UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

September 30, 2013

Allen Elliott
National Aeronautics and Space Administration
MSFC AS01, Building 4494
Huntsville, Alabama 35812

Subject: Draft Environmental Impact Statement for Proposed Demolition and Environmental Cleanup Activities at the Santa Susana Field Laboratory, Ventura and Los Angeles Counties, California. (CEQ# 20130227)

Dear Mr. Elliott:

The U.S. Environmental Protection Agency has reviewed the Draft Environmental Impact Statement for Proposed Demolition and Environmental Cleanup Activities at the Santa Susana Field Laboratory in Ventura and Los Angeles Counties, California. Our comments are provided pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508), our NEPA review authority under Section 309 of the Clean Air Act, and the provisions of the Federal Guidelines promulgated at 40 CFR 230 under Section 404(b)(1) of the Clean Water Act.

We acknowledge the complexity of the cleanup of NASA administered federal land at the Santa Susana Field Lab. The proposed action has three major components: demolition of buildings and structures; soil removal, including multiple treatment options; and groundwater cleanup, which also includes treatment options. The DEIS explains that NASA must satisfy the requirements of the Agreement on Consent it signed in 2010 with the California Department of Toxic Substances Control, which includes a requirement to remove contaminated soil that exceeds soil concentration limits based on factors such as background values and detection limits. The Proposed Alternative represents that action, and we understand that the Council on Environmental Quality has advised that NASA is not obligated, under NEPA, to consider other alternatives, given NASA's commitment in the AOC to cleanup chemical and/or radiological contaminants to local background levels.

We agree that cleanup of radioactively contaminated soil to background is imperative. EPA and DTSC have cooperatively overseen the cleanup of radioactive contamination to background at, for example, Hunter's Point Naval Shipyard and McClellan Air Force Base. For chemical contamination sites, EPA, as well as DTSC, typically performs soil cleanups to health-based levels, unless background concentrations exceed those health-based levels.

We are concerned about the impacts associated with NASA's proposed removal, transport, and disposal of the large volume of soil that is chemically contaminated at levels below risk-based thresholds. At other cleanup sites, including adjacent non-federal portions of the Santa Susana site, nearly two-thirds of the soil with comparable levels of chemical contamination would be left in place. The increase in traffic and associated air emissions that would result from this action

would create an unnecessary added burden to communities with environmental justice concerns near the potential receiving facilities, such as Kettleman City and Buttonwillow, as well as to the local community at the cleanup site. Based on the information provided in the Draft EIS, NASA proposed soil removal would require 52,000 (one-way) truck trips, compared to the 19,000 truck trips that would be required for cleanup to residential standards. As the Draft EIS also notes, this would be in addition to the 40,000 truck trips that Boeing and the Department of Energy will need to haul waste to disposal facilities from their portions of the Santa Susana site. Additionally, the total volume of soil would consume a notable portion of the hazardous waste landfill capacity in the State of California. DTSC has announced a commitment to reduce by half the amount of hazardous waste disposed in the State by the year 2025, and EPA supports that effort.

Based on the above concerns, we have rated the DEIS as Environmental Concerns – Insufficient Information (EC-2). We recommend that the Final Environmental Impact Statement offer a specific preferred treatment option for soil removal and groundwater cleanup. The enclosed Detailed Comments elaborate on our concerns and include additional recommendations regarding contaminated soil, water resources, air quality, traffic, cumulative impacts, cost, preservation of historic resources, and greener cleanups.

As you know, NASA has trust responsibilities to the Santa Ynez Band of Chumash Mission Indians. We encourage NASA to continue to consult with the tribe and address their concerns about the archaeological investigation performed to date. If NASA determines that any part of the federal land is a Sacred Site or Traditional Cultural Property, we also encourage you work proactively with the California Department of Toxic Substances Control and tribal representatives to mitigate the project's impacts.

EPA appreciates the opportunity to comment on the DEIS. When the FEIS is released, please send one electronic and one hard copy to the address above (mail code: CED-2). If you have any questions, please contact me at (415) 972-3311, or have your staff contact Tom Kelly, the lead reviewer for this project. Tom can be reached at (415) 972-3856 or kelly.thomasp@epa.gov.

