From:	William Preston Bowling
To:	MSFC-SSFL-EIS; Elliott, Allen (MSFC-AS01); ZORBA, PETER D. (HQ-LP040); Fellows, Merrilee (HQ-LD000)
Cc:	dianne_feinstein@feinstein.senate.gov; Molly_O"Brien@feinstein.senate.gov; Elizabeth.Fenton@SEN.CA.GOV; William.Craven@SEN.CA.GOV; louise.rishoff@sen.ca.gov; nicole.bernson@lacity.org; damon.wing@ventura.org; linda.parks@ventura.org; Kelly.ThomasP@epa.gov; bsaltsman@lacbos.org; zev@bos.lacounty.org; jdegonia@lacbos.org
Subject:	ACME Comments for SSFL NASA DEIS
Date:	Tuesday, October 01, 2013 1:27:47 PM
Attachments:	ACME to NASA Draft EIS October 1 of 2013.pdf

Hello,

Please confirm that the attached comments on the NASA DEIS will be entered into the record.

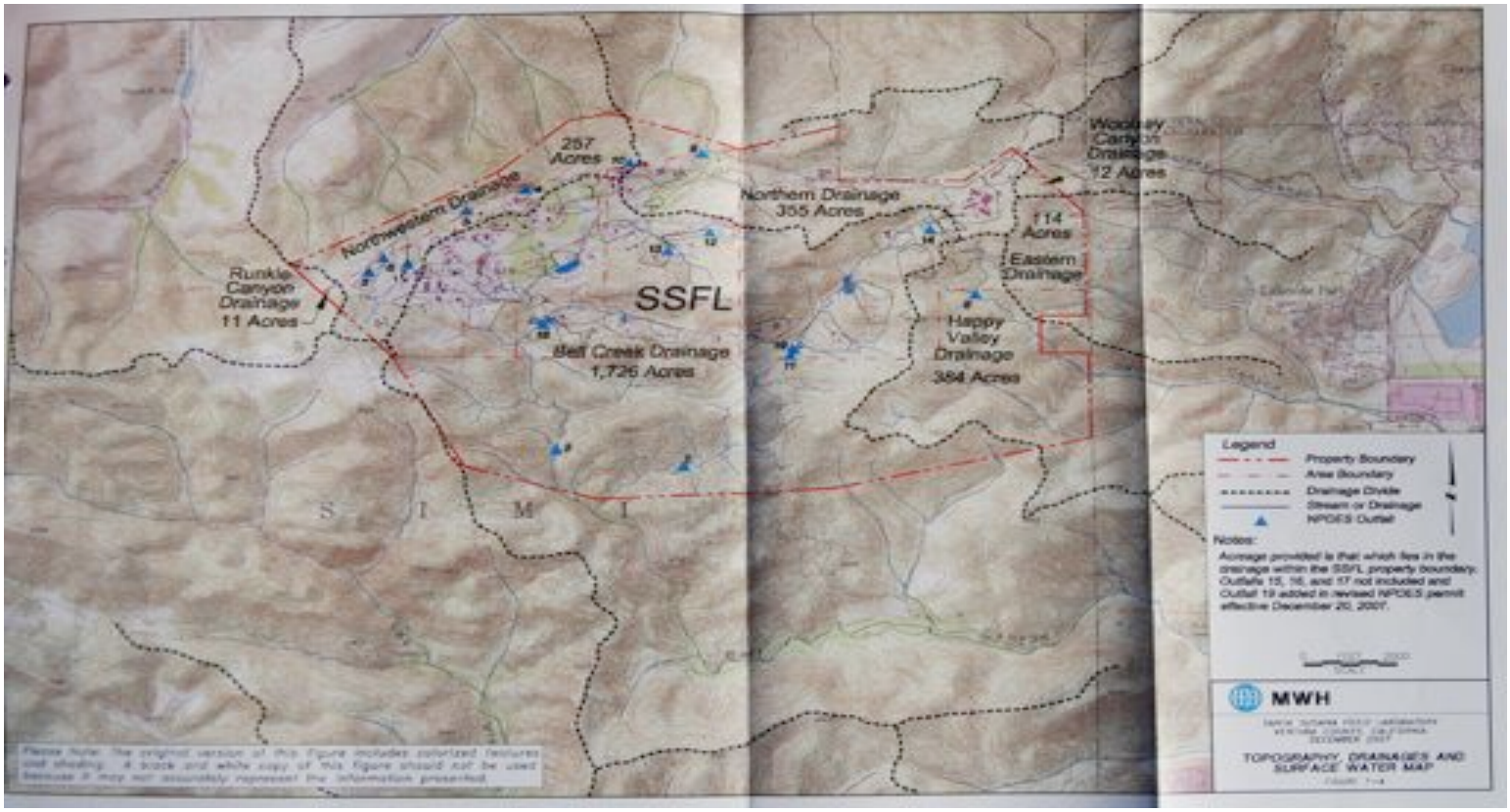
Thank you in advance for your time.

William Preston Bowling
Founder ACME
Aerospace Contamination Museum of Education
http://www.acmela.org/

10/1/2013

ACME
AEROSPACE CONTAMINATION MUSEUM OF EDUCATION
ACMELA.org
Learn about the cleanup of the Santa Susana Field Laboratory.

To: Allen Elliott, SSFL Program Director National Aeronautics and Space Administration (NASA)
Comments on the DRAFT Environmental Impact Statement (DEIS) for the NASA portions of the SSFL



Dear Mr Elliott,

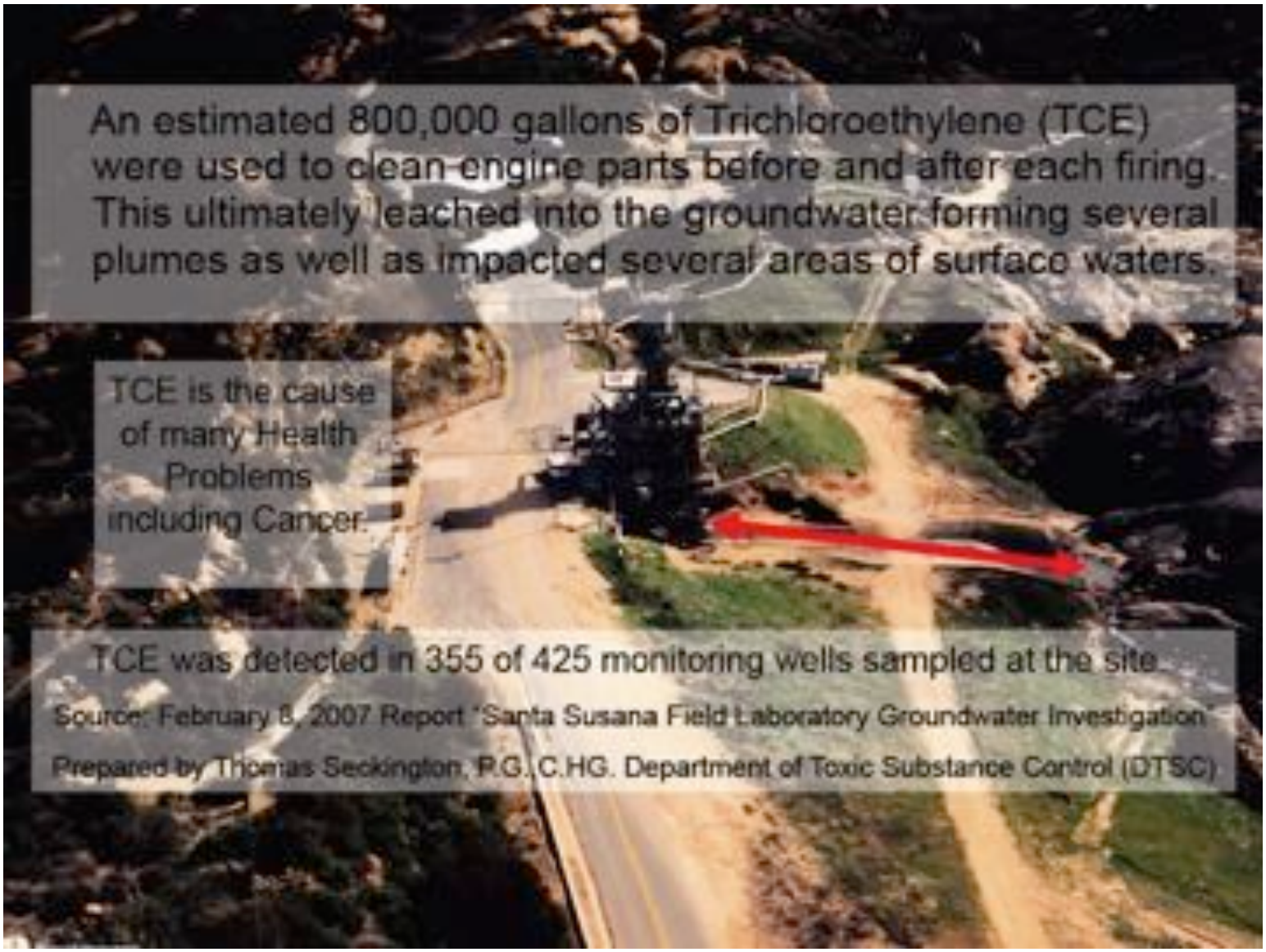
The Draft Environmental Impact Statement (DEIS) for the Santa Susana Field Laboratory (SSFL) raises questions as to whether some within NASA are trying to break out of the 2010 Administrative Order on Consent (AOC)...

http://ssfl.msfc.nasa.gov/documents/governance/NASA_DTSC_Final_AOC_Dec_2010.pdf

...between the National Aeronautics and Space Administration (NASA) and the State Department of Toxic Substances Control (DTSC),which requires the cleanup of all the contamination (i.e., to background). It is a legally binding agreement. NASA or the General Services Agency (GSA) cannot even consider the SSFL land for any type of transfer until the cleanup is complete. This agreement was many years in the making and it states...1.7.2. "Cleanup to Background Levels" means removal of soils contaminated above local background levels. The NASA property in question is the True Headwaters of the Los Angeles River (Above Map). It would be irresponsible to limit any cleanup of the headwaters as there are many plans for the public to engage the river including the recent United States Army Corps of Engineers (USACE) ARBOR Study that is currently up for public comment.

The Los Angeles Water Quality Control Board (RWQCB) have fined the responsible parties of the Santa Susana Field Laboratory (SSFL) hundreds of times for their polluting the Los Angeles River via their NPDES permit and will continue to do so, if the SSFL is not properly cleaned up. The Below photos shows the RWQCB at the NASA R2 drainage into Bell Creek/Los Angeles River Headwaters.

NASA, and prior operator United States Air Force (Plant #57) badly contaminated its part of the Santa Susana Field Laboratory with very toxic materials, some migrated off the property to neighboring areas. Studies have shown elevated cancer rates, both for people exposed on the site and for members of the public living nearby. NASA must live up to the AOC for the health and safety of the surrounding communities.



The above photo illustrates how the blackened hillside was washed down with toxins into unlined earthen ponds that impacted the groundwater as well. The ALFA test stands (shown above) are at the headwaters of the Los Angeles River and without a cleanup to background these areas will continue to impact the Los Angeles River and Beyond during rain events.

The AOC requires all contamination to be removed, but the EIS considers leaving in place old rocket test stands, trying to call them historical. The problem is that that is where much of the contamination is located, in the soil beneath the stands. NASA can't clean up the soil without getting those rusty structures out of the way. There is no discussion of how NASA could possibly clean up the contamination beneath the rocket test stands without getting them out of the way. Any such consideration should be removed from the EIS. Similarly, the AOC already provides protections for recognized Native American artifacts. For example, if the Burro Flats cave paintings could be impacted at all by the cleanup, which seems hard to believe, the AOC provides an exception to the cleanup to background requirement for soil immediately nearby. But the EIS goes way beyond the AOC provisions and seems to raise the possibility of just declaring all of the contaminated soil throughout the 2850 acres of the site sacred and then not comply with the AOC cleanup requirements all. This is unacceptable and would completely violate the agreement.

NASA uses the truck traffic "Scare Tactic" that would be needed supposedly to remove the contamination for disposal at toxic waste disposal facilities. There have been thousands of trucks per year since the opening of the SSFL, even to carry spent radioactive fuel into the SSFL for reprocessing and/or disposal. If one looks carefully at the numbers, it is really pretty trivial–a few trucks per hour. How much truck traffic was there when the facility was fully operating? How many car trips for workers? The DEIS shows a lot of exaggeration and double-counting about the trucks. For example, it counts both trucks taking contaminated soil or building debris, and adds to that trucks that might haul in clean fill. But there is no evidence NASA will need to bring in any fill, rather than simply regrade and use soil from the site. But if NASA needs any from offsite, the trucks going up to the site to haul away contaminated soil can haul up clean fill.

This property could be an example on how things are done right with a source removal of contamination to background levels and will leave a more positive legacy than pretending health risks do not exist. The EIS hypes secondary issues like trucks and is almost entirely silent about the environmental damage from the years of sloppy practices that led to widespread contamination, and the continuing environmental damage that would occur were NASA to breach its commitment to the AOC's requirement for full cleanup.

The Community looks forward to Ensure a Proper Cleanup of the Santa Susana Field Laboratory, it's Related Facilities and their Surrounding Communities. NASA should comply fully, without any more resistance, to the AOC in its entirety and, as promised, clean the contamination up to background.

Sincerely,

William Preston Bowling
Founder ACME
Aerospace Contamination Museum of Education
http://www.acmela.org

From:	Christine Rowe
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01); Fellows, Merrilee (HQ-LD000)
Subject:	Agreement in Principle between the DOE and DTSC
Date:	Saturday, September 28, 2013 6:12:01 AM
Attachments:	Nine Balancing Criteria in the AOC.pdf

Dear Mr. Elliott,

One issue related to the Administrative Order on Consent, and therefore there is concern related to the cultural / archaeological aspects of the SSFL site is addressed on this DTSC power point which I have named the Nine Balancing Criteria of the AOC.

Please see page 6 adobe - am I correct in interpreting this as - under exceptions -

There is: "No cap on exceptions on detection limits, **Native American artifacts / sites, or endangered species?**

How does NASA interpret this slide and language related to artifacts and sites? Was this just a community recommendation - or did DTSC accept this in their responses?

Respectfully submitted,

Christine L. Rowe

Administrative Order on Consent

between

The State of California

and

The U.S. Department of Energy

November 2010

Agreements in Principle
A Path Forward

- Resolve disagreements over interpretations and implementation of SB 990 (Kuehl, 2007)

- Fast forwards the process to where it will likely end up (years from now)

- Provide certainty and eliminates concerns about the unknown outcome of “process”

- Take advantage of U.S.EPA’s ongoing site survey and soil sampling work ***and*** U.S.EPA’s expertise on radiological contamination

What is the Administrative Order on Consent?

- The final agreement between DOE and DTSC
- Integrates the Agreement in Principle with cleanup and environmental review procedures
- Includes key elements that govern the relationship between DOE and DTSC
- Establishes the requirements as binding and enforceable

Agreements in Principle
Public Comments

- Public comment period September 3 – October 1
- Overwhelmingly positive
- Questions and concerns expressed

Public Comments
Suggested Additions

- Include groundwater
  - Groundwater is already part of 2007 agreement
- Radioactive contamination outside of Area IV
  - Still negotiating with NASA (and Boeing)
- Need a Confirmation Protocol for NASA
  - Will be negotiated with NASA
- Boeing not included
- Sign final agreements as soon as possible

Public Comments

Concerns about Possible Consequences

- Impacts on habitat and ecosystems and the surrounding community
  - Impacts will need to be estimated, and mitigation proposed, as part of Remedial Action Implementation Plan
- Exceptions – limitations
  - No cap on exceptions for detection limits, Native American artifacts/sites, or endangered species

Public Comments
Concerns about Possible Consequences

- Amount of soil to be removed
  - There's no way to estimate until characterization complete - Estimates based on assumptions
- CEQA Compliance
  - CEQA documents will be prepared and available for public review when the Remedial Action Implementation Plan is made available (combined with NEPA if needed)

Public Comments

Concerns about Implementation Procedures

- Onsite treatment
  - Onsite/in situ treatment of soils is allowed – AOC makes it clear
- Role of other State and Federal regulatory agencies
  - All agencies will be consulted, and requirements integrated into cleanup plan
- How background is determined
  - Background to be determined by EPA (rad) and DTSC (chem) - in process
- Unknown details of cleanup plan
  - Remedial Action Implementation Plan with specific details will be available for review after characterization

Public Comments
Concerns about Implementation Procedures

- Use of “Not to exceed” cleanup standards
  - EPA confirms that this is an acceptable method of verifying cleanup
- Disposal of Contaminated Soils
  - DTSC has worked with NRC and others to verify classification and disposal requirements
- Backfill soils from “Southern Buffer Zone”
  - Any use of onsite soils requires approval of appropriate agencies

Public Comments
Concerns about Implementation Procedures

- 2017 cleanup date
  - Recognize this date is aggressive – important to keep it to quicken the pace - approach in the AIP may be the only possible way to achieve it
- Public comment for final orders
  - Public comment period now (10/27 – 11/22)
- Stricter than SB 990
- Cleanup Process and “balancing criteria”

