at Risk**

<b>Contaminant</b>	<b>NASA DSEIS Proposed Suburban Residential Human Cleanup Levels (mg/kg)</b>	<b>NASA DSEIS Proposed Suburban Residential Ecological Risk Levels (mg/kg)</b>	<b>How many times higher are NASA's Proposed Residential Cleanup Levels than NASA's own risk levels for ecological receptors</b>
4-Methyl-2-pentanone	33,000	45	<b>733</b>
Acenaphthylene	3,300	3.3	<b>1000</b>
Acetone	61,000	230	<b>265</b>
Anthracene	16,000	25	<b>640</b>
Benzoic acid	240,000	45	<b>5333</b>
Carbazole	6,100	15	<b>407</b>
Di-n-butyl phthalate	6,100	1.1	<b>5545</b>
Diethyl phthalate	49,000	23	<b>2130</b>
Dimethyl phthalate	49,000	45	<b>1089</b>
Fluorene	2,200	5.4	<b>407</b>
Phenanthrene	16,000	28	<b>571</b>
Phenol	18,000	51	<b>353</b>
Zinc	23,000	215	<b>107</b>

Furthermore, the ecological risk levels NASA puts forward in its Appendices, without any basis provided as to how individual numbers were arrived at, are often considerably higher (less protective) than the Ecological Risk-Based Screening Levels in the DTSC-Approved SRAM2 Update. NASA says it has relied upon SRAM3, but SRAM3 was a proposal by Boeing which DTSC has officially rejected.<sup>172</sup>

<sup>172</sup> The NASA claim of reliance on SRAM3 is at DSEIS p. 2-10, 6-5 ; DTSC’s rejection of Boeing’s proposed SRAM3 was by letter dated January 16, 2018, from DTSC’s Mark Malinowski to Boeing’s Mark Zeller, “Department of Toxic Substances Control’s Comments on the Boeing Company’s Draft Standardized Risk Assessment Methodology Work Plan Revision 3”

**Table 6**  
**Comparison of NASA’s Alternative C Ecological Risk Levels (“Proposed Suburban Residential Ecological Risk Levels”) to Ecological Risk-Based Screening Levels in the DTSC-Approved Standardized Risk Assessment Methodology (“SRAM2 Update”)**<sup>173</sup>

<b>Contaminant</b>	<b>NASA DSEIS Proposed Suburban Residential Ecological Risk Levels (mg/kg)</b>	<b>DTSC SRAM2 Ecological RBSL Soil Cleanup Levels (mg/kg)</b>	<b>How many times higher are NASA's Proposed Residential Ecological Risk Levels than the SRAM2 Ecological RBSLs</b>
Aluminum	58,600	16	<b>3663</b>
Arsenic	74	2.1	<b>35</b>
Barium	1,410	44	<b>32</b>
Benzene	730	31	<b>24</b>
Chromium	330	1	<b>330</b>
Manganese	10,500	79	<b>133</b>
Methoxychlor / p, p'-Methoxychlor	50	2.5	<b>20</b>

Similarly, as shown in Table 7 below, the levels of contamination NASA proposes to leave in the soil at SSFL under its Alternative B, “proposed revised LUT values,” would for various chemicals be at levels far higher than the DTSC SRAM2 Update EcoRBSLs, i.e., place those ecological receptors at continuing risk.

<sup>173</sup> The comparisons are for the most protective EcoRBSLs in the DTSC SRAM2 Update.

**Table 7**  
**Comparison of NASA’s Alternative B Cleanup Levels (“Proposed Revised LUT Values”) to Ecological Risk Based Screening Levels in the DTSC-Approved Standardized Risk Assessment Methodology (“SRAM2 Update”)**

<b>Contaminant</b>	<b>NASA's Proposed Revised LUT Values (mg/kg)</b>	<b>DTSC SRAM2 Ecological RBSL Soil Cleanup Levels (mg/kg)</b>	<b>How many times higher are NASA's Proposed Revised LUT Values than the SRAM2 Ecological RBSLs</b>
Acetone	61,000	46	<b>1,326</b>
Antimony	30	0.042	<b>714</b>
Cadmium	1.7	0.019	<b>89</b>
Dioxin/Furans	0.0000046	0.0000005	<b>9</b>
Silver	380	0.99	<b>384</b>

**Conclusion**

NASA should withdraw its Draft Supplemental Environmental Impact Statement for the cleanup of the Santa Susana Field Laboratory and fully comply with the Administrative Order on Consent it signed in 2010.

## Exhibit List for NRDC-CBG-PSRLA DSEIS Comments

Exhibit Number	Document Title
EX01	Letter from Debbie Raphael, DTSC Director, to Allen Elliott, SSFL Project Manager, NASA, September 19, 2011,
EX02	Letter from CEQ Chair Nancy Sutley to Senator Barbara Boxer, Chairman, Committee on Environment and Public Works, June 19, 2012
EX03	Public Statement from SSFL Project Director Allen Elliott 7.18.12
EX04	NASA-SSFL-Communications, " <i>Notice of Update to NASA SSFL Website</i> ," December 11, 2019 email.
EX05	Taylor Altenbern, " <i>Missing Appendices NASA's SSFL Soil Data Summary Report</i> ," email, December 3, 2019.
EX06	Error Messages for DTSC Information Repository Webpage
EX07	DTSC Document Library Webpage that Shows Links to Appendices E - J Posted.
EX08A-K	Error Messages for Missing Appendices on DTSC Document Library
EX09	Transportation and Road Agreement "403 - Forbidden: Access is Denied" error code
EX10	DTSC, <i>Chemical Soil Background Study Report</i> , December 2012.
EX11	Briana Jahnsen, " <i>Draft SSFL DEIS</i> ," email, October 30, 2019
EX12	NASA, " <i>Soil Treatability Studies Summary</i> ," May 2018.
EX13	Email " <i>Re: NASA Final Remediation Areas</i> ," from Peter Zorba, NASA SSFL Project Director, to Paul Carpenter (DTSC) and Jason Ricks (ESA), June 29, 2015.
EX14	DSTC, <i>Comments on NASA Draft Soil Treatability Study Report</i> , May 2018.
EX15	DTSC, <i>Chemical Look-Up Table Technical Memorandum</i> , June 2013
EX16	Boeing, NASA, DOE, " <i>Transportation and Road Agreement</i> ," 2015
EX17	Statement of The Southern California Federation of Scientists at DOE Scoping Hearing for the Draft Environmental Impact Statement for the Santa Susana Field Laboratory March 1, 2014.
EX18	SSFL Transportation Options Taskforce, " <i>Preliminary Overview of Alternative Transportation Options for Santa Susana Field Laboratory Cleanup</i> ," August 2014.
EX19	Letter from DTSC's Mark Malinowski to Boeing's Mark Zeller, January 16, 2018.
EX20	DTSC Response to Comments on the Agreement in Principle, Volume 1, October 26, 2010.
EX21A-C	Letters from Kim Prillhart, Director, Ventura County Planning Division, to Mark Malinowski, DTSC, July 20, 2015, and December 20, 2017, and the Ventura County Board of Supervisors official December 27, 2019, comment letter on the NASA DSEIS.
EX22	December 7, 2017 Comments of the Southern California Federation of Scientists on DTSC's draft PEIR