Sincerely,

/s/

Kathleen Martyn Goforth, Manager
Environmental Review Office

Enclosures: EPA's Detailed Comments
Summary of the EPA Rating System

cc (via email): John Jones, Department of Energy
Ray Leclerc, Department of Toxic Substances Control
Cassandra Owens, Los Angeles Regional Water Quality Control Board
Susan Nakamura, South Coast Air Quality Management District
(continued on next page)

cc (continued): Sam Cohen, Santa Ynez Band of Chumash Mission Indians
David Dasler, Boeing
Dan Hirsch, Committee to Bridge the Gap

Contaminated Soil

Landfills

The proposed alternative would remove or treat contaminated soil above the Look Up Table values (p. 2-14), which are based on factors such as background concentrations and detection limits. In its notice of intent to prepare an EIS, NASA proposed several alternatives based on various health-based cleanup levels (e.g. residential, industrial and recreational scenarios), in addition to the proposed alternative (p. 2-34 to 36). These alternatives would have affected the soil removal action, but not the demolition or groundwater cleanup actions. Based on comments received, NASA decided to limit its evaluation of alternatives to the proposed alternative and the no action alternative, since only the proposed alternative would fulfill NASA's obligations under its 2010 Agreement on Consent (AOC) with the California Department of Toxic Substance Control to clean up the site to background (p.1-7).

While there are merits to remediating contaminated soil to background, such an approach inevitably involves trade-offs. For example, Table 2-4-2 in the DEIS indicates that a health-based alternative, sufficient to allow residential reuse of NASA administered federal property, would require removal of just over a third as much of the contaminated soil volume as would the proposed alternative. Correspondingly, such an alternative would only need just over one third of the 52,000 (one-way) truck trips, greatly reducing traffic and air quality impacts to the surrounding community and those along the disposal transportation routes. It is reasonable to expect that it might also reduce the significant impacts, acknowledged in the DEIS, to native vegetation communities and high-priority conservation habitats.

In the proposed alternative, the amount of soil to be removed from the NASA property (320,000 to 500,000 cubic yards per Table 2.2-5 and 2.2-6) is not only a large quantity for one site to generate, but large relative to the total volume of hazardous waste generated in California. Annually, about 300,000 cubic yards of contaminated soil and 600,000 cubic yards of waste are placed in California landfills.[1] While Table 2.2-4 indicates that 80% of the contaminated soil will be placed in hazardous waste landfills, another 10% of the total may not be hazardous waste, but could still be transported to a hazardous waste landfill. In addition, demolition will generate 43,152 tons of hazardous concrete for transport to a hazardous waste landfill.

The California Department of Toxic Substances Control recently committed to reducing disposal by 50% at both of the state's hazardous waste landfills -- Clean Harbors

[1] Department of Toxic Substances News Release, July 2, 2013, <http://www.dtsc.ca.gov/PressRoom/upload/News_Release_T-12-13.pdf>

Buttonwillow and Chemical Waste Management Kettleman Hills Facility -- by 2025.[2] NASA's soil removal could consume as much as 4% of the permitted capacity at CH Buttonwillow or 8% of the volume at CWM Kettleman Hills pending expansion of that facility.[3] NASA's contaminated soil could increase total annual disposal at these facilities collectively by more than 60% for two years. These estimates do not include contaminated non-hazardous soil, nor concrete contaminated with hazardous waste, from demolition.

The DEIS does not discuss coordination with these facilities or with U.S. Ecology in Beatty Nevada, the other hazardous waste landfill identified in the DEIS. While all three facilities have large permitted capacities, NASA should verify that they have current landfill space available to accept such large quantities of waste. If CH Buttonwillow is selected for both hazardous and nonhazardous waste, NASA would consume nearly 50% of the facility's current 950,000 cubic yard capacity. For U.S. Ecology, which has approximately 1.1 million cubic yards of capacity, NASA waste would consume nearly 36% of the facility's landfill volume.[4] To accept waste on the schedule proposed in the DEIS, the facility may need to speed the construction of additional landfill space.

Please note that the discussion above does not consider waste generation by the Department of Energy (DOE) or Boeing at the other portions of the Santa Susana Field Laboratory site. Boeing and DOE are expected to increase the quantity of contaminated soil to be removed by more than 65% (387,585 cubic yards per Table 4-13.1). The DEIS does not identify the disposal location for that waste.

> *Recommendation:*
> The FEIS should summarize NASA's discussions with receiving facilities regarding their ability to handle the potential volumes of contaminated soil from the proposed alternative. NASA should consider shipment to multiple facilities as a means to reduce impacts at the receiving facilities. To the extent possible, NASA should coordinate with Boeing and the Department of Energy on their remediation projects (e.g. schedules, disposal facilities and changes in soil volumes), so that its FEIS may contain as comprehensive a discussion of cumulative impacts as possible.