SB 990

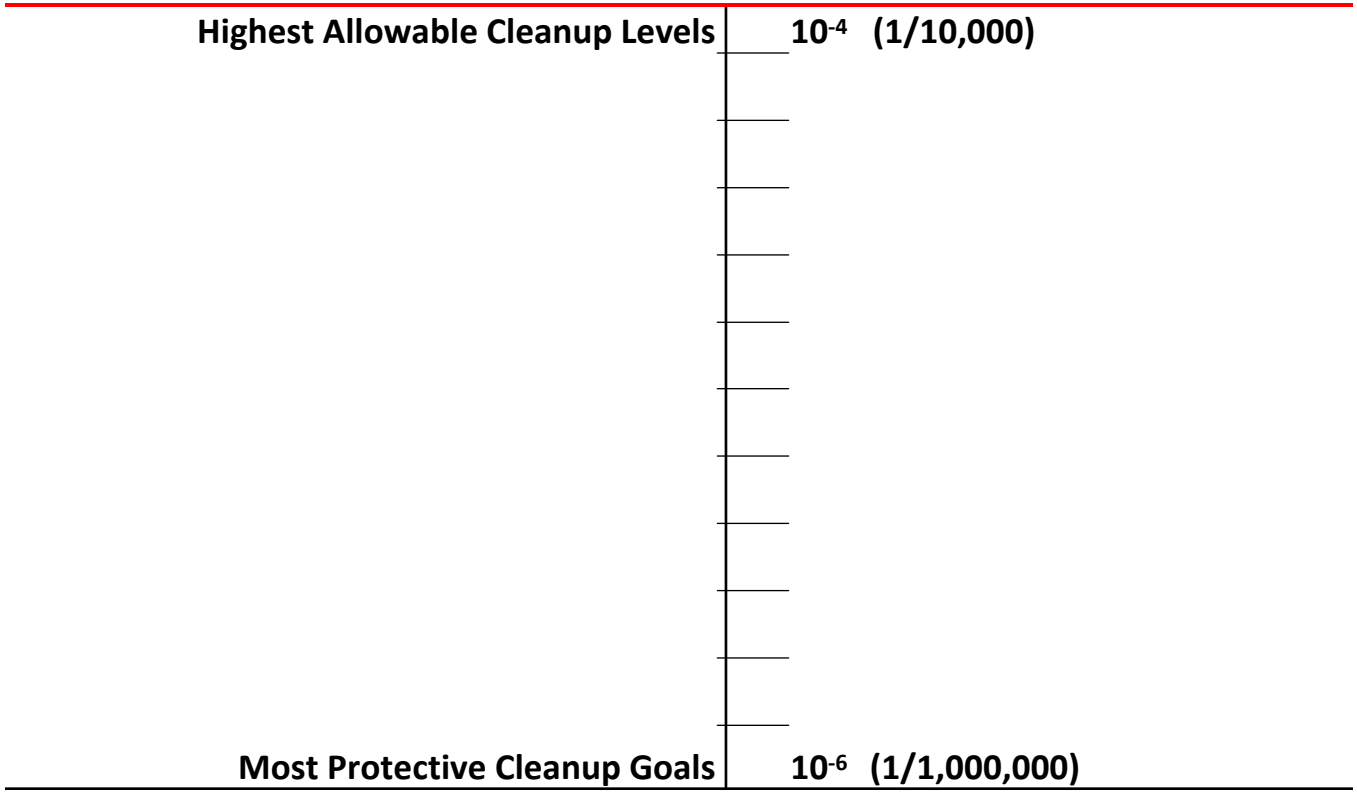
- What it says:
  - Requires cleanup standards for radioactive and chemical contaminants based on “rural residential” land use assumptions
  - Requires the use of EPA’s radiologic Preliminary Remediation Goals as the “point of departure”
  - Clarifies that risks due to ***both*** radioactive and chemical contaminants must be added
  - Requires use of the State Superfund process

Superfund

- Cleanup goal (for carcinogens) of one or less excess cancer risks in one million (10^{-6})

- Allows departure from the 10^{-6} goal to a maximum of one excess cancer risk in 10,000 (10^{-4})

Superfund Risk Range



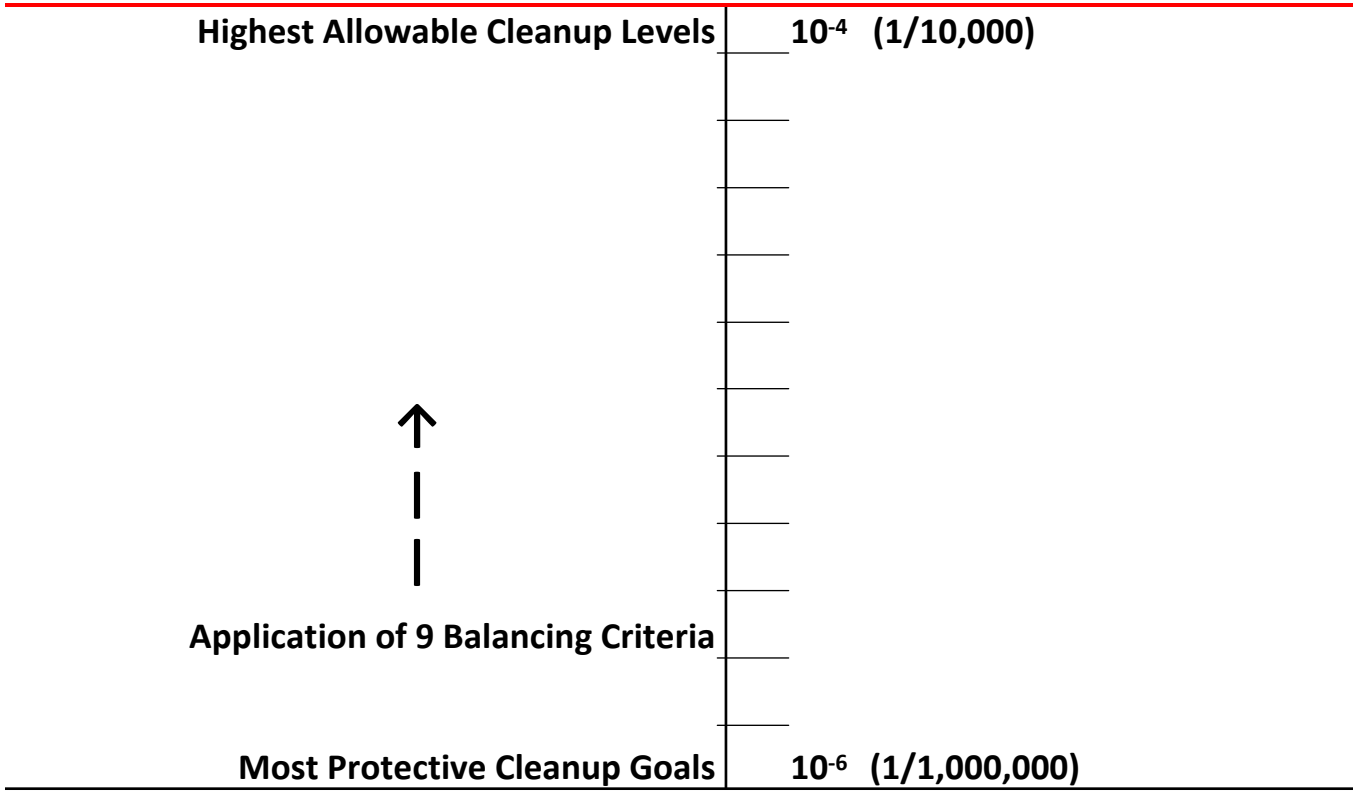
Superfund

- Requires consideration and balancing through a set of 9 criteria to adjust the goal

Nine Balancing Criteria

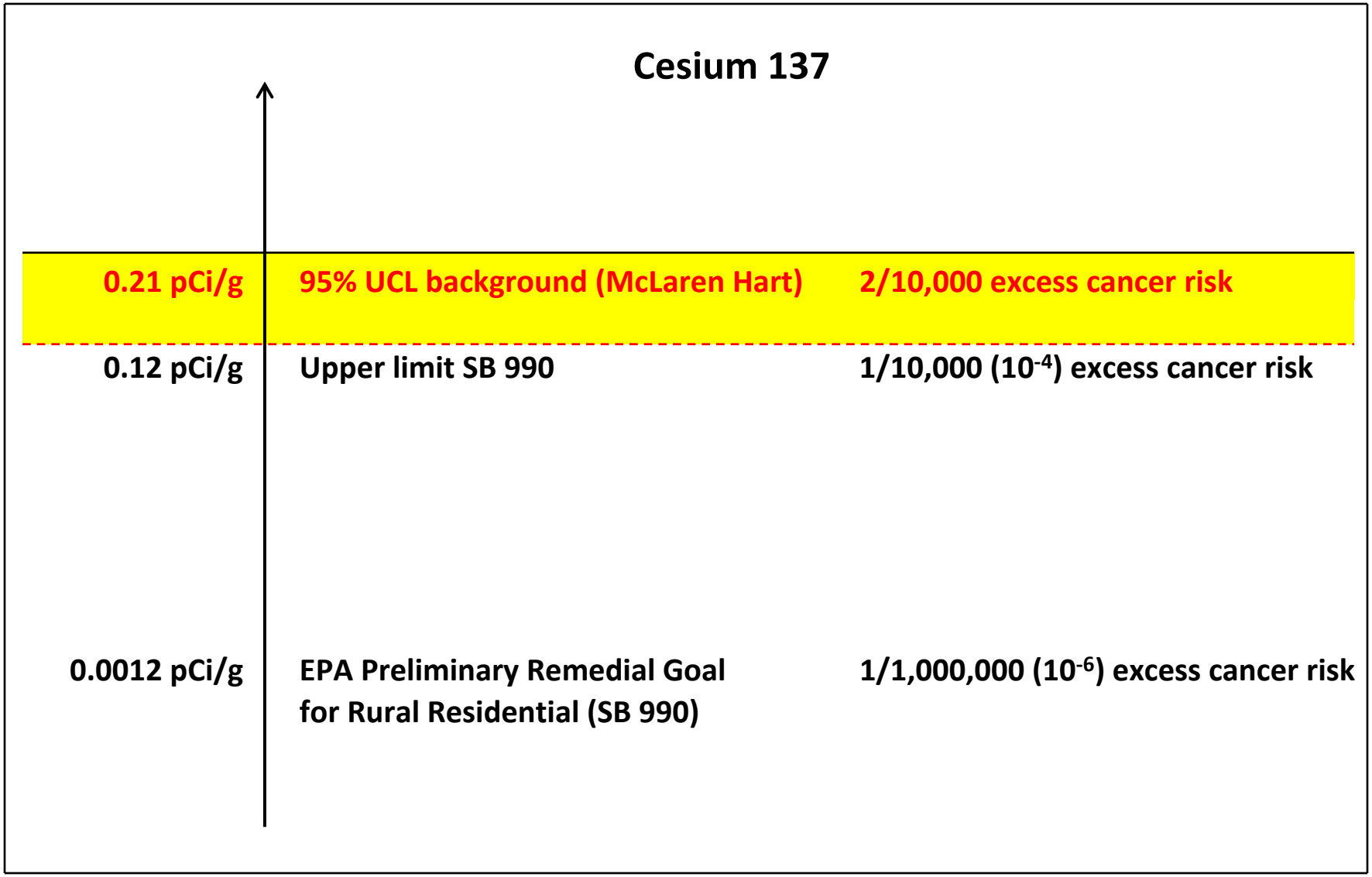
1. Overall protection of human health and the environment
2. Compliance with Applicable, Relevant and Appropriate Requirements
3. Long-term effectiveness and permanence
4. Reduction of toxicity, mobility, or volume
5. Short-term effectiveness
6. Implementability
7. Cost
8. State acceptance
9. Community acceptance

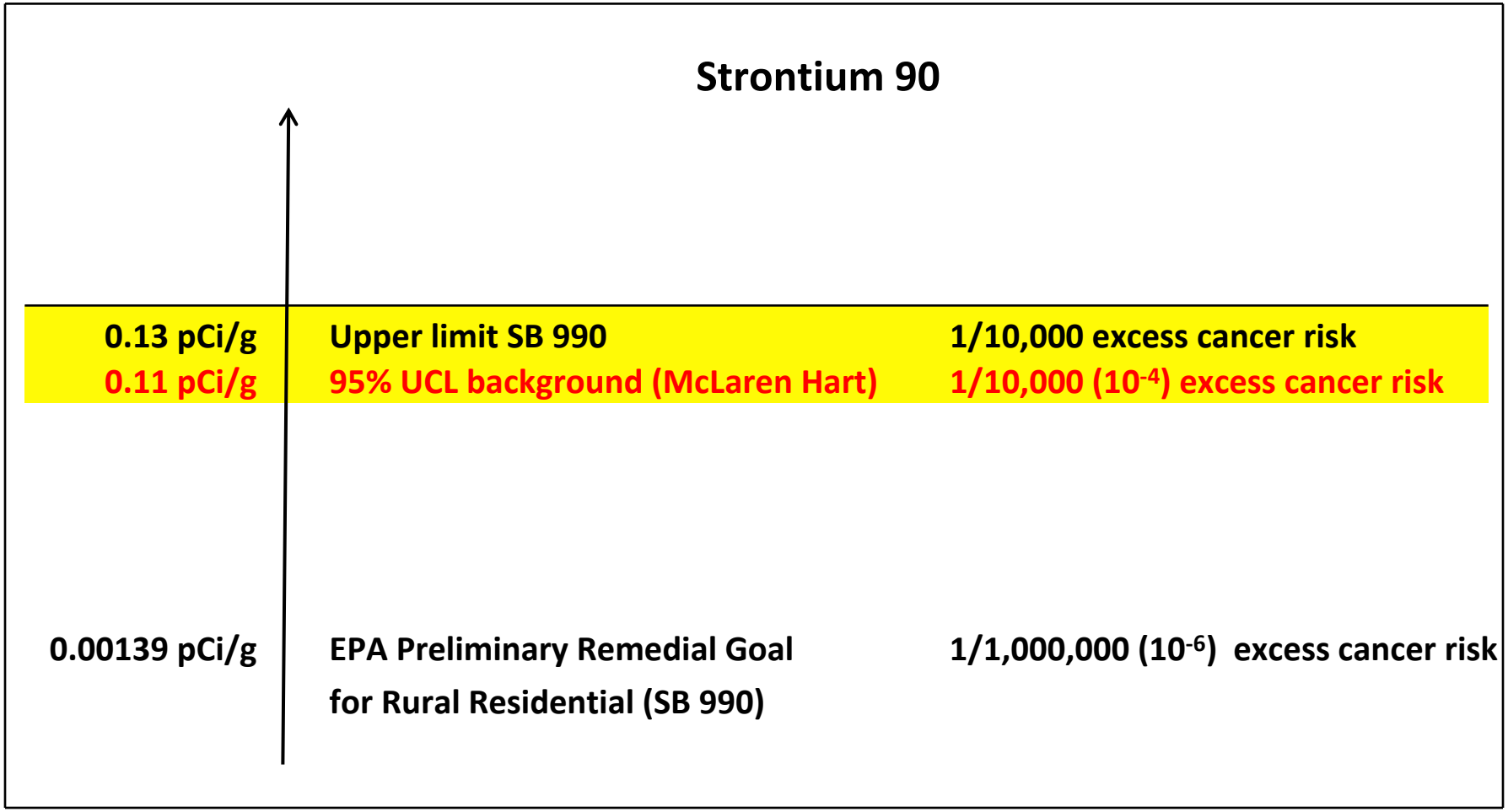
Superfund Risk Range

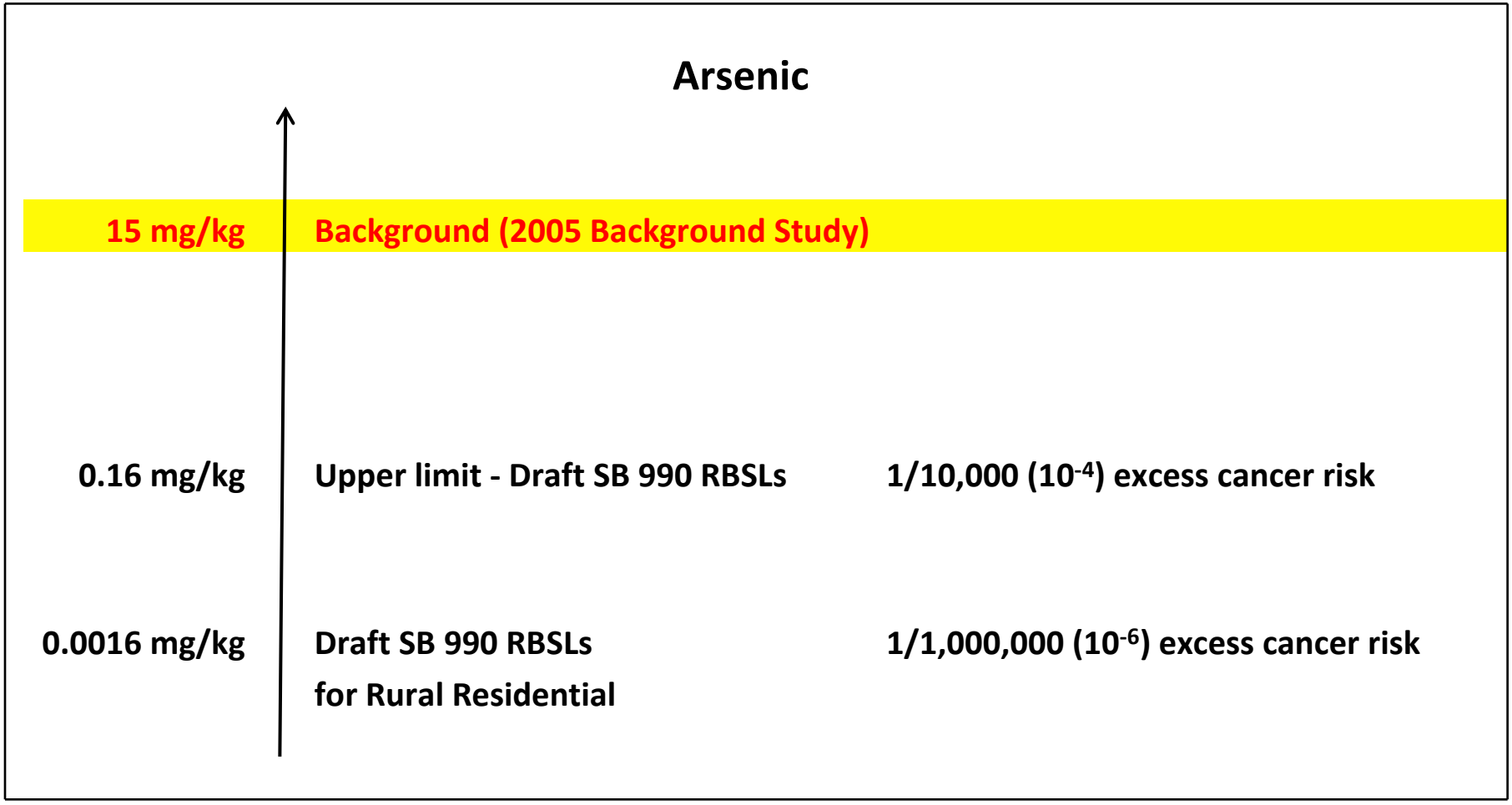


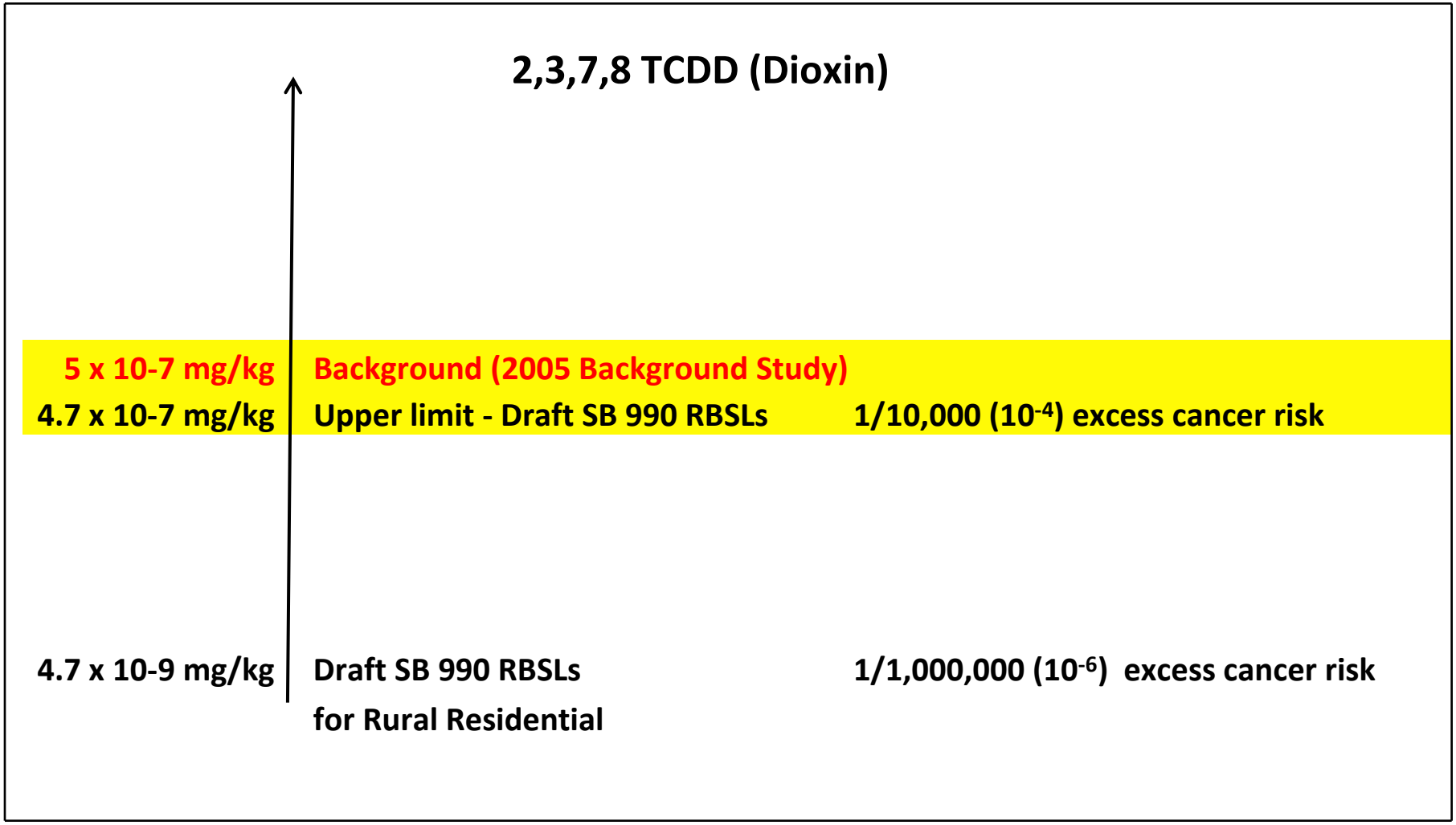
Superfund

- Recognizes:
  - Cannot clean up what is below “background”
  - Cannot clean up what you cannot measure (below “detection limits”)


Cesium 137
0.21 pCi/g
95% UCL background (McLaren Hart)
2/10,000 excess cancer risk
0.12 pCi/g
Upper limit SB 990
1/10,000 (10-4) excess cancer risk
0.0012 pCi/g
EPA Preliminary Remedial Goal for Rural Residential (SB 990)
1/1,000,000 (10-6) excess cancer risk


Strontium 90
0.13 pCi/g
Upper limit SB 990
1/10,000 excess cancer risk
0.11 pCi/g
95% UCL background (McLaren Hart)
1/10,000 (10-4) excess cancer risk
0.00139 pCi/g
EPA Preliminary Remedial Goal
for Rural Residential (SB 990)
1/1,000,000 (10-6) excess cancer risk


Arsenic
15 mg/kg
Background (2005 Background Study)
0.16 mg/kg
Upper limit - Draft SB 990 RBSLs
1/10,000 (10-4) excess cancer risk
0.0016 mg/kg
Draft SB 990 RBSLs
for Rural Residential
1/1,000,000 (10-6) excess cancer risk


2,3,7,8 TCDD (Dioxin)
5 x 10-7 mg/kg
Background (2005 Background Study)
4.7 x 10-7 mg/kg
Upper limit - Draft SB 990 RBSLs
1/10,000 (10^{-4}) excess cancer risk
4.7 x 10-9 mg/kg
Draft SB 990 RBSLs
for Rural Residential
1/1,000,000 (10^{-6}) excess cancer risk

Administrative Order on Consent

What does the Administrative Order on Consent do?

After cleanup, the site will be restored to the way it was before it was polluted

(“cleanup to background”)

Anatomy of the Administrative Order on Consent

Introduction

- Who, what, where, authorities
- Definitions

Key Definitions

- Cleanup of soils *doesn't include contamination from groundwater*
- Cleanup to Background Levels
  - *Includes in situ or other onsite treatment of soils*
  - Does not include onsite burial or landfilling
- Detection Limits
  - For chemicals = method reporting limit
  - For radionuclides = minimum detectable activity

Work to be Performed

- Building demolition
  - Clear buildings first
  - Easier to characterize
  - Boeing buildings in Area IV
- Site characterization

Site Characterization

- Characterization of radiologic contamination
  - EPA's radiologic characterization work to continue
- Characterization of chemical contamination
    - Phase I: Co-located samples
    - Phase II: Co-located random samples (& step outs?)
    - Chemical Data Gap Investigation
- Treatability Studies

Chemical Data Summary Report

- Summary of the chemical data collection efforts

- Defines the extent of soils contamination that exceeds chemical background levels

Site Cleanup

- Soils Remedial Action Implementation Plan
  - based on the Chemical Data Summary Report and U.S. EPA's radiologic characterization survey
  - Planned remedial action
  - Proposed use of exceptions
  - Proposed for in situ or onsite treatment
  - Proposed mitigation measures
  - Schedule for implementation
- Confirmation Sampling (protocol)

Public Participation

- Public review and comment on ***all*** draft plans and reports

California Environmental Quality Act

- Documents to be made available for public review and comment at the same time as the draft Soils Remedial Action Implementation Plan

U.S. Environmental Protection Agency Activities

Summary Judgment Order (Judge Conti)

General operating provisions

- Project director
- Web site
- Review/approvals
- Submittals
- Contractors
- Analyses
- Availability of sampling data and documents
- Access
- Recordkeeping
- Comply with all laws and regulations.
- DOE to pay DTSC costs (and DOE cost recovery)
- Availability of Federal Funds
- Penalties for Noncompliance
- Dispute Resolution (enforcement mechanism)
- Force Majeure
- Schedule Changes
- Extension Requests

Next Steps

- Receive public input on AOC
- Modify agreement if needed
- Sign and implement

More information

- Comments by email to: ssfl@dtsc.ca.gov by November 22, 2010

- Copies of the AOC, Responses to Comments (Summary and Detailed) and this presentation are located on-line at http://www.dtsc.ca.gov/SiteCleanup/Santa_Susana_Field_Lab/SSFL-Cleanup.cfm

From:	ronald.ziman@gmail.com on behalf of Ronald Ziman
To:	MSFC-SSFL-EIS
Subject:	Bell Canyon Homeowners" Association Resolution
Date:	Tuesday, October 01, 2013 1:57:41 AM
Attachments:	BCA BoD Resolution Regarding NASA DEIS.pdf

Please find attached the Bell Canyon Homeowners' Association's resolution concerning NASA's Draft EIS. The original is being sent to you by postal mail.

Sincerely,

Ronald B. Ziman, MD, FACP, FAAN
Vice President, Bell Canyon Association
Bell Canyon Representative to the SSFL

BELL CANYON ASSOCIATION

30 Hackamore Lane, Suite 8
Bell Canyon, CA 91307-1001

BCA Board of Directors Resolution Regarding
NASA's DEIS 9/30/13

WHEREAS Bell Canyon is the closest neighbor to the Santa Susana Field Laboratory (SSFL)

WHEREAS Bell Creek receives 90% of the watershed the SSFL

WHEREAS winds blow soil material from the laboratory into Bell Canyon

WHEREAS the NASA owns a 450 acre portion of SSFL

WHEREAS NASA has recently released its Draft Environmental Impact Statement (DEIS)

WHEREAS the DEIS only considers 2 extreme alternatives, "no cleanup" or "cleanup to background"

WHEREAS the "no cleanup" option ignores those chemicals that require cleanup

WHEREAS the "cleanup to background option" is not risk based

WHEREAS the health, environmental, historical and cultural destructive consequences of the "cleanup to background" option that includes removal of 500, 000 cubic yards of soil, 320,000 of which will be trucked off site has not been fully identified and mitigated

WHEREAS the "cleanup to background" option is paradoxically unnecessarily harmful to public health, the environment and the historical and cultural resources

WHEREAS the "cleanup to background option will destroy the wildlife corridor going through NASA's property

WHEREAS the "cleanup to background" option will newly grade 105 acres with neither drainage nor grading plan

WHEREAS the "cleanup to background" option will disrupt Native American sacred ground

WHEREAS the soil erosion runoff from surface water will not be able to be adequately controlled

818.346.9879
818.883.8490 FAX
bellcanyon.com

BELL CANYON ASSOCIATION

30 Hackamore Lane, Suite 8
Bell Canyon, CA 91307-1001

WHEREAS such erosion will likely deleteriously alter the drainage of the SSFL through all the streams and creeks originating within or adjacent to that property

WHEREAS alteration in surface water hydrology will have consequential undefined impacts on aquifer recharge and groundwater kinetics

WHEREAS alteration in surface water hydrology will result in stagnant pools creating new mosquito breeding grounds
Whereas mosquitoes are known vectors of disease including West Nile Virus, Bird Flu and Equine Encephalitis

WHEREAS airborne soil erosion will carry endemic San Joaquin Valley Fever spores (Coccydioidomycosis) which constitutes a public health risk

WHEREAS all such adverse health consequences noted above have not been taken into any consideration in NASA's DEIS

THEREFORE BE IT RESOLVED that the Bell Canyon Homeowners' Association considers the NASA DEIS in its present form to be defective and framed too narrowly

BE IT FURTHER RESOLVED that Bell Canyon Homeowners' Association recommends that the NASA DEIS be rewritten after the AOCs, which are guiding the DEIS, are mutually amended by the parties to take health risk into account by the inclusion of PRG's into the lookup tables and other EPA standards that are used in all other cleanups of this nature

BE IT FURTHER RESOLVED that the mutually agreed to completion date also be modified to allow other in situ treatment methods to be considered as practical alternatives for the cleanup process consistent with the CEQ letter, NEPA and CEQA

BE IT FURTHER RESOLVED that after the above, a new NASA DEIS be prepared and published for public comment

By:

Richard Levy, Secretary

Bell Canyon Board of Directors

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818.883.8490 FAX
bellcanyon.com

From:	Teena Takata
To:	MSFC-SSFL-EIS
Subject:	Comment Letter, DEIS for NASA Site at Ventura County, CA
Date:	Tuesday, October 01, 2013 11:45:30 AM
Attachments:	TT Nasa DEIS Comment Letter Final.pdf

Please find attached, my comment letter for the above-referenced DEIS.

October 1, 2013

Mr. Allen Elliott
SSFL Project Director
NASA MSFC AS0, Building 4494
Huntsville, AL 35812

Comments on the Draft Environmental Impact Statement for Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California, dated July 2013

I am one of the authors of the comment letter filed by the Santa Susana Mountain Park Association, and hereby adopt and incorporate all comments in that letter in this letter which represents more personal comments. I have not re-defined the various abbreviations used in the DEIS and

I wanted to speak regarding the cancer statistics. About four years ago, West Hills Neighborhood Council hosted a presentation by Dr. Mack, who maintains statistics related to cancer and other possible negative health affects that could result from contaminants at the SSFL. During his presentation, he commented there was NO statistically significant increase in the cancer statistics in nearby zip codes. In making this statement, he noted there was a tiny increase of perhaps 1 or 2 percent in a certain cancer. He immediately commented further, that the observed increase WAS NOT STATISTICALLY significant to one educated in statistics, and therefore the overall conclusion from a educated perception was that there was no measurable increase in cancer risks from the site.

Personally, my mother and my grandfather died from cancer. In neither case, does their death certificate indicate cancer was a proximate, or secondary cause of their death. I think if anybody within a community made an effort to interview residents and identify underlying causes of death, they would find a huge amount of cancer deaths, over the statistics reported for cancer deaths. And not to ignore this terrible disease, but it appears likely that usual standards of cleanup such as Suburban Residential or Recreational would be perfectly protective of human health, particularly if the end use of the property is for open space/recreational. So while I am sympathetic to losses that certain protesting residents have experienced, I do not believe the SSFL caused the problem from a statistical, or scientific point of view. And I believe the lesser cleanup standards of open space/-recreational use are adequately protective of health in the surrounding community.

Unfortunately, the extreme standards of cleanup to background, will have a much greater impact on residents of nearby communities than is needed for a adequate cleanup under the open space/recreational alternative. The DEIS is helpful for analysis in that it shows some of the severe, and in my opinion, totally unacceptable results of this cleanup.

Removal of 2/3 of the soil (after remediation/restoration)
Impacts to the Burro Flats Site
Inconsistencies in the basic description of the Burros Flats Site to the NRHP description
Removal (apparently, not clear) of the test stands and their associated structures.

During Groundwater University, participants were taught about "fractured rock", representing the bedrock at this site that is part of the Chatsworth Formation and is primarily sandstone. The scientists who specialized in soil and water, explained that the contaminants that were now-imbedded in the rock is left undisturbed, it really would not cause any problems. Results of testing contamination plumes were presented, and it was noted that the great majority of these contamination plumes are on the property, and are no longer spreading based on the stoppage of additional contamination by stopping chemical work on the property, and steps already taken to clean up the property.

Taking the above paragraph at face value – now remove all the soil that is contaminated in ANY way (beyond background). And then, replace that soil, only to the extent of 1/3 of the soil removed. Now the contaminants in the fractured rock are much more exposed and the reduced soil provides a much more significant water wash of the rocks when it rains. That then runs off to the community, which can be impacted by runoff which is not addressed in the DEIS.

One of the great characteristics of the SSFL is the undisturbed nature of the land that has not been used for buildings or industrial uses. The entire site should be viewed as a special area, and an example of how the Valley may have looked before it became grazing land, farmland, homes, and a suburb of Los Angeles. Removal of huge amounts of soil, and replacement with soil from outside the area, will bring an unknown amount of foreign plants to this area, which presently has few invasive plants.

Not addressed in the DEIS is where the replaced soil will come from. What additional plants will be introduced through seeds in those soils? The SSFL has multiple rare or endangered plants, such as Santa Susana Tarplant, Brauntons milk vetch, and many others. What steps will be taken to clean the soil, to monitor the incompatible plants that are introduced, and to remove invasive plants that may impact the site in a negative way. The expected cost of this type of monitoring and cleaning of inappropriately introduced plants should be disclosed, and the cost should be funded before the DEIS moves on to a remediation phase.

Not addressed in the DEIS is the effect on the community of diseases that may be introduced in the community by the removal of vegetation and the disturbance of soil, for possible Valley fever outbreaks and other diseases that may occur through air-borne dust.