Treatment Options

The soil removal action, a component of the proposed alternative, includes many treatment options (Section 2.2.2.3). While we understand the urgency to complete soil removal by 2017 to comply with NASA's Agreement on Consent with DTSC (p. 1-7), the options of the DEIS create substantial uncertainty regarding the impacts of the proposed action, which should be avoided in the FEIS.

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[2] Department of Toxic Substances News Release, July 2, 2013, <http://www.dtsc.ca.gov/PressRoom/upload/News_Release_T-12-13.pdf>

[3] According to DTSC July 2 News Release, the CWM Kettleman expansion is 5 million cubic yards, according to Clean Harbor's Fact Sheet (http://clark.cleanharbors.com/ttServerRoot/Download/12381_FINAL_Buttonwillow_CA_Facility_FS_030108.pdf), the Buttonwillow facility has a 10 million cubic yard permitted capacity. See Table 2.4-5 for the volume that could be sent to these facilities as part of the proposed alternative.

[4] Per the estimate of EPA's permitting staff familiar with U.S. Ecology

Recommendation:
The FEIS should identify one preferred treatment option for contaminated soil.

Environmental Justice

While the DEIS considers environmental justice impacts near the Santa Susana Field Lab, it specifically eliminated consideration of the effects around designated landfills and disposal facilities (Table 2.5-1). The DEIS states that "siting and licensing of these facilities includes consideration of the potential effects of bringing designated and permitted waste to the sites." In view of the burden imposed on the communities near receiving facilities, particularly in light of the cleanup to background, a more detailed evaluation of environmental justice impacts would be valuable for those communities. Additionally, a facility permit could be many years old, offering NASA an opportunity to implement more recently developed mitigation measures. DTSC's proposed permit for CWM Kettleman Hills, for example, would require trucks hauling waste to the facility to meet 2007 emissions standards immediately, and meet 2010 emissions standards by 2018.[5]

Recommendation:
The FEIS should consider impacts to communities with environmental justice concerns near facilities receiving substantial quantities of waste from demolition and soil removal. The FEIS should also commit to using on-road heavy duty diesel trucks that meet or exceed EPA's emissions standard for 2010.

Radioactive Waste

The DEIS estimates that the proposed action will generate 50,000 cubic yards of mixed waste, both low level radioactive and hazardous waste (Table 2.4-2), but does not indicate the source of radioactive contamination. While the DEIS mentions the potential for mixed waste from contaminated industrial or research waste, it also mentions that NASA operations did not use or generate radioactive waste (p. 2-12). Demolition wastes appear to contain minor amounts of radioactive waste, such as smoke detectors, batteries in emergency lighting, exit signs, electric control panels, and building surfaces, equipment and or debris (radiological materials) (p. 3-48). The list of demolition wastes (Table 2.2-2), however, does not include large quantities of radioactive waste and the amount of demolition waste is shown as a separate quantity from that of contaminated soil estimated in Table 2.4-2.

Recommendation:
The FEIS should clarify the composition of the material that NASA expects to comprise the 50,000 cubic yards of mixed waste (Class A low-level radioactive waste and hazardous waste).

[5] Community Notice regarding the Kettleman Hills Facility, DTSC, July 2013 < http://dtsc.ca.gov/HazardousWaste/Projects/upload/Kettleman_FS_ExpansionDecision_0713.pdf>

Waste Management

NASA's Santa Susana Field Lab website discuses a past waste shipment from the site that was halted due to concerns that the receiving facility was not appropriate for the waste.[6] Based on our historic involvement with the site, we are aware that this was not an isolated incident. We recommend as much transparency in the matter of waste composition and management as possible. NASA would be better served to hear concerns regarding receiving facilities following publication of the FEIS or the public release of BMPs, than much later in the soil removal process, when delays may hinder NASA's ability to meet its commitment under the 2010 AOC.

Recommendations:
The FEIS should include, or commit NASA to develop and publicly release, best management practices that include the following:

- a description of debris and soil screening or testing procedures for radiation and chemical contamination
- a decision matrix that identifies specific facilities or types of facilities (e.g. solid waste landfill, hazardous waste landfill) for debris and soil based on the screening or testing protocol. Particular focus should be given to debris and waste that may be contaminated, but not regulated by EPA or the Nuclear Regulatory Commission (e.g. hazardous waste exceeding background levels of radionuclides, soil exceeding the Look-up Table values that is not considered hazardous waste etc.).

Water Resources

Groundwater Cleanup

The DEIS does not describe groundwater cleanup in the same level of detail as it does demolition and soil removal. The description of the no action alternative for groundwater cleanup, described as a "groundwater interim measure and interim source removal," (p. 2-33) does not show the location of the current extraction well, the lateral or vertical volume the well is intended to capture, the volume of water removed from the aquifer, or the weight of trichloroethylene (TCE) removed from groundwater over time; nor does it describe the treatment method for extracted groundwater or identify its discharge location.

The DEIS includes one figure showing the two-dimensional extent of trichloroethylene (TCE) in groundwater (Figure 2.2-4). Even though other contaminants are mentioned, such as TCE degradation products and n-nitrosodimethylamine (p. 2-27), none are mapped. The DEIS does not discuss the thickness of groundwater contaminant plumes. It mentions treatment of metals as an advantage of pump and treat technology but does not indicate elsewhere that groundwater is contaminated by metals. From the reports cited by the DEIS, such as RCRA Facility Investigation reports (p. 3-42), we presume that a considerable

[6] See email from James Elliott, NASA to Cassandra Owens, Los Angeles Regional Water Quality Control Board at http://ssfl.msfc.nasa.gov/documents/comm/Elliott_to_Owens.pdf

amount of additional information that would be useful for disclosure and decision making could have been summarized in the DEIS.

The DEIS does not discuss criteria for selecting a groundwater cleanup remedy. What factors will NASA or DTSC consider in deciding between the technologies described in the DEIS (e.g. short and long term effectiveness; reduction in contaminant mobility, toxicity or volume; implementability; community acceptance)? The timeframe for treatment technologies is discussed (e.g. pump and treat technology would take "decades to centuries" achieve groundwater cleanup levels, p. 2-28), but further refinement of the estimates would increase the value of this information. While the DEIS discusses the advantages of each technology, it does not consider disadvantages. At some VOC sites, depending on the geochemistry, In-Situ Chemical Oxidation and Enhanced Bioremediation can break down TCE to form vinyl chloride, which is more toxic (i.e. has a lower Maximum Contaminant Level) than TCE.

The DEIS does not include actual or preliminary groundwater cleanup levels. It does clarify that the values will be based on a standardized risk assessment methodology (p. 2-27), but provides little additional information. For example, it is not clear whether the methodology only considers groundwater as a potential source of drinking water, or also considers vapor intrusion into buildings where contaminated groundwater contains volatile organic compounds at shallow elevations.

The DEIS does not discuss contamination of the vadose zone (soil and bedrock above the saturated zone or water table) below the depth of soil removal. Contaminated vadose zone soil may pose a continuing source of groundwater contamination. We note that some of the technologies considered, such as soil vapor extraction, may be capable of effectively removing vadose zone contamination, depending on the local geology.

Energy use can be a major cost and environmental impact of the operation and maintenance of a groundwater remedy. The document appears to recognize this, as the description of remedy options includes alternative energy, such as solar arrays (p. 2-28); however, the DEIS does not provide the energy use of the existing groundwater treatment system or an estimate for the proposed alternatives. The DEIS does state, "groundwater response actions should occur in 2016 and 2017, with long-term groundwater O&M [Operation and Maintenance] following" (p. 2-44), but it does not estimate the associated priority pollutants or greenhouse gas emissions. As noted in our air quality comments, below, NASA's conformity determination should consider the groundwater cleanup emissions in 2016 and 2017.

Recommendations:

The Final Environmental Impact Statement (FEIS) should include:

- a thorough discussion of the no action alternative that includes the current groundwater extraction and treatment system, its energy use and a discussion of its effectiveness;
- an expanded discussion of the site's geology;
- an explanation of three-dimensional groundwater flow and contaminant migration at the site;

- a more thorough description of source areas (e.g., test stands, evaporation ponds, landfills, leach fields,etc.) and vadose zone contamination;
- a description of the interaction of groundwater and surface water, including the location of surface seeps;
- an estimate of air emissions (priority pollutants and GHGs) associated with each treatment technology;
- a map of conceptual well networks necessary to implement potential groundwater cleanup technologies;
- the groundwater cleanup levels, based on a standardized risk assessment methodology. NASA should ensure that the methodology includes consideration of vapor intrusion into buildings where contaminated groundwater contains volatile organic compounds at shallow elevations;
- the goals or criteria that will be used in evaluating the vadose zone and groundwater cleanup technologies,
- a brief summary comparison of the advantages and disadvantages of each technology; and
- identification of NASA's preferred groundwater cleanup technology.