Given our chaparral vegetation community, plants that are removed due to soil bearing a 1 or 5 percent too much of a tested chemical out of hundreds of chemicals tested…..it may take 10 years to regenerate the plant and to regenerate a root system under it to hold soil again. A tree of significant size such as an oak tree, in good climatic conditions, may take 200-300 years to regenerate. In too dry years, the young trees will die. HOW will the community be protected for the many years of reparation???? HOW will that be managed? How will dust from the soil be contained while the plant community is regenerated? Remember we have Santa Ana Winds each fall; control of fugitive dust over 105 disturbed acres (with all surface dirt removed and partially replaced) in high wind circumstances is a frightening responsibility – HOW can that be accomplished? But as the soil is disturbed, I believe NASA creates an obligation to protect the community for many years – but this is not discussed in any significant detail in the DEIS . The cost of this, and a detailed management

plan explaining how protection from dust due to wind during huge wind events, should all be disclosed. All the above are integral considerations associated with soil removal – and impacts from the dust, from general particulate air pollution to Valley Fever, can affect many more people in the surrounding community than leaving dirt onsite.

Meanwhile, the excessive cleanup impacts the surrounding community for truck emissions, traffic and goes by many schools.

I do not believe the benefit to the community for removal of contaminants to background levels, justifies the various pollution effects to our community and to the eventual dump site.

The Santa Susana Mountain Park Association letter speaks of the cultural resources. Impacts or destruction of cultural resources (Burro Flats site, NRHP eligible structures), BEFORE we have any CEQA analysis from DTSC that controls the decision under the AOC, is simply wrong! DTSC has been intimately involved in this project for many years. DTSC told the PPG (the public participation group that it ran) that met with them in 2009-2010 that CEQA WOULD BE CONSIDERED under the AOC's. The timeline shown by the NASA Inspector General report referred to in the Santa Susana Mountain Park Association letter, makes it clear that CEQA analysis now is scheduled to occur after a substantial amount of the actual clean up is already completed. It's unfortunate the timing of the CEQA analysis by DTSC is not as clearly shown in the DEIS. Both the timing of the CEQA analysis and the results of the CEQA analysis, that considers costs of various alternatives and benefits (alternatives such as clean up to residential standards or open space standards) should be considered. This should be incorporated in a re-issued DEIS.

I encourage NASA to re-issue the DEIS. Include costs compared to benefits. Show multiple alternatives based on usual cleanup standards (such as residential use, recreational use, as well as background, no alternative), for each impact item mentioned below.

- Include Multiple Alternatives consistent with general California law.
- Include how DTSC will decide various issues.
- Include a definition of an Artifact.
- Include a definition of a recognized Cultural Resource.
- Include how restoration using 1/3 of the removed soil can be justified.
- Include source of soil.
- Include detailed effects from removal of 2/3 of the soil on the surrounding community.
- Provide information on how dust will be controlled in the revegetation and soil removal period.
- Provide contaminant information on how emission and traffic impacts vary under multiple alternatives.
- Complete the evaluation of the cultural resources including limited contamination testing of soils near NRHP eligible structures.
- Include which structures and related buildings will be retained.
- Reconcile the NRHP definition of the Burro Flats site with the DEIS.
- Explain what part of the Burro Flats site is proposed to be impacted and even better, eliminate that.
- Explain how the Indian Sacred Site will be handled.

The list above will not be resolved for some time. Based on a likely three year delay in the CEQA analysis being available by DTSC, it seems extending the clean up date from 2017 to 2020 is an excellent short-term solution to provide NASA with time to gather appropriate input and develop an adequate and comprehensive plan to deal with the items above, which should all be part of the analysis provided on this extremely significant and special property.

This time frame is based on the Inspector General Report on the NASA portion of the Santa Susana Field Laboratory, which notes that NASA will assist DTSC with CEQA in Winter 2015, which means at earliest their DEIR would be available in 2016, three years out from now. In fact, to avoid more confusion, the target cleanup date should be extended to three years after DTSC issues its final DEIR, since environmental documents are to be issued before projects are worked on. That likely will cause longer than a three year delay, but will be the most appropriate time frame to govern the NASA cleanup under the AOCs.

Please refer to the Santa Susana Mountain Park Association letter for footnotes and other references that relate to the above issues.

We look forward to your review of our comment letters and hope for significant revisions to the DEIS so it can, indeed, provide adequate information so it can become a true decision-making document, as outlined by the various laws that require it to be issued. Thank you for the opportunity to make comments on this document.

Sincerely,

Teena A Takata
9629 Baden Avenue
Chatsworth, CA 91311

From:	Liza Tucker
To:	MSFC-SSFL-EIS
Subject:	COMMENT ON NASA DRAFT EIS ON SANTA SUSANA FIELD LAB
Date:	Tuesday, October 01, 2013 5:34:10 PM
Attachments:	CW-DRAFT-EIS-LTRHEAD.pdf image.gif

October 1, 2013

Allen Elliott

SSFL Program Director

NASA MSFC AS01, Building 4494

Huntsville, AL 35812

email address: msfc-ssfl-eis@mail.nasa.gov

Re: Consumer Watchdog Comments on Draft Environmental Impact Statement for Cleanup of NASA Property at the Santa Susana Field Laboratory

Dear Mr. Elliott:

Consumer Watchdog is a California non-profit, non-partisan public interest group that watchdogs government and corporate malfeasance. We write in defense of residents who live near the Santa Susana Field Laboratory (SSFL) who could be significantly affected if NASA reneges on its commitments to cleanup all the contamination that is the legacy of NASA's past operations at the site. Among our projects is our Toxics Watchdog Project, which has been investigating and exposing problems with agency action—or inaction—in protecting the public from toxic pollution, with a particular focus on SSFL. We recently filed suit against

the Department of Toxic Substances Control, the Department of Health Services, and the Boeing Company over violations of state environmental law regarding demolition and disposal of the apparently radioactive debris at California sites—such as dumps and metal recycling shops—not licensed or designed for disposal of radioactive waste.

NASA has been an irresponsible environmental steward of its land at SSFL. For decades, the most elementary safeguards were ignored. A million gallons of tricholoethylene (TCE), for example, were used to flush rocket engines and just allowed to drain into soil and from there to pollute groundwater. The soil and groundwater today hold some half a million gallons of TCE (with more dispersing through the air and settling in nearby neighborhoods). TCE is not permitted in water at levels above 5 parts per billion, yet levels far in excess of that limit are found in groundwater throughout much of NASA's property, with a plume leaving SSFL boundaries.

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There are dozens of constituents of concern (COCs) polluting SSFL.

And they are not staying at SSFL. When it rains, the surface water runoff carries the pollutants offsite. The LA Regional Water Quality Control Board has issued violation after violation for exceeding surface water pollution limits (NPDES limits), as well as numerous findings for exceeding health-based pollution benchmarks. Essentially, the site leaks contaminants to the neighboring areas.

A study by UCLA for the federal Agency for Toxic Substances and Disease Registry (ATSDR) by a team led by Professor Yoram Cohen found widespread pollution at SSFL and that it had affected neighboring communities. A second ATSDR study, by Professor Hal Morgenstern, found elevated rates of key cancers in the offsite population associated with their proximity to the site. And a large, multi-year study by the UCLA School of Public Health found significant increases in death rates for various cancers among the more exposed workers. In short, SSFL appears to have been killing people, both onsite and in neighboring communities.

That is why the public and their elected officials have fought for years to get the site cleaned up. For a long time NASA strenuously resisted meeting its cleanup obligations. Finally, in 2010, it signed a legally binding Administrative Order on Consent (AOC) for Remedial Action, pledging to clean its part of the site up to background.

The current draft Environmental Impact Statement (EIS) is supposed to carry out a provision of the AOC that requires a review under the National Environmental Policy Act (NEPA) of *implementing* the cleanup to background. In other words, it is not about *whether* to comply with the AOC, it is about *how* to comply. For example, the AOC requires cleanup to background, but one can accomplish that through removal and disposal of contaminated soil, or treatment of soil so that it is no longer contaminated. That is supposed to be the subject of the EIS. Instead, some within NASA who long resisted cleanup appear to be

doing everything they can to sabotage the cleanup required under the AOC. Rather than a NEPA-compliant science-based assessment of how to clean up the site, this draft EIS appears to be an unscientific polemic aimed at trying to get out of the promises NASA made.

First of all, last year NASA tried to convert the EIS into a document reviewing *whether* to comply with the AOC, not *how.* It claimed, despite AOC provisions to the contrary, that NEPA required this. The Council on Environmental Quality (CEQ), in a formal written opinion, made clear that was not true. CEQ is, of course, the federal government's agency for determining NEPA compliance. And the State of California wrote NASA saying that its proposed course of action would violate the AOC. NASA therefore promised to limit the scope of the EIS to how to implement the AOC, and a "No Action" alternative.

But it has now broken the commitments it made to CEQ. NASA has nonetheless gone ahead and included the very analysis they claim to have dropped, particularly trying to claim how much fewer truck trips there would have to be if allowed to walk away from the great majority of the contamination. The "analysis" (for which no factual basis or calculations are provided) includes options that would involve walking away from nearly 90% of the contamination, just allowing it to keep impacting the environment and migrating into neighboring areas. This part of the EIS thus violates the agreement with CEQ and the provisions of the AOC, and raises serious questions about the veracity of the NASA personnel involved.

At its core, the draft EIR violates the central requirements of NEPA. It appears to be a piece of propaganda about why NASA should be allowed to get out of its commitments in the AOC and walk away from the contamination. The draft EIS does this by hyping—there really is no other word for it—the trucks it would take to clean the site up and other misleading assertions about impacts of cleanup while being essentially silent about the environmental impacts of the contamination and the impacts of not cleaning up.

This draft EIS would leave any uninformed reader thinking that NASA wanted to remove soil for the heck of it. There are a few sentences about contaminants, in a document of hundreds of pages. The entire discussion of environmental impacts is thus fundamentally flawed.

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The draft EIS claims the impact of cleanup on biological resources would be important, yet is largely silent on the impact of all that contamination on the biological resources and the impact on them of not removing the pollution. The draft EIS asserts negative impacts on surface water and groundwater from cleaning up their contamination, but essentially ignores the far more significant negative impacts of the pollution of these beneficial resources and the impact on the environment of a contaminated aquifer if one didn't clean up the aquifer, or if one allowed contamination to continue to pollute the streams leading off the property.

On and on, the EIS tries to scare readers into being worried about trucks while blatantly refusing to do what the EIS was supposed to do, address in detail the environmental impacts of all that pollution and thus the effect the No Action alternative would have. What is the need for the project? In a portion of a single sentence the reader is told, "Contamination is known to exist at NASA's SSFL property because of previous mission activities, and NASA has declared the property excess to its mission needs. Therefore, the Proposed Action is *needed to protect human health and the environment*..." p. 1-7, emphasis added. Yet nowhere in the EIS is this expanded on in any detail. What is the damage to the environment that NASA has done? What contaminants, what toxic effects can they have, what impacts can they have on ecological receptors, how much of each pollutant is in the

SSFL NASA area, how do these pollutants migrate, etc.

So the core of what the EIS is supposed to be about, the environmental harm from the pollutants NASA has recklessly released into air, soil, groundwater and surface water, is almost completely missing from the EIS. Instead we get pure hype as to why NASA shouldn't have to do what it promised—clean up the site.

For example, the AOC expressly exempts from the cleanup to background requirement anything that might damage recognized Native American artifacts. Yet the EIS tries to make it seem that cleanup to the AOC would damage the cave paintings at the Burro Flats area. That is just plain false. The AOC protects the cave paintings. It is simply dishonest to try to imply the opposite.

But then NASA goes even further overboard and asserts that maybe the entire 2,850 acre SSFL site should somehow be considered "sacred." The AOC does not allow that as an excuse to not clean it up, and NASA knows that. Yet throwing that in is again part of a propaganda effort to get out of obligations rather than an honest analysis under NEPA. (Furthermore, even if one could somehow claim the contaminated land as sacred, that is the prime argument for restoring it to its unpolluted prior state, not allowing the land to remain forever polluted.)

And NASA tries to assert that the falling-apart old rocket test stands should be considered "historical" and suggests that they not be demolished. But that is where much of the contamination is, centered at the test stands. You can't clean it up without getting them out of the way. The AOC requires full cleanup. Trying to claim the polluted test stands are historical and implying that perhaps you can get out of cleanup that way directly violates the AOC.

Lastly, the real purpose of an EIS is in large part to identify mitigation

measures. The Draft EIS fails to do that. For example, it is clear all NASA is trying to do is inflame the community about trucks, when the EIS should have looked at ways of mitigating the truck impacts. One could use natural gas trucks or electric trucks to reduce diesel emissions and global warming effects; not analyzed in the EIS. The trucks could be routed over various routes, so no community experiences more than a few trucks an hour passing by, but this is not analyzed. One could fix up an existing fire road off SSFL and truck contaminated soil to a rail spur; not examined. NASA merely says that any alternative would cost money and time and so refuses to analyze them.

Similarly, the areas in which most of the contamination exists are already far from pristine; NASA stripped them bare when it built the test stands and other structures. The EIS should look at mitigation for any soil removal in terms of re-vegetation and restoration. But on this, the EIS is deficient.

In short, the EIS was supposed to address the environmental impacts from the contamination created by NASA and the effects if one didn't clean it up. NASA didn't do that. Instead, it deflected attention to minor effects like truck traffic that has occurred there for years. And rather than identify sensible mitigation measures, NASA punts. This is not an EIS; this is an overt effort by NASA to try to misuse an EIS to blow up the binding commitments NASA made and instead just walk away from the great majority of the contamination NASA created.

NASA irresponsibly polluted that area for decades. In 2010 it finally stopped resisting its obligation and committed to full cleanup. Now, in an about face it appears some at NASA want to revert to the old environmental irresponsibility and to break binding commitments to fully clean up contamination that threatens public health. We find this outcome unacceptable.

Sincerely,

Liza Tucker

Consumer Advocate

Consumer Watchdog

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Consumer Watchdog

October 1, 2013

Allen Elliott
SSFL Program Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

email address: msfc-ssfl-eis@mail.nasa.gov

Re: Consumer Watchdog Comments on Draft Environmental Impact Statement for Cleanup of NASA Property at the Santa Susana Field Laboratory

Dear Mr. Elliott:

Consumer Watchdog is a California non-profit, non-partisan public interest group that watchdogs government and corporate malfeasance. We write in defense of residents who live near the Santa Susana Field Laboratory (SSFL) who could be significantly affected if NASA reneges on its commitments to cleanup all the contamination that is the legacy of NASA's past operations at the site. Among our projects is our Toxics Watchdog Project, which has been investigating and exposing problems with agency action—or inaction—in protecting the public from toxic pollution, with a particular focus on SSFL. We recently filed suit against the Department of Toxic Substances Control, the Department of Health Services, and the Boeing Company over violations of state environmental law regarding demolition and disposal of the apparently radioactive debris at California sites—such as dumps and metal recycling shops—not licensed or designed for disposal of radioactive waste.

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Sincerely,

Liza Tucker
Consumer Advocate
Consumer Watchdog
2701 Ocean Park Blvd
Suite 112
Santa Monica, CA 90405

From:	Sandy
To:	MSFC-SSFL-EIS
Subject:	Comments from the Susana Knolls HOA on the Draft EIS
Date:	Sunday, September 29, 2013 6:23:20 PM
Attachments:	SusanaKnolls-Draft-EIS-Comments-Sept29-2013.pdf

Dear Mr. Elliot,

Attached are comments from the Susana Knolls HOA on the Draft EIS.

Best regards,

-Sandy Capaldi

President
Susana Knolls HOA

Susana Knolls Homeowners Association
1409 Kuehner Dr. #5
Simi Valley, CA 93063

Mr. Allen Elliott
SSFL Program Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

September 29, 2013

by email to: msfc-ssfl-eis@mail.nasa.gov

RE: Comments on Draft EIS for Demolition and Cleanup Activities at the SSFL

Dear Mr. Elliot,

The Susana Knolls Homeowners Association would like to submit our comments and concerns to NASA on their Draft Environmental Impact Statement for Demolition and Cleanup Activities at the SSFL.

As an introduction, we are one of the oldest Homeowner's Associations in Ventura County, having formed in the 1960's. We are a community of approximately 500 homes all nestled beneath the SSFL. Many of our homes were built in the 1920's and 1930's as hunting cabins so our community was inhabited when the facility opened.

Our HOA Board has been very informed and active since we read about the pollution at SSFL when the news broke in The Daily News in May 1989. We have listened to our HOA Board members who attend many meetings about the ongoing cleanup efforts by NASA, DOE and Boeing.

We were very encouraged when we heard that the AOCs, requiring cleanup to background, had been signed by both NASA and DOE on December 6, 2010. The AOCs brought peace of mind to our community. Whenever the Santa Ana's blow or the heavy rains come we feel extremely vulnerable living below and in the direct path of migrating deadly toxins. Our community is well aware that the Water Board has reported numerous violations of contaminants leaving the site. This is very disconcerting to us when we live below with creeks running through many of our properties.

When our HOA Board members go to meetings and hear a few people further from the site showing little regard for cleaning up we try to understand. It is obviously hard for them to comprehend our fear of raising children and possibly exposing them to deadly carcinogens. For many years the contamination has been downplayed, but studies are proving otherwise. Our fear is magnified when we read reports showing studies that breast cancers are highest at the East end of Simi Valley and the West end of the San Fernando Valley.

We feel that the EIS needs to commit to focusing on the pollution that needs to be cleaned/removed in order to meet the background levels defined in the AOCs. When our neighborhood sees the EIS focusing on truck trips that are necessary to remove the contaminants and equates it to children's safety rather than recognizing the possible harm inflicted on all the children living beneath the site by migrating contamination we feel that NASA's EIS is missing the point.

We feel that the test stands are given more consideration than the health and welfare of our communities

below. The AOC requires all of the contamination to be cleaned up. Much of that contamination is beneath the test stands. One cannot realistically meet NASA's commitment to clean up to background without getting the test stands out of the way to allow for a full cleanup of the ground beneath which we all know was horribly contaminated by TCE and other chemicals.

Native American Artifacts are already protected under the AOC. But the discussion in the EIS seems to go far beyond the AOC to suggest that one might simply declare the whole 2850 acres of the long-degraded SSFL land "sacred" and rather than restoring the polluted land from its contaminated state perhaps walk away from one's cleanup obligations. The AOC does not permit that.