For purposes of presenting groundwater information in the DEIS more effectively, we suggest that NASA consider, as an example, a presentation that is posted on the Department of Energy (DOE) website, at: http://etec.energy.gov/Library/Main/GWU--May_5_Beth_Parker_Final_Handout--Full_Page.pdf. EPA cannot speak to the accuracy of the presentation; we note only that it provides a detailed discussion of the site's groundwater contamination in an easy to understand format. While the presentation does not include any information about options for groundwater cleanup, we encourage NASA to consider its format and level of detail as guides for providing more detailed groundwater concepts.

Surface Water

As the DEIS discusses, the entire site, not just the NASA property, is covered by the Los Angeles Regional Water Quality Control Board's permit for the facility.[7] The DEIS notes permit violations occurring from 2006 to 2009 at NASA outfalls due to contaminants in soil and sediment, such as dioxins (p. 3-42). It mentions an Interim Source Removal Action, conducted at the direction of the Regional Board for Outfalls 8 and 9, as a cumulative impact (p. 4-155 to 156). Interim Source Removal Action reports indicate that NASA and Boeing are using an expert panel to prioritize the need for Best Management Practices (BMPs) in areas draining to these outfalls, to assist in development of BMPs, and to evaluate the success of BMP implementation.[8]

NASA has excavated 4,800 cubic yards of contaminated soil, and expected to remove another 7,580 cubic yards by the end of this year at the Expendable Launch Vehicle area,

[7] Waste Discharge Requirements for the Boeing Company, Santa Susana Field Lab, Order No. R4-2010-0090, NPDES No. CA0001309, California Regional Waste Quality Control Board, Los Angeles, Region, April 6, 2010, Revised May 20, 2010 and June 3, 2010.
[8] See http://www.boeing.com/boeing/aboutus/environment/santa_susana/isra.page.

the Sewage Treatment Plant, the former Liquid Oxygen Plant and an area identified as A2LF (p. 4-156). The DEIS notes that the cleanup levels are consistent with DTSC's values, except for dioxins which are elevated in the area due to past wildfires. It does not provide a map of these areas nor indicate whether additional soil removal is required for NASA property in the Northern Drainage, which leads to Outfall 9.

Some of NASA's property in the Southwestern Drainage drains through Boeing-owned property back onto NASA property where it flows to Outfall 18 (Figure 3.6-1). (*See NASA-Boeing Cross Contamination* below.) The Regional Board's Stormwater Permit describes a sophisticated temporary treatment system at the Silvernale Pond, upstream of Outfall 18, which includes filtration, metals precipitation, and activated carbon treatment prior to discharge. The DEIS does not include a description of this system.

Based on discussions with the Regional Board, our review of their permit, and our limited review of the Interim Source Removal Action reports, surface water appears to be a subject of substantial focus for the entire Santa Susana Field Lab. This focus is not apparent from the DEIS. While the DEIS includes a mitigation measure (Water BMP-1, p. 4-80) to develop a Stormwater Pollution Prevention Plan and Erosion Control Plan (i.e. collections of BMPs), it provides no specific information on current or past BMPs.

Recommendations:
The FEIS should include

- a more comprehensive description of the interim source removal action, including BMPs developed through that process;
- a discussion of coordination between the interim source removal, demolition, and soil removal actions, including a map showing remaining demolition and soil removal actions in the Northern Drainage;
- a summary of BMPs currently in place, outside the Northern Drainage, to control the movement of contaminated sediment as well as any planned BMPs that will be used during demolition and soil removal; and
- a more recent description of compliance with the Regional Board's permit. NASA should consider engaging the expert panel on additional BMPs (if necessary) to control its stormwater discharges from active demolition and soil removal for the Northern and Southwest Drainages. EPA has an interest in the facility's BMPs and the description of these measures in the FEIS. Please contact Cindy Lin, at 213-244-1803 lin.cindy@epa.gov, if you would like our assistance.

NASA-Boeing Cross Property Contamination

Boeing and NASA appear to be using different standards for soil remediation. As risk-based standards may allow more contamination to remain at the site than the Look-Up Table values, post-cleanup concentrations of soil contamination will differ between Boeing-owned property and NASA-administered federal property. Figure 3.6-1 appears to show that federal property drainages extend into Boeing property, and Boeing drainages extend into federal property.

The DEIS does not describe the timing of cleanup for the two properties. If Boeing completes soil removal prior to NASA, contamination from the NASA property might migrate to Boeing property. While the same is true for Boeing contamination to migrate onto federal land, we are particularly concerned that, following the remediation of both properties, Boeing's property may still pose a risk of contamination to federal property.