We now live with the knowledge that UCLA and the Agency for Toxic Substances and Disease Registry have found elevated cancers in the workers and in people living offsite and close to the SSFL. This information enforces the realization that the site requires cleanup to background.

We applaud NASA for signing and committing to the AOCs and to a full cleanup to background. Please don't drag your feet or take the focus away from the important work of removing the contaminants and returning this beautiful site to how it was before you came. Future generations should have the privilege to safely experience the magnificence of this site.

Our fundamental message about the EIS is that NASA must fully live up to the obligations it assumed in the AOC to completely clean up the pollution it created so close to our homes and families. There must be no backtracking.

We await this day.

Sincerely,

Sandra Capaldi

Sandra Capaldi
President
Susana Knolls Homeowners Association

From:	polyvios georgilas
To:	MSFC-SSFL-EIS
Subject:	COMMENTS ON DEIS FOR PROPOSED DEMOLITION AND ENVIRONMENTAL CLEANUP ACTIVITIES AT SSFL, JULY 2013
Date:	Monday, September 30, 2013 1:13:28 PM
Attachments:	GEORGILAS SSFL COMMENTS.pdf

Dear Mr. Elliot,

Please find attatched letter as my submitted SSFL DEIS comments.

Thank You,

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9/17/2013

Allen Elliot, SSFL Project Manager
NASA MSFC AS01, Building 4494
Huntsville, AL 95812

msfc-ssfl-eis@mail.nasa.gov

RE: Comments on Draft Environmental Impact Statement for proposed Demolition and Environmental Cleanup Activities at Santa Susana Field Laboratory, July 2013.

Dear Mr. Elliot,

Thank you for providing this format for submitting the following comments.
As a resident of Bell Canyon, a community with perhaps one of the largest stakes in this process given its proximity to the SSFL, I am deeply troubled with the NASA DEIS as presented. This document is flawed primarily because it relies on a weak foundational premise. That is, the DEIS only considers the two extreme alternatives of either, a soil cleanup to a historically unprecedented Background/Detect level, or the alternative of No Action at all. Any reasonable mind can perceive that neither course of action is viable given the many variables present at SSFL. These variables require careful and collaborative solutions, none of which the two extreme alternatives offered adequately address.

By failing to include a risk based cleanup, the DEIS fails to balance the level of cleanup with the consensus end use of the site, that being some variation of a Public Land Use. Determining clean up levels prior to establishing site end use is putting the cart before the horse, and serves to waste tax payer dollars on a cleanup that exceeds all levels of reasonability. The Environmental, Cultural, and Biological impact of such a drastic cleanup to Background/Detect levels, leads one to contemplate which is worse the problem or the proposed solution. The DEIS fails to adequately define the current negative health effects to both Human and wildlife populations. This information would be helpful in contemplating an appropriate course of action, where short and middle term negative cleanup effects are brought to balance with the long term benefit of a site that does not put the public at risk.

As the DEIS is written, the proposed cleanup to Background/Detect levels puts at risk the rich cultural and historical resources that should be preserved for posterity. The Burro Flat site VEN-1072, as an NRHP designated site should be exempt from cleanup mitigation efforts, yet the DEIS seems to include at least portions of this important site in the cleanup. Nine structures at Alpha, Bravo and Coca test stand sites, have been found eligible as historic architectural structures under NRHP and SHPO. Given the significant role these test stand structures have played in our nations Space Program, they are an important symbol of our national heritage and should be preserved for posterity. As written,

the DEIS cleanup to Background/detect level, will in all probability destroy these structures in the very first phase of implementation.

The Traffic and Transportation impacts of a Background/detect level cleanup would involve the removal of approximately 1/2 million cubic yards of soil and 95,000 tons of debris. This would result in 142 truck trips per day, including Twenty-Eight peak hour trips(DEIS ES 5.1.4). These numbers fail to take into account returning loads of replacement landfill (1/3 of removed soil), or empties coming into the site to collect their initial loads. The traffic and transportation impact also fails to take into account the truck traffic that the concurrent mitigation effort at the much larger Boeing and DOE sites would produce. The Cumulative impact on the neighboring community will be devastating. As a lifelong resident of the immediate impacted area, it is an endeavor to travel east on Roscoe and North to highway 118 via Topanga Canyon Blvd(route 23) as it is today. One can only imagine the adverse conditions that the 142 to 250(extrapolated per all three sites and worse case basis) truck loads of Hazardous materials would create to the immediate communities of West, Hills, Canoga Park, Chatsworth and Woodland Hills. The DEIS uses a flawed Levels Of Service(LOS) threshold, that does not adequately take into account the effect of the low speeds (especially at Grade -Rocky Pointe, at peak traffic) that this volume of trucks will have on traffic times. The high density Commercial corridor on the Southern route via Topanga Canyon BLVD. (23) to interstate 101 , bisects an Elementary School, a High School, and one of the largest shopping malls in all of Southern California (a large portion of which is currently under construction), that stretches from Vanowen Street almost to Interstate 101. The LOS threshold numbers not-withstanding, this is a recipe for disaster.

At the essence of the weakness of the DEIS is the 2010 AOC agreement that guides it. The AOC agreement as written is not workable. The remedy is to amend or modify the 2010 AOC, so as to allow the EIS to include legitimate, reasonable and risk based cleanup solutions. The 2010 AOC goes beyond EPA recommended levels for human health and safety, because it was based on Senate Bill 990(KUEHL 2007). This Bill was stuck down by Federal District Court decision, yet the AOC survived. Section 5.26 Severability of 2010 AOC Order provides that ..."should any court determine that any state law or regulation incorporated into, referenced in, or authorizing this order is invalid or unenforceable in whole or in part, NASA shall comply with each remaining part."(5.26 Severability AOC2010 page 38). The 2010 AOC Order is open to Modification by mutual agreement of the parties(2010 AOC 6.0 pg 38-9), and should so be modified before any further action is taken. The modifications should include a risk based PRG table for suburban residential risk levels, for the purpose of avoiding removing near background soils which do not present a risk to human health or the environment. The remediation goal should be modified to include suburban residential PRGs to enhance LUT look up table process by comparing soil condition and risk standards established by USEPA as public remediation goals.

A reasoned approach to amending the 2010 AOC will by definition create a more thorough EIS. From a more functional EIS that studies the array of mitigation options available, current stakeholders can participate in conducting a cleanup effort that future stakeholders can be proud of.

POLY GEORGILAS

BELL CANYON BCCC DIRECTOR

SSFL CAG MEMBER

From:	polyvios georgilas
To:	MSFC-SSFL-EIS
Subject:	COMMENTS ON DEIS FOR PROPOSED DEMOLITION AND ENVIRONMENTAL CLEANUP ACTIVITIES AT SSFL, JULY 2013
Date:	Monday, September 30, 2013 1:13:28 PM
Attachments:	GEORGILAS SSFL COMMENTS.pdf

Dear Mr. Elliot,

Please find attatched letter as my submitted SSFL DEIS comments.

Thank You,

Poly Georgilas
alt email therealest8guy@hotmail.com
(818)518-6022
(818)883-8569
81 Stagecoach Rd.
Bell Canyon, CA. 91307

Poly Georgilas
81 Stagecoach Rd.
Bell Canyon, CA 91307

9/17/2013

Allen Elliot, SSFL Project Manager
NASA MSFC AS01, Building 4494
Huntsville, AL 95812

msfc-ssfl-eis@mail.nasa.gov

RE: Comments on Draft Environmental Impact Statement for proposed Demolition and Environmental Cleanup Activities at Santa Susana Field Laboratory, July 2013.

Dear Mr. Elliot,

Thank you for providing this format for submitting the following comments.
As a resident of Bell Canyon, a community with perhaps one of the largest stakes in this process given its proximity to the SSFL, I am deeply troubled with the NASA DEIS as presented. This document is flawed primarily because it relies on a weak foundational premise. That is, the DEIS only considers the two extreme alternatives of either, a soil cleanup to a historically unprecedented Background/Detect level, or the alternative of No Action at all. Any reasonable mind can perceive that neither course of action is viable given the many variables present at SSFL. These variables require careful and collaborative solutions, none of which the two extreme alternatives offered adequately address.

By failing to include a risk based cleanup, the DEIS fails to balance the level of cleanup with the consensus end use of the site, that being some variation of a Public Land Use. Determining clean up levels prior to establishing site end use is putting the cart before the horse, and serves to waste tax payer dollars on a cleanup that exceeds all levels of reasonability. The Environmental, Cultural, and Biological impact of such a drastic cleanup to Background/Detect levels, leads one to contemplate which is worse the problem or the proposed solution. The DEIS fails to adequately define the current negative health effects to both Human and wildlife populations. This information would be helpful in contemplating an appropriate course of action, where short and middle term negative cleanup effects are brought to balance with the long term benefit of a site that does not put the public at risk.

As the DEIS is written, the proposed cleanup to Background/Detect levels puts at risk the rich cultural and historical resources that should be preserved for posterity. The Burro Flat site VEN-1072, as an NRHP designated site should be exempt from cleanup mitigation efforts, yet the DEIS seems to include at least portions of this important site in the cleanup. Nine structures at Alpha, Bravo and Coca test stand sites, have been found eligible as historic architectural structures under NRHP and SHPO. Given the significant role these test stand structures have played in our nations Space Program, they are an important symbol of our national heritage and should be preserved for posterity. As written,

the DEIS cleanup to Background/detect level, will in all probability destroy these structures in the very first phase of implementation.

The Traffic and Transportation impacts of a Background/detect level cleanup would involve the removal of approximately 1/2 million cubic yards of soil and 95,000 tons of debris. This would result in 142 truck trips per day, including Twenty-Eight peak hour trips(DEIS ES 5.1.4). These numbers fail to take into account returning loads of replacement landfill (1/3 of removed soil), or empties coming into the site to collect their initial loads. The traffic and transportation impact also fails to take into account the truck traffic that the concurrent mitigation effort at the much larger Boeing and DOE sites would produce. The Cumulative impact on the neighboring community will be devastating. As a lifelong resident of the immediate impacted area, it is an endeavor to travel east on Roscoe and North to highway 118 via Topanga Canyon Blvd(route 23) as it is today. One can only imagine the adverse conditions that the 142 to 250(extrapolated per all three sites and worse case basis) truck loads of Hazardous materials would create to the immediate communities of West, Hills, Canoga Park, Chatsworth and Woodland Hills. The DEIS uses a flawed Levels Of Service(LOS) threshold, that does not adequately take into account the effect of the low speeds (especially at Grade -Rocky Pointe, at peak traffic) that this volume of trucks will have on traffic times. The high density Commercial corridor on the Southern route via Topanga Canyon BLVD. (23) to interstate 101 , bisects an Elementary School, a High School, and one of the largest shopping malls in all of Southern California (a large portion of which is currently under construction), that stretches from Vanowen Street almost to Interstate 101. The LOS threshold numbers not-withstanding, this is a recipe for disaster.

At the essence of the weakness of the DEIS is the 2010 AOC agreement that guides it. The AOC agreement as written is not workable. The remedy is to amend or modify the 2010 AOC, so as to allow the EIS to include legitimate, reasonable and risk based cleanup solutions. The 2010 AOC goes beyond EPA recommended levels for human health and safety, because it was based on Senate Bill 990(KUEHL 2007). This Bill was stuck down by Federal District Court decision, yet the AOC survived. Section 5.26 Severability of 2010 AOC Order provides that ..."should any court determine that any state law or regulation incorporated into, referenced in, or authorizing this order is invalid or unenforceable in whole or in part, NASA shall comply with each remaining part."(5.26 Severability AOC2010 page 38). The 2010 AOC Order is open to Modification by mutual agreement of the parties(2010 AOC 6.0 pg 38-9), and should so be modified before any further action is taken. The modifications should include a risk based PRG table for suburban residential risk levels, for the purpose of avoiding removing near background soils which do not present a risk to human health or the environment. The remediation goal should be modified to include suburban residential PRGs to enhance LUT look up table process by comparing soil condition and risk standards established by USEPA as public remediation goals.

A reasoned approach to amending the 2010 AOC will by definition create a more thorough EIS. From a more functional EIS that studies the array of mitigation options available, current stakeholders can participate in conducting a cleanup effort that future stakeholders can be proud of.

POLY GEORGILAS

BELL CANYON BCCC DIRECTOR

SSFL CAG MEMBER

From:	Sharon Ford
To:	MSFC-SSFL-EIS
Subject:	Comments on Draft EIS
Date:	Monday, September 30, 2013 5:39:55 PM
Attachments:	14 Sep 2013-Sharon"s comments on NASA DEIS draft 1.doc 14 Sep 2013-Sharon"s comments on NASA DEIS draft 1.odt 14 Sep 2013-Sharon"s comments on NASA DEIS draft 1.pdf

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Dear Mr. Elliott,

Attached are different formats of my comments related to the DEIS describing the proposed actions.

Sharon Lee Ford
sharon_ford1@att.net
818-780-5816

30 September 2013

Allen Elliot, SFL Projector
NASA MSFC ASO1, Bldg. 4494
Huntsville, AL 35812

SUBJECT: COMMENTS ON DRAFT EIS FOR PROPOSED DEMOLITION AND ENVIRONMENTAL CLEANUP ACTIVITIES AT SANTA SUSANA FIELD LABORATORY, VENTURA COUNTY, CALIFORNIA, JULY 2013

Dear Sir:

Thank you for the opportunity to comment on the NASA Draft DEIS document. I have very deep concerns about the document, due to the politics involved by state and federal legislators, the federal court, and a monied, public interest group. Decisions, accusations, threats and a lawsuit have been made, without any consideration of the consequences to the site, the environment and the surrounding communities in two different counties.

The Santa Susana Field Laboratory (SSFL) is located within Ventura County, however, it is the public and communities of Los Angeles County that will suffer the greatest consequences. The SSFL site is only accessible via the gate on Woolsey Canyon Road, located within the boundaries of Los Angeles County. Although NASA, Department of Energy (DOE) and Boeing, the largest landowner of the SSFL site, appear to be working together, internally, with the Department of Toxic Substances Control (DTSC), and the public, in reality, it appears that each are doing, or have proposed their own method of cleanup, without DTSC oversight. For example, Boeing was granted permission by the authorities in Ventura County for the demolition of their structures. . Where is the DTSC? Now, NASA has released their DEIS for the proposed cleanup of NASA owned land, and it is very limited and extremely destructive. The Draft DEIS is incomplete, inadequate and flawed.

Department of Energy (DOE) also owns acreage involved in the cleanup, and, is subject to the same NEPA laws/regulations as NASA. Segmentation of two federal agencies and two AOCs, leads to a piecemeal analysis of an environmental document. This does not provide a true or full picture of the amount of soil to be excavated, number of buildings to be demolished, number of truckloads hauling soil to and from the SSFL site, damage or

total destruction to cultural and architectural sited, or identified, remedial soil and water implementation plans. Each agency should not have its own DEIS; there should be *one* document governing both. The DEIS is incomplete, without necessary information, yet to be provided in the not yet written/released DEIS by DTSC.

■ Providing only two, extreme alternatives, clean-up to background or no cleanup, is unacceptable and inadequate, and the consequences devastating. It is not clear, in the DEIS, which clean-up to background standard has been considered: industrial, agricultural, residential, or recreational. Alternatives for residential or recreational use *must* be considered for the land to become parkland.

A health risk assessment *must* be considered over *any* level of cleanup to background. This is the most important issue of concern, to the people in the communities surrounding the SSFL site. Cleanup to background, does not imply health risks. It is quite possible, and likely, for some cleanup to background levels, to be higher than health risk levels set by the EPA. There is no doubt, by anyone, that some soil removal is necessary, but, if the AOC was modified to a health risk assessment, the amount of soil to be excavated would be greatly decreased, lowering the actual health risks to the public.

■ The DEIS is flawed because the level of cleanup is not balanced against costs, cultural impacts and environmental impacts required by NEPA and CEQA. This is a clear case of putting "the cart before the horse." Cleanup to background would devastate the natural ecosystem, sensitive habitat, sacred Native American cultural sites, and the historic rocket test stands. It makes no sense to allow for demolition and soil removal, then have CEQA and DTSC step in to evaluate the environmental and health risks. It would be too late.

■ The AOC driving the project was based on a California legislative bill, SB990 (Kuehl2007), which was later struck down by a Federal District Court decision. The AOC goes *beyond* EPA recommended requirements for human health and safety, however, intervention by politicians and a monied activist group have forced NASA into the "all or nothing" position, without weighing any of the consequences.

The AOC needs modifications that are implementable, that are not time constrained, that address the concerns and needs of the surrounding public, and protect the environment and habitat. This includes use of

existing and future alternative technologies, to minimize damage to the environment. A "no way or the highway" plan is unacceptable.

It is extremely doubtful that cleanup can be accomplished by 2017. It is an artificial date, not based on science, but set by "emergency" type pressures, to create environmental decision documents, prior to completion of studies or input from the California Department of Toxic Substances (DTSC). Due to the size and complexity of the project, no technologies should be ignored or dismissed. Studies on new technologies are currently being conducted at local universities.

- **Excavation and transportation of contaminated soil is a major public concern. The DEIS does not address how, or if, replacement soil will be obtained. Nor, does it address the environmental consequences of soils foreign to the SSFL site. Soils foreign to the site, can pose a threat to the current ecological biodiversity. Non-native plant species can have a significant impact on the wildlife food chain.**

  Many non-native plant species are invasive and a major threat to native vegetation. Also, non-natives are hazardous fuel for wildfires, and do not provide protection from soil erosion.