> *Recommendation:*
> The FEIS should discuss the timing of the cleanup for the Boeing and NASA properties, as well as measures to prevent cross-contamination (pre-and post remediation) to Boeing and federal property.

Wetlands and Waters of the U.S.

The extent of jurisdictional waters of the U.S. (waters) is unclear in the DEIS. Figure 4.10-1 shows the potential impacts of the project to streams and ponds from the estimated soil cleanup activities. Several of these features are not identified in the Appendix G Wetlands Delineation Report or Figure 3.4-5 (Wetlands). In addition, Figure 3.4-5 identifies many of the features as man-made, which, according to the discussion in Section 3.4.5, are not considered as part of the impacts analysis. Also, the discussion of wetlands in section 3.4.5.1 appears to only consider aquatic features, such as palustrine and riverine wetlands that meet the three parameter wetlands test. Based on the information provided, it is difficult to determine the extent of jurisdictional features at the project site and whether the features are wetlands or non-wetland waters.

Additionally, the DEIS does not sufficiently describe the condition and functions of the wetland and non-wetland waters on the project site. An approved assessment method, such as the California Rapid Assessment Method (CRAM), should be used to measure baseline conditions as this type of information will be needed as part of the 404 permit application to the Corps.

We also note that the DEIS does not include potential mitigation measures to offset unavoidable impacts to jurisdictional waters of the U.S. Mitigation measures in the DEIS are limited to Table 6.1-1, which includes best management practices such as erosion control, revegetation, and permits from the Corps and the Regional Water Quality Control Board. The DEIS does not address how lost functions of jurisdictional waters could be offset through on-site restoration or through the purchase of credits at an approved mitigation bank or in-lieu fee program. As part of the 404 permit application, and to comply with the Corps/EPA 2008 Compensatory Mitigation Rule, NASA will be required to submit a detailed draft compensatory mitigation plan for approval by the Corps.

> *Recommendations:*
> The FEIS should:
> - clarify the extent of features, by wetland and non-wetland waters, including any that are manmade, and include a figure that identifies areas of permanent and temporary impacts; (If possible, this information should be based on an

approved jurisdictional determination from the U.S. Army Corps of Engineers.)

- describe the condition and function of jurisdictional waters and other waters at the site;
- include an assessment of the conditions and functions of the waters using an approved assessment method;
- identify potential compensatory mitigation measures that NASA may propose in the CWA 404 permit application to offset unavoidable impacts.

Air Quality

General Conformity is intended to ensure that actions taken by federal agencies in nonattainment and maintenance areas do not interfere with the state's plans to meet the national standards for air quality. The DEIS concludes that the proposed alternative may exceed General Conformity de minimis thresholds in several counties (p. 4-110), so a general conformity analysis is required for the proposed alternative. The DEIS continues on to state, "the quantity of NOx offsets purchased by NASA would equal the quantity by which the General Conformity de minimis threshold values were exceeded." Please note that a project using offsets to demonstrate conformity must fully offset its emissions (i.e. to 0), not offset the emissions to the de minimis thresholds.[9,10].

The DEIS also states that "Groundwater response actions should occur in 2016 and 2017, with long-term O&M [Operation and Maintenance] following." (p. 2-44). If peak emissions occur in 2016 and 2017, per Tables 4.7-3 and 4, then the General Conformity analysis should consider the emissions from groundwater cleanup response actions along with soil removal. The DEIS states, "the impacts to air quality and climate change from the groundwater remedial technologies are described qualitatively in the following text…" (p. 4-107). Additionally, the General Conformity Table of Appendix H includes demolition, excavation, and offsite disposal, but not groundwater response actions (p. H-17).

The DEIS discusses but does not commit to a mitigation measure to use newer model year trucks to reduce local criteria pollutants and GHGs (Air Quality Mitigation Measure – 2, p. 4-111). The DEIS also discusses the use of offsets to comply with General Conformity. NASA is likely to find cleaner trucks a cost effective project element to reduce the amount of offsets required by Air Districts.

Recommendation:
If NASA plans to use offsets to demonstrate compliance with General Conformity: the FEIS should commit to fully offset emissions (i.e. to zero) of any pollutants for which the projected emissions would exceed the de minimis thresholds. NASA should begin discussions with the appropriate air quality management districts on the emission offsets as soon as practical. The FEIS should include emissions from groundwater response actions in 2016 and 2017 in the General Conformity analysis,

[9] 40 CFR 93.158
[10] See Question 27, General Conformity Guidance: Questions and Answers, U.S. EPA, July 13, 1994

in addition to emissions from demolition and soil removal actions. The FEIS should also commit to using on-road heavy duty diesel trucks that meet or exceed EPA's emissions standard for 2010 and raise awareness of California's anti-idling rule among drivers (http://www.arb.ca.gov/msprog/truck-idling/factsheet.pdf).

Traffic

Reasonably Expected Route

The DEIS shows a truck route leaving the facility. Trucks would travel primarily on Woolsey Canyon, Valley Circle Boulevard, and Roscoe Boulevard and either split between routes that travel north and south on Topanga Canyon Boulevard (Figures 4.5-1 and 3) or favor a southern route (on Topanga Canyon Boulevard) by a 4 to 3 ratio for the maximum soil removal (Figure 4.5-2). We are concerned that the truck routes described for soil removal may not represent a reasonably expected route.

The majority of the waste generated during soil removal would be hazardous waste (80% per Table 2.4-2). Two of the three hazardous waste facilities that could accept hazardous waste are northeast of the site. To reach these sites, a route traveling south on Topanga Canyon Boulevard to I-101 and I-405 would appear to take trucks several miles further on highways likely to be as crowded or more so than I-118. Even for waste traveling to U.S. Ecology in Beatty, Nevada, or Energy Solutions Landfill in Clive, Utah, the route suggested by Google Maps would travel north on Topanga Canyon to I-118.[11] The DEIS does not explain whether there are overriding considerations that would warrant selection of a less direct route. For hazardous waste, only trucks destined for DeMenno Kerdoon would likely travel south on Topanga Canyon Boulevard, per the Google Maps suggested route, and that facility accepts only petroleum contaminated soil, which may not even be hazardous waste.

Closer to the Santa Susana Field Lab, the DEIS identifies several possible routes as Region of Influence Roadways. Although Box Canyon Road and Plummer Street appear to offer a slightly shorter route to I-118, the DEIS does not clarify the reason for assuming that all trucks will use Roscoe.

Recommendations:
The FEIS should:

- designate truck routes, particularly for the largest (Class VIII) trucks;
- explain the reason(s) more trucks would not travel North on Topanga Canyon Boulevard;
- evaluate the possible effects of landfill selection (or other receiving facility) on the truck route to ensure that all reasonably foreseeable traffic analyses are considered;

[11] The Initial recommendation for a route to Beatty Nevada would travel through Death Valley National Park. The recommended southern route, through Barstow, would be on I-118 rather than I-405.

- to the extent possible, based on coordination with Boeing and the Department of Energy, NASA should update its traffic analysis to consider the cumulative impacts; and
- offer rideshare or carpool program for construction workers to further reduce traffic impacts.

Effects and Potential Safety of School Children

We commend NASA for its consideration of the impact of truck traffic on school children. As the analysis is novel, we offer some recommendations for improvement. We noted that the DEIS did not include childcare centers, preschools, parks nor recreation centers in its evaluation of truck traffic and children. While fewer children may walk to these facilities than to schools, their safety is relevant for consideration. Additionally, the DEIS does not consider the role of crossing guards at intersections near schools, nor educational outreach to schools, childcare centers and residents.

Recommendation:
The FEIS should:

- consider childcare centers, preschools, parks and recreation centers as well as schools in the evaluation of truck traffic and potential exposure to children;
- provide additional funding for crossing guards, if busy intersections near schools are not currently staffed;
- target outreach material about the construction schedule and truck routes to schools and childcare centers and residents.

Cumulative Impacts

As the Cumulative Impacts Section (4.13) mentions, DOE and Boeing are also actively cleaning up soil and groundwater at their portions of the Santa Susana Field Lab. While the DEIS provides additional waste volumes and trucks for the Boeing and DOE cleanup, it does not model the cumulative impacts to children, traffic, and air quality. A cumulative model of these impacts is likely to be of much more interest and value to the public than the individual analysis of impacts from NASA, Boeing, or DOE.

Recommendation:
To the extent possible, in coordination with Boeing and the DOE, NASA should update its analysis to consider the cumulative impacts (including Boeing and DOE soil removal) on traffic, children and air quality.

Cost

Many factors should be considered in making a remedy selection for soil removal. For example, EPA uses nine criteria to evaluate cleanup alternatives under the Comprehensive

Environmental Response, Compensation, and Liability Act, commonly known as Superfund.[12] For the most part, the DEIS and the public comment period address these factors, except cost. The cost of a cleanup should play an important role in screening and selection of alternatives.[13] The DEIS contains no information on the cost or cost-effectiveness of the treatment technologies for soil removal.