  At great expense and time, members of environmental societies and the public volunteer in removal of non-native plants, in the Santa Monica Mountains. There is great concern that seeds from non-native plants, as a result foreign soil at the SSFL site, can easily be distributed by wind, and transferred by animal fur and clothing/shoes of humans.

  The proposed amount of soil to be excavated poses great health and safety concerns due to air and water pollution. Dust, created by soil excavation, poses a great health risk for children, the elderly, and those with respiratory issues. Disturbance of such a large amount of soil, exposes the public to potential risks from deadly diseases, such as Valley Fever and Avian Flu.

  Fuel emissions from the trucks not only pose a health risk, but the estimated number of truckloads (80,000) hauling soil, to and from the SSFL site, poses safety risks, traffic congestion, and accidents. Approximately 3-4 schools are located within the proposed routes of the trucks. Although, the proposed schedule is for trucks to be

restricted, during hours when children are going to and from school, life happens, and all the public, pedestrians and in vehicles, will be subject to issues of safety during the cleanup operational hours.

Extreme damage will be done to Los Angeles County surface streets, state and federal highways, and freeways. The DEIS does not address who will pay for this damage and if there will be any mitigation.

■ Environmental issues are of great concern to the public. The proposed amount of soil to be excavated will leave the remaining soil unstable and highly subject to erosion by wind and rain. Erosion can and will have profound affects, on the environment, due to pollution of surface water, particularly in watershed drainage areas.

The proposed removal of such a tremendous amount of soil will also remove biota, rendering the remaining soil sterile, and unsuitable for habitat. This plan includes removal of all vegetation, including endangered plant species and very old oak trees. The AOC needs to be modified to allow for other and newer technologies.

■ Environmental issues regarding habitat protection of flora (previously addressed above) and fauna on the SSFL site is lacking in the AOC. The SSFL site is an important habitat area for resident and migratory birds and mammals, including deer, bobcats, and a mountain lion and offspring. The site is a critical wildlife corridor that links the Santa Monica Mountains, Simi Hills, Santa Susana Mountains, Los Padres Forest, San Gabriel Mountains, and Angeles National Forest.

To insure healthy wildlife, particularly herd animals, corridors are essential to reduce in-breeding, and to allow for migration, particularly in time of drought and climate warming, The fact that the wildlife corridor is not clearly defined in the DEIS is a major flaw.

■ Lack of protection of archaeological and historical resources, from damage or destruction, is as egregious as the lack of a health risk assessment in the DEIS. The DEIS is incomplete because it does not specify expected outcomes for cultural resources, both archeological and architectural.

Protection needs must be established for archaeological sites, such as the Burro Flats site VEN-1072 and any other archaeological sites on the property. Non-excavation methods an technologies should be exhausted before performing actions that could permanently damage cultural sites.

Protection needs to be established before cleanup for historical, architectural structures, such as the Alpha, Bravo, and Coca rocket test stands and their related structures, eligible for protection as historic structures and districts. The AOC refers to removal of structures on soil. The test stands are built on bedrock, so their removal is not necessary or warranted.

Removal or destruction/damage to archaeological and historical resources will significantly decrease the interest in the property by state and federal park agencies.

The DEIS, as written, is unsatisfactory, and needs to be rewritten to include a health risk based cleanup. The AOC must be modified to allow for other technologies to be implemented.

Thank you, again, for the opportunity to comment on the NASA Draft DEIS.

Sincerely,

Sharon Lee Ford
13028 Aetna St
Valley Glen, CA 91401
818-780-5816
sharon_ford1@att.net

From:	Donna Nachtrab
To:	MSFC-SSFL-EIS
Subject:	Comments on NASA DEIS for SSFL
Date:	Tuesday, October 01, 2013 9:19:23 PM
Attachments:	NASA DEIS Commentary DN.pdf

Please find my comment reltive to the NASA SSFL DEIS.

Donna Nachtrab
10530 Larwin Avenue, Unit 7
Chatsworth, CA 91311

October 1, 2013

Mr. Allen Elliott
SSFL Project Director
NASA MSFC AS0, Building 4494
Huntsville, AL 35812

RE: Comments on the Draft Environmental Impact Statement for Demolition and Environmental Cleanup Activities for the NASA administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California, dated July 2013

Most importantly, I fully endorse the comprehensive "Comments on Draft Environmental Impact Statement" separately submitted to you by the Santa Susana Mountain Park Association (SSMPA).

On a personal level, as a resident of Chatsworth, I wish to emphasize my belief that implementation of the DEIS as it stands would be a massive disservice to the communities surrounding SSFL. The DEIS must be re-issued, based on facts, not emotions, political promises or unrealistic deadlines. The re-written DEIS:

- Must follow, not precede, DTSC's final DEIR
- Must include comprehensive analysis of all alternatives, not exclusively "clean-up to background level"
- Must include comprehensive analysis of the effects of transportation of soil removed from SSFL through surrounding communities
- Must include scientific studies of health effects on surrounding communities
- Must evaluate the impacts of disturbing the site (soil and rocks), from environmental, health and esthetic viewpoints

My greatest fear is that the "cure" will be worse than the problem it is seeking to fix – that the proposed solution, if implemented, would cause more harm to surrounding communities than simply doing nothing.

Thank you for the opportunity to comment.

From:	Lewis MacAdams
To:	MSFC-SSFL-EIS
Cc:	Barbara_Boxer@boxer.senate.gov; grant.cope@boxer.senate.gov; bettina.poirier@boxer.senate.gov; dianne_feinstein@feinstein.senate.gov; Molly_O"Brien@feinstein.senate.gov; Elizabeth.Fenton@SEN.CA.GOV; William.Craven@SEN.CA.GOV; louise.rishoff@sen.ca.gov; nicole.bernson@lacity.org; councilmember.englander@lacity.org; damon.wing@ventura.org; linda.parks@ventura.org; bsaltsman@lacbos.org; zev@bos.lacounty.org; jdegonia@lacbos.org; Kelly.ThomasP@epa.gov
Subject:	Comments on NASA DEIS
Date:	Tuesday, October 01, 2013 2:29:27 PM
Attachments:	FoLAR NASA DEIS Comments Oct 2013.pdf.pdf

Dear Mr. Elliott,

Attached please find FoLAR comments on the NASA DEIS.

Lewis MacAdams
Founder Friends of the Los Angeles River
323-223-0585

Friends of the Los Angeles River

October 1st, 2013

Allen Elliott, SSFL Program Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

RE: Comments on the NASA DEIS for the Headwaters of the Los Angeles River (Area II/SSFL)

Dear Mr. Elliott,

As President and Founder of Friends of the Los Angeles River (FoLAR) and on its behalf, I want to thank you in advance for consideration of these comments as the outcome of the NASA DEIS will have a direct impact on the Los Angeles River, as the property in question is it's headwaters.

We feel that a proper cleanup as outlined in the 2010 Administrative Orders on Consent (AOC) is essential. This is what NASA has committed to, and we trust NASA will live up to those commitments.

We note that the NASA DEIS considers leaving in place old rocket test stands, yet, a great deal of the chemical contamination lies beneath them, as well as asbestos and lead are within the remaining structures. To clean up the contamination the test stands must be removed.

FoLAR understands the significance of the Burro Flats Caves used by our native people and is thankful that the AOC already provides protections for recognized Native American artifacts. The EIS needs to make this clear -- there is no risk whatsoever to the Burro Flats cave paintings because the AOC exempts such artifacts from the clean up to background requirement.

The "No Action" alternative within the DEIS should not be considered as it violates an agreement already in place (AOC) that will clean up the NASA and Department of Energy portions of the Santa Susana Field Laboratory to background levels, protecting the communities downstream. The AOC must be complied with, in full.

Sincerely,

Lewis MacAdams
President/Founder FoLAR

FoLAR
Los Angeles River Center
570 W. Ave 26 Suite 250 Los Angeles, CA 90065-1047
Tel: 323-223-0585
Fax: 323-223-2289
WWW.folar.org
E-Mail: mail@folar.org

From:	Scott Silverstein
To:	MSFC-SSFL-EIS
Cc:	Dennis DiBiase; Joyce Fletcher; g.murley@whcouncil.org
Subject:	Comments regarding DEIS for Santa Susanna Field Lab clean-up.
Date:	Tuesday, October 01, 2013 1:03:31 PM
Attachments:	WHWCNC NASA cleanup letter 9 30 13.pdf

Mr. Elliott

On behalf of the Woodland Hills-Warner Center Neighborhood Council and its Stakeholders, attached, please find our comments regarding the aforementioned DEIS.

We look forward to a favorable response.

Thank you,

Scott Silverstein, Chair
Woodland Hills Warner Center Neighborhood Council

Woodland Hills Warner Center Neighborhood Council

September 30, 2013

Mr. Allen Elliott, Program Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

RE: NASA Draft Environmental Impact Statement

Dear Mr. Elliott,

The Woodland Hills Warner Center Neighborhood Council submits the following comments concerning the NASA Draft Environmental Impact Statement (DEIS).

In accordance with the Los Angeles City Charter, the Woodland Hills-Warner Center Neighborhood Council (WHWCNC) is an advisory body consisting of 22 individuals that have been elected by the nearly 70,000 stakeholders of Woodland Hills to protect their interests and bring the local elected officials closer to the community.

The Woodland Hills–Warner Center Neighborhood Council was not directly notified of the potential impact of the truck traffic and toxic material exposure to our community as related to the cleanup of NASA's portion of the Santa Susana Field Laboratory.

We strongly request the public comment period to be extended from October 1st for an additional 30 days for our committees to address the Draft Environmental Impact Statement (DEIS). We request that NASA develop a new DEIS to show all options as listed in your summary Table 2.4–1. We need NASA to show all options – not just a cleanup to "background levels" or a "No Further Action". A compromise on the Administrative Order on Consent is necessary due to the impact of the truck traffic and the potential of toxic materials being disbursed into our communities.

As stated above, there are two primary concerns that we have with the DEIS.

First, we are very concerned with the potential toxic and/or carcinogenic materials that our stakeholders may be exposed to. In Table 2.4-2, the types of waste and their percentages are defined as to where they are being shipped. The DEIS needs to clearly state how this hazardous waste will be encapsulated during shipping and what clean-up measures will be taken to mitigate any potential toxic residue that may be dispersed from the truck, its tires, or undercarriage. Additionally, it must contain what specific hazardous material cleanup program will be employed in the event of an accident on route. It is unreasonable and, in our opinion, unethical for this generation to potentially put our youngsters at unnecessary risk for long term or potentially lethal health issues.

Second, we are concerned about the increased heavy truck traffic through our area, much of it in residential districts and near schools. The WHWCNC was charged with reviewing this document on September 19th, 2013, and only then we became aware that 60% of the truck traffic from NASA's portion of the cleanup, as stated in your own findings, would go south through Woodland Hills.

Mr. Allen Elliott
September 30, 2013

Through our investigation we know that the information relating to this proposed route was not presented at the NASA DEIS Public Forums on August 27th, 2013 and August 28, 2013. At no previous meetings, that we are aware of, was the route for the trucks from Santa Susana Field Laboratory to go south on Topanga Canyon Boulevard through Woodland Hills along with the adjacent communities of West Hills and Canoga Park.

In the NASA assessment of schools, NASA was negligent in conducting a thorough investigation of all schools potentially impacted by the traffic. NASA's list of schools on Table 4.8-2 fails to list many Los Angeles Unified School District Schools sites which includes local schools, magnet schools, charter schools, and private schools, as well preschools and day care centers.

On or near the proposed NASA route south there are numerous schools including Canoga Park High, and the New Community Jewish High School in West Hills. Additionally, on the proposed route there are no less than three super-regional shopping malls including Westfield Topanga Plaza, Westfield "The Village" which is currently under construction, and the Westfield Promenade Mall. NASA has not considered the traffic that is currently generated in this area by the heavily attended Los Angeles Pierce College.

The NASA DEIS does not tell the Woodland Hills stakeholders the true impact of the cleanup of all of Santa Susana and how many additional trucks may go south on Topanga Canyon Boulevard from The Boeing Company and the Department of Energy sites. A full site Environmental Impact Report is necessary to weigh all of the impacts of the cleanup by all three responsible parties.

Furthermore, your DEIS only references repairs to Woolsey Canyon Road. The entire route in every direction should be surveyed for damage and ongoing maintenance should be paid for by the responsible parties.

In conclusion, as the DEIS is currently written, the Woodland Hills Warner Center Neighborhood Council strongly objects to the plan. It requires two or more years of daily and continuous heavy truck traffic, estimated to send over 140,000 truckloads through our communities. In our opinion, an EIR should have been required just for the enormous added volume of truck traffic. We also object to NASA's proposal for twelve operating hours per day. The hours of truck traffic needs to be limited to daytime hours only.

We believe that the risks to public safety and the environment from the remediation activity proposed are greater than the risk of doing minimal or no cleanup.

Please re-develop the DEIS and include the analysis of options that reduce heavy truck traffic through our neighborhood, infrastructure damage, and the potential disbursement of toxic waste and residue in our community.

Sincerely yours,

Woodland Hills Warner Center Neighborhood Council

Scott Silverstein, Chair

Mr. Allen Elliott
September 30, 2013

Cc: Brad Sherman, United States Congressman, 30th District
Fran Pavley, State Senator, California 27th State Senate District
Eric Garcetti, Mayor, City of Los Angeles
Bob Blumenfield, Councilman, Los Angeles City Council, District 3
Mitchell Englander, Councilman, Los Angeles City Council, District 12
Zev Yaroslavski, Supervisor, Los Angeles County Board of Supervisors, District 3
John Deasy, Superintendent, Los Angeles Unified School District
Tamar Galatzen, Board Member, Los Angeles Unified School District, 3rd Board District
Dan Brin, President, West Hills Neighborhood Council
Corinne Ho, President, Canoga Park Neighborhood Council
Warren Fletcher, President, United Teachers Los Angeles

From:	Brian Sujata
To:	MSFC-SSFL-EIS
Cc:	Fellows, Merrilee (HQ-LD000); Elliott, Allen (MSFC-AS01); peter.zorba@nasa.gov
Subject:	Comments regarding SSFL Draft EIS
Date:	Friday, September 27, 2013 10:25:43 AM
Attachments:	SUJATA_NASA_SSFL_DEIS Comments 1Oct13.pdf

Good morning!

Attached are my comments regarding the current Draft EIS for the NASA-administered parcels at SSFL.

Best regards,

Brian Sujata
Thousand Oaks, California

October 1, 2013

Allen Elliott,
SSFL Program Director,
NASA MSFC AS01, Building 4494,
Huntsville, AL 35812

Subject: Comments regarding “Draft Environmental Impact Statement for Proposed Demolition and Environmental Cleanup activities at Santa Susana Field Laboratory (DEIS).”

Dear Mr. Elliot,

The DEIS is an important step towards the completion of the NASA-responsible cleanup at the Santa Susana Field Laboratories (SSFL). The comments presented here[1] offer constructive remarks intended to improve the project outcome.

The current DEIS is the outcome of two flawed decisions. First, NASA erred by including only one action alternative in the DEIS and not the full range of alternatives twice presented to the public. Granted, NASA has less responsibility for the outcome as Senator Boxer who interceded at various agency levels to reduce five action alternatives to one. The result is a DEIS based on an arbitrary, hastily crafted, single-option cleanup plan that is unique to established State and Federal environmental laws. The community can only comment on the options of ‘do nothing’ or stripping all soil, grass, plants and trees from over one hundred acres of land totaling roughly one quarter the NASA-administered property at SSFL.

NASA also erred by not combining their supporting NEPA analysis with the DOE for their respective cleanups at SSFL even though they are nearly identical projects in terms of cleanup requirements, remediation activities, transportation consequences, completion schedule and long-term impacts to the environment. The current DEIS represents a piecemeal analysis of a larger project that has been segmented for the convenience of two Federal agencies. Thus, the community has been denied the opportunity to consider the totality of the cleanup conducted by the Federal government at SSFL.

[1] The comments regarding the DEIS presented here represent solely the opinions of the author and do not necessarily represent the opinions of the SSFL Community Advisory Group of which the author is a member.

In large measure, the comments presented here focus attention on the various impacts of removing all impacted soils without consideration of the environmental consequences. The DEIS illustrates how a seemingly good idea (i.e., complete removal of contaminants from an expected parkland) results in a whole host of unintended and unacceptable environmental consequences.

Absent Meaningful Alternatives

The absence of meaningful alternatives within the subject DEIS has produced an incomplete analysis that can only be remedied by the inclusion of additional alternatives.

The origin and application of a single action alternative offered in the current DEIS unusual enough to deserve retelling. In July, 2011, NASA published their NEPA Notice of Intent announcing their intention to pursue seven alternatives (two demolition and five soil cleanup options) to be considered for the NASA-administered property.[2] A public scoping meeting followed on March 27th, 2012. Less than forty-eight hours later, Senator Boxer contacted NASA Administrator Charles Bolden to voice her concerns as Chairman of the US Senate Environment and Public Works Committee. The NASA Administrator was evidentially persuaded and all action alternatives, save the one favored by Senator Boxer, were withdrawn.

Advocating a single action alternative under NEPA is unusual. Given the degree of public scrutiny, a veil of legal legitimacy was required. Senator Boxer turned to the Council of Environmental Quality, chartered by NEPA to offer a degree of oversight and council. NEPA regulations developed by the CEQ requires the agency to:

> "Encourage and facilitate public involvement in decisions which affect the quality of the human environment."[3]

Ironically, Federal environmental regulations must not have seemed as compelling as the Chairman of the Senate Environment and Public Work Committee. The CEQ applied a "rule of reason" to justify the exclusion of a range of alternatives concluding "…NASA is not compelled to consider less comprehensive cleanup measures as alternatives." Setting aside the skillfully deployed term "not compelled," the CEQs support of a single alternative is puzzling since their regulations and cited case opinions argue for additional analysis, not less.[4]

[2] 76 FR 39443

[3] 40 CFR 1500.2(d) see also (e) and (f).