> *Recommendation:*
> The FEIS should include an estimate of the cost for each element of the cleanup (i.e. demolition, soil remedial activities and groundwater remedial activities), as well as the options within each element (e.g. soil excavation and off-site disposal, soil excavation and ex-situ treatment, soil vapor extraction etc.

Preservation of Cultural Resources

The proposed alternative would include retention of one test stand (Cultural Mitigation Measure-1, p. 4-25). The DEIS describes potential hazardous material that may be encountered during demolition of structures, such as lead painted surfaces, asbestos insulation and ceiling material, and polychlorinated biphenyl (PCBs) contained in caulk and paint (Table 3.8-1). The DEIS does not appear discuss the removal, encapsulation or other methods to minimize hazards associated with retained historic resources.

> *Recommendation:*
> To enable broader access to the retained historic resources, Cultural Mitigation Measure-1 should include a commitment to remove, encapsulate or otherwise prevent visitor exposure to, potential hazards, such as lead paint, asbestos and PCBs.

Greener Cleanups

Greener Cleanups refers to an approach at remediation sites in which EPA seeks to understand the environmental footprint resulting from site activities and identify opportunities to reduce that footprint. EPA has developed Principles for Greener Cleanups,[14] Best Management Practices (BMPs) for greener cleanups,[15] and a Methodology for quantifying the environmental footprint of a cleanup.[16] Each of these resources may be

[12] See A Guide to Preparing Superfund Proposed Plans, Records of Decisions, and Other Remedy Selection Decision Documents, U.S. EPA July 1999.
[13] The Role of Cost in the Superfund Remedy Selection Process, U.S. EPA, September 1996 <http://www.epa.gov/superfund/policy/cost_dir/cost_dir.pdf>.
[14] see http://www.epa.gov/oswer/greenercleanups/pdfs/oswer_greencleanup_principles.pdf
[15] BMPs are listed at http://www.clu-in.org/greenremediation/.
[16] Methodology for Understanding and Reducing a Project's Environmental Footprint, U.S. EPA, February 2012 (EPA-542-R-12-002 <http://www.clu-in.org/greenremediation/methodology/docs/GC_Footprint_Methodology_Feb2012.pdf> and Overview of EPA's Methodology to Address the Environmental Footprint of Site Cleanup, U.S. EPA, March 2012, EPA-542-F-12-023, <http://www.clu-in.org/greenremediation/methodology/docs/GR_Overview_of_Footprint_Methodology_FS_3-29-12.pdf>

of use for the activities at the Santa Susana Field Laboratory. Broadly speaking, the resources address the following aspects of a cleanup:

- Total Energy Use and Renewable Energy Use
- Air Pollutants and Greenhouse Gas Emissions
- Water Use and Impacts to Water Resources
- Materials Management and Waste Reduction
- Land Management and Ecosystems Protection

The DEIS already addresses many aspects of Greener Cleanups. These include estimated greenhouse gas emissions (for demolition and soil removal), and estimated waste generation volumes, as well as measures to be taken for fugitive dust control, stormwater management, and reuse of demolition debris.

We offer the Principles, BMPs, and Methodology for use at remediation sites on a voluntary basis, but we also note that these resources may help to identify additional topics that should have been included in the DEIS, and should be included in the FEIS, depending on the potential significance of the impact [40 CFR 1502.2(b)]. For example, the DEIS does not consider: quantifying certain aspects of the remedy such as the amount of water and materials used; extending the scope to off-site support activities, such as laboratory analysis and waste management; and identifying opportunities for reduction for these aspects of the remedy. Karen Scheuermann is available to assist NASA in understanding and applying the Greener Cleanups approach at the Santa Susana Field Laboratory. Ms. Scheuermann can be contacted at (415) 972-3356 or scheuermann.karen@epa.gov. We also note that DTSC's *Advisory for Green Remediation*[17] is compatible with EPA's Principles for Greener Cleanups.

> *Recommendation:*
> NASA should consider EPA and DTSC resources for Greener Cleanups and take advantage of any aspects of these resources that may be beneficial in the cleanup of the Santa Susana Field Lab.

[17] Interim Advisory for Green Remediation, California Department of Toxic Substances Control, December 2009 < http://www.dtsc.ca.gov/OMF/upload/GRT_Draft_-Advisory_-20091217_ac1.pdf>