[4] It is arguable that NASA should have requested a decisive interpretation since "not compelled" is not exactly an instruction to abandon their noticed and scoped range of alternatives. Given the level of political involvement, however, it was understandable. And so the NASA DEIS was a fatally flawed document before it was written.

- ***NASA must comply with established regulations relevant to the considered alternatives and scope of the DEIS.***

The rebuttable presumption of CEQs "rule of reason" justification is that the most restrictive cleanup is so superior that it need not be compared to any other action. Moreover, the CEQ assumes the action's unintended consequences are less important than the existing condition so the project may proceed without the need to conduct an holistic analyses of possible negative outcomes. As discussed here, this logic proves to be tragically untrue at SSFL.

A full range of alternatives (such as those presented in the Notice of Intent and Scoping Meeting) would include a range of cleanup levels which would attempt to balance the detrimental effects of the cleanup against impacts to human health and the environment. The analysis of a broader range of alternatives would certainly provide new information to the community and those potentially affected regarding the reasonableness of the SSFL cleanup.

Removing the full range of alternatives withholds the opportunity for those potentially affected to consider the incumbent tradeoffs of the agency decision. For instance, community members exposed to the additional safety risk and other harm from the expected one hundred thirty five trucks per day are not allowed to consider a lesser cleanup standard requiring fewer trucks and the smaller risk of being engaged in a transportation -related accident.

Citizens may also want to know why a risk-based cleanup is being used for the groundwater cleanup while the surface soil cleanup is based on arbitrary standards regardless of the effect on the surrounding environment.

- ***The DEIS must be revised to include a meaningful range of cleanup alternatives as presented in the July, 2011 Notice of Intent and March, 2012 Scoping Meeting.***

Some of the Area II structures and buildings are considered historic, however, NASA removed two alternatives concerning their demolition from the DEIS. The public should have an opportunity to consider the fate of the NASA administered historic structures in Area II.

- ***The DEIS must be revised to include the two demolition-related alternatives presented in the July, 2011 Notice of Intent and March, 2012 Scoping Meeting.***

The AOC cleanup plan itself requires the removal of soils having one or more contaminants above the arbitrary background figure. Any and all soils exceeding background are removed but so too goes the ecosystem. Soil will be stripped, trees felled and anything living thing that can't move fast enough will be shoveled into a bin and carted through the neighborhood on its way to a far-off dump.

The cleanup plan at SSFL before the AOC arrived was to create risk-based limits that balanced the removal of contaminated soil with the impacts to the site ecosystem and those exposed to the hazards. Boeing, NASA and DOE together spent well over a million dollars and several years to produce a standardized, regulatory-approved approach to assess the human health and ecological risk of chemicals present in the SSFL water, soil and air in a document called "Standardized Risk Assessment Methodologies (SRAM)." The Department of Toxic Substances Control approved the 703-page SRAM in 2005 and it's revision in 2007.

The SRAM provided the public an opportunity to participate in the risk assessment process at SSFL as part of the site-wide Corrective Action program. Having a SRAM meant that granular risk assessment methods were in place, approved and at work, evaluating the risk of residual chemicals to the SSFL ecosystem. Environmental gearheads would have been offered the opportunity to noodle over the estimates of the exposure point values for soil invertebrates or something less interesting, if they liked.

The SRAM was perhaps the most important casualty of the AOC since it set aside the relative elegance of applied toxicology in favor of a knuckle-headed look up table.[5]

- ***The DTSC-approved SSFL Standardized Risk Assessment Methodologies must be used to implement a cleanup standard consistent with the future land use of administered parcels should be used by NASA.***

The SSFL should be preserved in its current state rather than suffer the additional harm to the ecosystem and surrounding inhabitants the preferred alternative poses. The action alternative will also cause the loss of potentially historic buildings without the consideration of meaningful alternatives by the community.

- ***The No Action alternative is preferred over the Proposed Action.***

[5] The SRAM will be used by NASA for the groundwater evaluation but in a greatly reduced role since the ecosystem is much less exposed to groundwater than soil. Relying on the SRAM for NASA groundwater only serves to illustrate the absurdity of relying on two different cleanup standards on a vertical slice of earth. Note also that Boeing will apply the SRAM for their soils, which total some 70 percent of the SSFL surface area.

The DEIS Scope Has Produced An Incomplete and Piecemeal Analysis

The DEIS scope does not consider a similar environmental cleanup that will be completed concurrently by a different Federal agency at SSFL, thereby resulting in the piecemeal analysis of a larger cleanup project.

Both NASA and DOE have been at SSFL for many decades. Both are planning their cleanups and eventual exit from SSFL. In 2010, their cleanup efforts were joined at the hip when both agencies signed their respective (but virtually identical) Administrative Order on Consent for Remedial Action (AOC) documents.

Various statements and actions of Federal and State governments have repeatedly presented indications to the public the project is a single major Federal action conducted by two different agencies. Yet the DEIS only concerns the NASA-administered areas and not the cleanup activities in Area IV. The following circumstances illustrate how the NASA and DOE cleanups at SSFL are effectively one major Federal action undertaken by two agencies:

- The DTSC commonly communicates to the public in terms of "SSFL cleanup" as a single project[6] and was previously required by State law to apply a single soils cleanup standard to both NASA and DOE.[7]
- Both NASA and DOE signed nearly identical Agreement in Principal documents with the DTSC on the same day, September 3rd, 2010.
- Both NASA and DOE announced the signing of nearly identical AOC documents using a joint press release on December 6, 2010. DTSC noted the AOC will provide "a comprehensive cleanup is conducted" within their press release issued the same day.
- Both NASA and DOE cleanups involve the demolition and removal of existing buildings and the same numerical cleanup goals (using "look up tables") for both chemical and radioactive constituents.
- Both NASA and DOE efforts will involve the removal of large amounts of soil from the site as the principal remedy.
- Both NASA and DOE are conjoined in regards to the SSFL site groundwater investigation and remediation as specified by a 2007 consent order.[8]
- Both NASA and the DOE have accepted exclusive responsibility for the cleanup of impacted soils within the 450-acre Area II and 290-acre Area IV, respectively.

[6] Description of SSFL project, viewed on September, 2013: http://www.dtsc.ca.gov/SiteCleanup/Santa_Susana_Field_Lab/ssfl_site_activities_overview.cfm

[7] California SB990 (2007) codified at H&SC 25359.20

[8] See MWH, 2013, "Report on Annual Groundwater Monitoring, 2012, Santa Susana Field Laboratory, Ventura County, California" Page 1-1 as a recent example of ongoing cooperation.

- At least one portion of the NASA cleanup is expected to encroach onto the DOE-responsible parcel. [9]
- Both agencies agreed to the same scheduled "soils completion date" of 2017 so the effects of the cleanup to both the site and the public are combined within the same timeframe.

Upon fair consideration of the above, one can only conclude NASA has artificially divided a major federal action into two smaller segments with the result being an incomplete analysis of the Federal cleanup at SSFL. Because the DEIS scope is seriously flawed, those interested are not able to evaluate the planned government-funded cleanup of SSFL in its entirety. The community (this author included) is denied the opportunity to respond to the complete extent of impacts to human health and the environment, including the cumulative impacts of the proposed Federal actions.

- ***The DEIS must be revised to include all Federal cleanup activities to be undertaken by both NASA and the DOE at the SSFL.***

Tangible Risk Communication Needed

The NASA portion of the SSFL cleanup forecasts a total of 500,000 cubic yards of soil to be transported through the adjacent neighborhoods and therefore transportation presents a tangible risk of harm. The DEIS presents risk in terms of percent exposure to children traveling to school but does not consider the additional risk to the parent returning home.[10]

Accident risk does not end when the truck enters the highway but continues to the disposal facility and back. The DEIS must consider the additional harm arising from of all project-related truck traffic. Tens of thousands of truck trips will be involved in the proposed action. All affected and potentially affected persons should have the opportunity to understand the additional hazards the cleanup poses.

- ***The DEIS must consider the harm to the entire exposed public, including those on the highways as well as non-children.***

As discussed above, the DEIS conveys risk in terms of percent exposed. This risk communication method is difficult to translate into real terms. In 2003, the DOE considered the transportation risk associated with the three evaluated alternatives within the NEPA Environmental Assessment for the closure of the ETEC facilities. The DEIS should take this approach as well.

[9] DEIS, Section 4.5, page 324
[10] DEIS, Table 4.5-5.

- ***The DEIS should be revised to include the transportation risk in terms of additional morbidity/mortality per transportation mile for the evaluated alternative.***

The DEIS Must Consider the Inability to Secure Suitable Backfill, the Excavation Backfill Schedule and Define "Local Background" for Replacement Soils.

The AOC requires offsite replacement soils not to exceed "local background" but the DEIS does not contemplate actions to be taken if suitable soil is not located. Under the AOC, backfill soils must not exceed the background levels for contaminants. However, given the stringency of the analytical requirements, an off-site soil may have one or more naturally occurring components thereby causing the soil to exceed the SSFL background and be rejected by the DTSC. NASA should consider and present the appropriate options and contingency responses the agency will undertake.

- ***The DEIS must be revised to present the course of action to be taken if sufficient quantity of acceptable replacement soil cannot be located.***

The DEIS is silent regarding the schedule for soil replacement once the impacted soils have been removed. To minimize harm to the environment, the excavated areas must be restored using the appropriate replacement soils and re-vegetated as soon as possible. Site restoration must not wait for a source of suitable replacement to be located and committed to the site.

- ***Excavation of impacted soils must not occur until an adequate volume of appropriate replacement soil has been located and committed to the project.***

It would not be appropriate to conveniently define "local background" definition in a way that would allow backfill soils meeting "local background' at their off-site source to be used by NASA. Impacts to the SSFL NASA-administered parcel ecosystem and those affected must be minimized. It does not make sense to remove soil and habitat only to have the replacement soil that does not meet the original cleanliness criteria.

- ***Replacement soils must meet the "local background" established for SSFL and not a "local background" established for an off-site location.***

The Planned Soil Removal Volume Appears To Be Low

The method and assumptions used to estimate the quantity of soil to be removed is not presented but likely underestimates the actual amount removed by a significant margin.

The accurate assessment of the planned soil removal volume is important since it will affect the exposure from the harm associated with trucks carrying the impacted and replacement soils. It is also important to understand the extent of environmental impact the project poses.

Established evidence indicates contaminants exist in the areas shown within the DEIS. The difficulty is to accurately estimate the amount of soil which needs to be excavated to remove literally every trace contaminant above background. There are several reasons why it is difficult to estimate.[11]

The remediation work cycle favors removing increased soil volumes: The remediation work cycle is a constraint-rich process involving a number of steps. Soil remediation requires the readying and staging of storage bins, manpower and equipment. The site is flagged and transition areas established to minimize the spread of contaminants out of the area. Then excavation removes all soil which includes "weatherized bedrock." Verification sampling of the sidewalls follows and the laboratory produces results two to three weeks later. If the results are too high, the cycle is repeated. The cost and schedule impacts of unplanned recurrent remediation at a single site can be sever.

For the one hundred-plus acre NASA-administered site restoration, the key constraints are expected to be the availability and management of soil storage/transportation bins, equipment and manpower scheduling, laboratory analytical turn-around times and weather. Of these, weather will be most significant since the stormwater Best Management Practices discussed in Section 4.6.2 are labor and time intensive to establish within areas undergoing excavation. Stormwater is also of grave concern since it has ability to spread contaminants out of the excavation, thus increasing the volume of impacted soil and possibly cause NPDES permit exceedances.

The removal of additional soil is a practical and common response to successfully managing the noted project constraints. Removing soil beyond the initially identified area reduces cost and schedule risk and helps to reduce the spread of contaminants.

Contaminant maps tend to underestimate the remediation area: Soil samples retrieved to determine the presence/absence of contaminants are not performed to map an areal distribution of the contaminant but to bound the extent of contamination. In other words, the DEIS maps indicating the areas of soil removal are provided only as

[11] Author's qualification statement: The author holds a B.S, Soil Science (1987), Cal Poly, San Luis Obispo and was involved in numerous environmental-related excavation field activities at the SSLF over a sixteen year period as a Boeing Project Manager. The author is no longer employed by Boeing nor any contractor conducting business at SSFL.

large scale representations which rely on some amount of educated guesswork. Maps represent only start and not the completion of a remediation project.

Spills and cross-contamination will increase soil volumes: The unprecedented cleanup standard of detect for most contaminants dictates the absolute control of impacted soils. Each movement of virtually every soil particle presents the opportunity to spread contamination into previously "clean" areas.[12] Cross-contamination resulting from the unintended mismanagement of impacted soils must be planned for.

The underlying bedrock is not a level surface: The bedrock underlying the soils is uneven with nearly continuous undulations characterizing the weathered bedrock surface. Planned soil removal estimates tend to be inaccurate since they do not factor in the volume represented by the highly variable subsurface low points.

Conclusion: Based on the factors discussed above and my experience at SSFL, I conclude the planned soil volume of 500,000 yd^3 is less than what should be expected. I estimate that at least one-third additional volume (resulting in a total project volume of 665,000 yd^3) of excavated soil should be expected from expanded excavations, mishaps and so forth.

- ***The DEIS must be revised to state the rationale for the planned soil removal volume.***
- ***The DEIS must be revised to include a margin of error for the planned soil removal volume and the resultant impacts.***

<u>Only One-third the Volume of Excavated Soils Is To Be Replaced</u>
Restoring the site with only one third the volume of soil removed was not evaluated for long term impacts.

The proposed action allows NSAS to restore the site using two thirds less soil than removed. The restored areas will therefore have a substantially reduced soil column which will drive permanent modifications of the existing habitat. Steeper surface gradients will result in greater erosion and in turn increased sediment loading over time, resulting in a negative long-term off site consequences to water quality.

The shallower soils will hold less moisture and dry out sooner so the restored locations will favor fewer oak trees and favor weedy and non-native plants thus resulting in dramatic visual and habitat modifications throughout the nearly twenty four percent of Area II where remediation is planned.

[12] Keep in mind that the use of large-sized equipment occasionally results in large-sized mistakes.

- ***The DEIS must be revised to consider the impacts of reduced replacement soil volume on the environment.***
- ***The DIES must be revised to provide for the complete replacement of removed soils.***

Replacement Soil Materials May Not Be Similar to Those Removed

The replacement soils type should match the excavated soil type as much as possible.

Sandy loam soils which are rather light and porous predominate SSFL. A different soil type (such as a clay-type soil) will have contrasting characteristics such as less moisture infiltration rate, greater compaction which would lead to changes to the vegetation, groundwater recharge and other unforeseen habitat changes.

- ***The DEIS must be revised to specify that all replacement materials will have a similar soil type to those removed.***

General Comments Regarding the Practicability of Excavating Impacted Soils to Background

The many soil-related issues discussed here focus on just some of the unintended consequences of a perhaps well-meaning but impractical cleanup to background goal presented in the DEIS and AOC.

The CEQ justification applying their “rule of reason” for recommending the most stringent alternative appears disconnected from the reality of the site and the purpose of NEPA. Sadly, the CEQ’s arbitrary single alternative will have greater negative environmental consequences than the current conditions at SSFL. For this reason, NASA should select the DEIS no action alternative.

Finally, the on-site treatment of impacted soil should be discounted as means to reduce the soil removal/replacement volume. The excavation, movement and processing of impacted soils will be at best insufficient to remove all detectable traces of organic contaminants and at worse provide for the unintended spread of above-background contaminants (and/or their by-products) to the surrounding area.

Consideration of Ventura County Oak Tree Protection Law

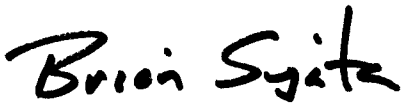
Although not specifically required, the DEIS should be responsive to the Ventura County ordinances requiring protection or mitigation of impacts to oak trees.

NASA should perform a physical survey to identify protected trees (including those potentially impacted by soil movement or encroaching equipment) and contemplate mitigation of the impacts caused by the cleanup.

- ***The DEIS should be revised to include the applicable protection and mitigations afforded to Oak trees by Ventura County ordinance.***

Thank you for the opportunity to provide comments regarding the subject document. I look forward the completion of a balanced environmental restoration at the NASA-administered SSFL sites.

Sincerely,



Brian Sujata
Thousand Oaks

From:	Rocketdyne Cleanup Coalition
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Subject:	Comments to NASA from the Rocketdyne Cleanup Coalition on SSFL Draft EIS
Date:	Wednesday, October 02, 2013 1:07:47 AM
Attachments:	RCC Comments to NASA on EIS.pdf

See attached and below

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October 1, 2013

Comments by the Rocketdyne Cleanup Coalition on the NASA Draft Environmental Impact Statement for Cleanup of the Santa Susana Field Laboratory

The Rocketdyne Cleanup Coalition hereby submits these comments on NASA's Draft Environmental Impact Statement (EIS) for Demolition and Cleanup Activities at the Santa Susana Field Laboratory (SSFL). The Rocketdyne Cleanup Coalition was established 34 years ago, a coalition of community members living near SSFL and concerned organizations. (At that time, Rocketdyne operated the site for NASA and the Department of Energy; some years ago Rocketdyne was purchased by Boeing.) We have been active ever since in trying to get the site cleaned up.

Through decades of gross violations of environmental rules, NASA badly contaminated its part of the Santa Susana Field Laboratory with very toxic materials, some of which have been transported off the property to neighboring areas. Studies have shown elevated cancer rates, both for people exposed on the site and for members of the public living nearby. After years of dragging its feet on cleanup, in 2010 NASA executed a binding cleanup agreement with the State of California, promising to clean up all the contamination to background.

NASA has now published a Draft Environmental Impact Statement on the cleanup. The EIS has created considerable consternation among the affected community, creating, frankly, the impression that that some NASA personnel are working to sabotage the agreement NASA signed and is pledged to carry out.

We want to be absolutely clear that NASA must live up to the AOC, every provision of it, with no effort at evasion or avoidance of obligations.

Among the concerns about the draft EIS that should be rectified:

The AOC requires all contamination to be removed, but the EIS considers leaving in place old rocket test stands, trying to call them historical. The problem is that that is where much of the contamination is located, in the soil beneath the stands. It is not possible to clean up the soil without getting those rusty structures out of the way. There is no discussion of how NASA could possibly clean up the contamination beneath the rocket test stands without getting them out of the way. Any such

consideration should be removed from the EIS.

Similarly, the AOC already provides protections for recognized Native American artifacts. For example, if the Burro Flats cave paintings could be impacted at all by the cleanup, which seems hard to believe, the AOC provides an exception to the cleanup to background requirement. But the EIS goes way beyond the AOC provisions and seems to raise the possibility of just declaring all of the contaminated soil throughout the 2850 acres of the site sacred and implies that then NASA might not comply with the AOC cleanup requirements all. This is unacceptable and would completely violate the agreement, which has an exception solely for artifacts, not some loose claim about the entire property where there are no such artifacts.

Additionally, the AOC already has provisions that would be triggered if the Fish and Wildlife Service were to issue a biological opinion requiring certain actions to protect endangered species. But the EIS seems to go far beyond what the AOC allows and appears to imply it would like to hide behind vague, generalized consideration of plants and other biological resources and not clean up contamination at the site even though there is no Fish and Wildlife requirement that would allow that under the AOC. This also would violate the agreement.

NASA concedes that the Council on Environmental Quality, the agency responsible for assuring other agencies comply with the National Environmental Policy Act, directed that the EIS should not include "alternatives" that would involve breaching the AOC. Yet NASA, in the Draft EIS, goes ahead and includes several alternatives that would in fact breach the AOC, and in the guise of "alternatives not analyzed" goes ahead and analyzes them, throwing in inflammatory and inaccurate claims about how much they would reduce truck trips, etc. If NASA cannot keep its word to the White House Council on Environmental Quality, and Senator Boxer, how can the community have faith it will keep its word about the cleanup it committed to in the AOC? All of those non-compliant alternatives and their misleading truck estimates should be removed from the text.

The most egregious part of the draft EIS is its complete imbalance. The site is contaminated with all sorts of toxic materials, in soil, groundwater, and surface water, and the structures remaining at the site. There is almost no discussion of the contamination in the EIS, no real discussion of the environmental impacts of leaving, for example, vast quantities of TCE and other contaminants in the groundwater, a beneficial resource, or of leaving PCBs, dioxins, perchlorate, etc. in the soil. There is no discussion of the scores of violations of pollution limits cited by the Water Board when rain carries NASA's pollution offsite. The "No Action" alternative is almost silent about the real environmental issue here--the huge amounts of contamination NASA has created and which it has an environmental, moral, and legal obligation to clean up.

There needs to be vast expansion of the discussion of the contamination itself, for example, the health effects of each of the pollutants that has been found at the site. Is it a carcinogen? Does it cause genetic damage? Does it lead to birth defects? Neurological damage? Immune system dysfunction? The great bulk of the EIS should be about the environmental impacts of the pollution damage NASA has done and the need to clean it up and how the No Action alternative would leave all that contamination continuing to damage the environment.

Each contaminant should be identified; its effects, environmental persistence,

transport pathways, etc. fully described. How much of each is where? At what levels? There is no discussion of the UCLA School of Public Health studies finding that the contamination at the site resulted in excess cancers among the workers. There is no discussion of the study by the federal Agency for Toxic Substances and Disease Registry (ATSDR) finding elevated rates of cancers of the bladder, thyroid, aerodigestive tract, and blood and lymph systems in people living offsite and associated with proximity to the site. There is no discussion of the extensive other study for ATSDR by Professor Yoram Cohen and his UCLA team showing that pollution from the site migrated offsite and at levels in excess of EPA acceptable limits.

To be clear, we are not advocating "risk assessment"; just the opposite. The whole purpose of the AOCs was to make the cleanup simple. The contaminants would be surveyed, assessed, and whatever was over background would be cleaned up. This draft EIS was supposed to be about how to do that, not whether to do it. Under NEPA, pollution of land or water is a major environmental impact, even if one declares the site uninhabitable or the water too polluted to utilize. And the end-use of SSFL is irrelevant; even if one could guarantee what it would be for the centuries the contamination would be there if not cleaned up. People live near the site, and no one talks of forcing them from their homes, declaring their communities uninhabitable and restricted to open space use. The people nearby have been impacted by the pollution, as evidenced by the increased cancer rates and studies showing offsite migration. They need to be protected. They need full cleanup. The EIS must thoroughly spell out the environmental damage NASA has done by all its pollution, and the significant negative impacts to the environment if NASA were to take "No Action" and breach its AOC commitments by not cleaning up the toxic mess it made.

All this needs to be rectified. An honest EIS would focus in detail on the environmental impacts of the contamination to be cleaned up. This EIS doesn't do that, but seems intent on burying the real reason for the action--the extraordinary environmental damage done by NASA in contaminating its site and the need to repair that damage.

Instead, NASA exaggerates the truck traffic that would be needed supposedly to remove the contamination for disposal at toxic waste disposal facilities. If one looks carefully at the numbers, it is really pretty insignificant--a few trucks per hour. The EIS is silent about how many trucks have been going in and out of the site for decades. How much truck traffic was there when the facility was fully operating? How many car trips for workers?

A careful review of the EIS shows a lot of exaggeration and double-counting about the trucks. For example, it counts both trucks taking contaminated soil or building debris, and adds to that trucks that might haul in clean fill. But there is no evidence NASA will need to bring in any fill, rather than simply regrade and use soil from the site, and NASA should commit to taking all possible steps to avoid needing any offsite soil. But if NASA needs any from offsite, the trucks going up to the site to haul away contaminated soil can haul up clean fill.

The purpose of an EIS in large measure is to identify mitigation measures. So, the EIS should focus on regrading and using on-site soil; but it doesn't. NASA should require the use of natural-gas or electric vehicles rather than diesel trucks to reduce air emissions and global warming. But it doesn't. The draft EIS should consider the

use of rail, but it doesn't. There is no consideration of improving a fire road leaving the site and then taking by truck some of the shipments a different route, or taking the material that way to a rail spur. Again, the draft EIS doesn't do that. The EIS could identify additional routes once you get down Woolsey, but it didn't. And even for the three routes that were identified, NASA could require the trucks to be dispersed over those routes, so none gets more than a few trucks an hour. Again, the agency refuses to do that. NASA simply refuses to consider any mitigations to the trucks at all, saying it might add time or money. But that is not a reason to refuse to consider appropriate mitigations.

Similarly, the draft EIS fails to adequately consider mitigations for the soil cleanup. These are not pristine areas in the first place. The contamination occurred in the areas of heavy NASA activity, where the soil had already been scraped away, structures like test stands constructed, and huge amounts of pollutants just dumped in the soil. But once it is cleaned, it needs to be restored. There is virtually no discussion about restoration, replanting with native vegetation, etc., so that the land NASA has damaged so badly is returned to its native state, how it was before it was injured so badly. Again, the EIS should detail those mitigation options and plans, and doesn't.

Instead of following NEPA and identifying the environmental impacts of the contamination and thus the need for the action and what the No Action alternative would result in if all that pollution is left unremediated, the EIS comes across as a piece of propaganda by some within NASA trying to blow up the agreement the agency signed. We note that on September 20 of this year, just a few days ago, NASA testified before the Science and Technology Committee of the U.S. House of Representatives. NASA Associate Administrator Richard Keegan stated, "The draft EIS is open for public comment until October 1 and we expect the final EIS in November and **NASA is committed to fulfilling our obligations under the AOC**. There is sufficient funding in our FY14 request to accomplish all the activities that are planned for FY14 leading to **fulfilling our commitments under the AOC.**" (emphasis added) Congresswoman Julia Brownley then followed up, confirming, "So, regardless then of what the IG may be recommending, **your commitment is still to the agreement with the AOC.**" (emphasis added) To which Associate Administrator Keegan reiterated, "**We are committed to the agreement under the AOC.**"

If the draft EIS is any indication, however, there seem to be some at work at lower levels of NASA trying to sabotage or undermine what the agency has committed to, to the Congress, to the State of California, and to our communities. This cannot be tolerated.

NASA is responsible for a huge amount of pollution at its property at SSFL. It solemnly signed a legally binding agreement to clean up all the contamination to background. It has reiterated its promises as recently as a few days ago to the U.S. Congress. We expect and demand and insist that NASA live up to its obligations under the AOC, completely and without any efforts to break those commitments.

ROCKETDYNE CLEANUP COALITION Since 1989

October 1, 2013

Comments by the Rocketdyne Cleanup Coalition
on the NASA Draft Environmental Impact Statement
for Cleanup of the Santa Susana Field Laboratory

The Rocketdyne Cleanup Coalition hereby submits these comments on NASA's Draft Environmental Impact Statement (EIS) for Demolition and Cleanup Activities at the Santa Susana Field Laboratory (SSFL). The Rocketdyne Cleanup Coalition was established 34 years ago, a coalition of community members living near SSFL and concerned organizations. (At that time, Rocketdyne operated the site for NASA and the Department of Energy; some years ago Rocketdyne was purchased by Boeing.) We have been active ever since in trying to get the site cleaned up.

Through decades of gross violations of environmental rules, NASA badly contaminated its part of the Santa Susana Field Laboratory with very toxic materials, some of which have been transported off the property to neighboring areas. Studies have shown elevated cancer rates, both for people exposed on the site and for members of the public living nearby. After years of dragging its feet on cleanup, in 2010 NASA executed a binding cleanup agreement with the State of California, promising to clean up all the contamination to background.

NASA has now published a Draft Environmental Impact Statement on the cleanup. The EIS has created considerable consternation among the affected community, creating, frankly, the impression that that some NASA personnel are working to sabotage the agreement NASA signed and is pledged to carry out.

We want to be absolutely clear that NASA must live up to the AOC, every provision of it, with no effort at evasion or avoidance of obligations.

Among the concerns about the draft EIS that should be rectified:

The AOC requires all contamination to be removed, but the EIS considers leaving in place old rocket test stands, trying to call them historical. The problem is that that is where much of the contamination is located, in the soil beneath the stands. It is not possible to clean up the soil without getting those rusty structures out of the way. There is no discussion of how NASA could possibly clean up the contamination beneath the rocket test stands without getting them out of the way. Any such consideration should be removed from the EIS.

Similarly, the AOC already provides protections for recognized Native American artifacts. For example, if the Burro Flats cave paintings could be impacted at all by the cleanup, which seems hard

to believe, the AOC provides an exception to the cleanup to background requirement. But the EIS goes way beyond the AOC provisions and seems to raise the possibility of just declaring all of the contaminated soil throughout the 2850 acres of the site sacred and implies that then NASA might not comply with the AOC cleanup requirements all. This is unacceptable and would completely violate the agreement, which has an exception solely for artifacts, not some loose claim about the entire property where there are no such artifacts.

Additionally, the AOC already has provisions that would be triggered if the Fish and Wildlife Service were to issue a biological opinion requiring certain actions to protect endangered species. But the EIS seems to go far beyond what the AOC allows and appears to imply it would like to hide behind vague, generalized consideration of plants and other biological resources and not clean up contamination at the site even though there is no Fish and Wildlife requirement that would allow that under the AOC. This also would violate the agreement.

NASA concedes that the Council on Environmental Quality, the agency responsible for assuring other agencies comply with the National Environmental Policy Act, directed that the EIS should not include "alternatives" that would involve breaching the AOC. Yet NASA, in the Draft EIS, goes ahead and includes several alternatives that would in fact breach the AOC, and in the guise of "alternatives not analyzed" goes ahead and analyzes them, throwing in inflammatory and inaccurate claims about how much they would reduce truck trips, etc. If NASA cannot keep its word to the White House Council on Environmental Quality, and Senator Boxer, how can the community have faith it will keep its word about the cleanup it committed to in the AOC? All of those non-compliant alternatives and their misleading truck estimates should be removed from the text.

The most egregious part of the draft EIS is its complete imbalance. The site is contaminated with all sorts of toxic materials, in soil, groundwater, and surface water, and the structures remaining at the site. There is almost no discussion of the contamination in the EIS, no real discussion of the environmental impacts of leaving, for example, vast quantities of TCE and other contaminants in the groundwater, a beneficial resource, or of leaving PCBs, dioxins, perchlorate, etc. in the soil. There is no discussion of the scores of violations of pollution limits cited by the Water Board when rain carries NASA's pollution offsite. The "No Action" alternative is almost silent about the real environmental issue here--the huge amounts of contamination NASA has created and which it has an environmental, moral, and legal obligation to clean up.

There needs to be vast expansion of the discussion of the contamination itself, for example, the health effects of each of the pollutants that has been found at the site. Is it a carcinogen? Does it cause genetic damage? Does it lead to birth defects? Neurological damage? Immune system dysfunction? The great bulk of the EIS should be about the environmental impacts of the pollution damage NASA has done and the need to clean it up and how the No Action alternative would leave all that contamination continuing to damage the environment.

Each contaminant should be identified; its effects, environmental persistence, transport pathways, etc. fully described. How much of each is where? At what levels? There is no discussion of the UCLA School of Public Health studies finding that the contamination at the site resulted in excess cancers among the workers. There is no discussion of the study by the federal Agency for Toxic Substances and Disease Registry (ATSDR) finding elevated rates of cancers of the bladder, thyroid, aerodigestive tract, and blood and lymph systems in people living offsite and associated with proximity to the site. There is no discussion of the extensive other study for ATSDR by Professor Yoram Cohen and his UCLA team showing that pollution from the site migrated offsite and at levels in excess of EPA acceptable limits.

To be clear, we are not advocating "risk assessment"; just the opposite. The whole purpose of the AOCs was to make the cleanup simple. The contaminants would be surveyed, assessed, and whatever was over background would be cleaned up. This draft EIS was supposed to be about how to do that, not whether to do it. Under NEPA, pollution of land or water is a major environmental impact, even if one declares the site uninhabitable or the water too polluted to utilize. And the end-use of SSFL is irrelevant; even if one could guarantee what it would be for the centuries the contamination would be there if not cleaned up. People live near the site, and no one talks of forcing them from their homes, declaring their communities uninhabitable and restricted to open space use. The people nearby have been impacted by the pollution, as evidenced by the increased cancer rates and studies showing offsite migration. They need to be protected. They need full cleanup. The EIS must thoroughly spell out the environmental damage NASA has done by all its pollution, and the significant negative impacts to the environment if NASA were to take "No Action" and breach its AOC commitments by not cleaning up the toxic mess it made.

All this needs to be rectified. An honest EIS would focus in detail on the environmental impacts of the contamination to be cleaned up. This EIS doesn't do that, but seems intent on burying the real reason for the action--the extraordinary environmental damage done by NASA in contaminating its site and the need to repair that damage.

Instead, NASA exaggerates the truck traffic that would be needed supposedly to remove the contamination for disposal at toxic waste disposal facilities. If one looks carefully at the numbers, it is really pretty insignificant--a few trucks per hour. The EIS is silent about how many trucks have been going in and out of the site for decades. How much truck traffic was there when the facility was fully operating? How many car trips for workers?

A careful review of the EIS shows a lot of exaggeration and double-counting about the trucks. For example, it counts both trucks taking contaminated soil or building debris, and adds to that trucks that might haul in clean fill. But there is no evidence NASA will need to bring in any fill, rather than simply regrade and use soil from the site, and NASA should commit to taking all possible steps to avoid needing any offsite soil. But if NASA needs any from offsite, the trucks going up to the site to haul away contaminated soil can haul up clean fill.

The purpose of an EIS in large measure is to identify mitigation measures. So, the EIS should focus on regrading and using on-site soil; but it doesn't. NASA should require the use of natural-gas or electric vehicles rather than diesel trucks to reduce air emissions and global warming. But it doesn't. The draft EIS should consider the use of rail, but it doesn't. There is no consideration of improving a fire road leaving the site and then taking by truck some of the shipments a different route, or taking the material that way to a rail spur. Again, the draft EIS doesn't do that. The EIS could identify additional routes once you get down Woolsey, but it didn't. And even for the three routes that were identified, NASA could require the trucks to be dispersed over those routes, so none gets more than a few trucks an hour. Again, the agency refuses to do that. NASA simply refuses to consider any mitigations to the trucks at all, saying it might add time or money. But that is not a reason to refuse to consider appropriate mitigations.

Similarly, the draft EIS fails to adequately consider mitigations for the soil cleanup. These are not pristine areas in the first place. The contamination occurred in the areas of heavy NASA activity, where the soil had already been scraped away, structures like test stands constructed, and huge amounts of pollutants just dumped in the soil. But once it is cleaned, it needs to be restored. There is virtually no discussion about restoration, replanting with native vegetation, etc., so that the land

NASA has damaged so badly is returned to its native state, how it was before it was injured so badly. Again, the EIS should detail those mitigation options and plans, and doesn't.

Instead of following NEPA and identifying the environmental impacts of the contamination and thus the need for the action and what the No Action alternative would result in if all that pollution is left unremediated, the EIS comes across as a piece of propaganda by some within NASA trying to blow up the agreement the agency signed. We note that on September 20 of this year, just a few days ago, NASA testified before the Science and Technology Committee of the U.S. House of Representatives. NASA Associate Administrator Richard Keegan stated, "The draft EIS is open for public comment until October 1 and we expect the final EIS in November and **NASA is committed to fulfilling our obligations under the AOC.** There is sufficient funding in our FY14 request to accomplish all the activities that are planned for FY14 leading to **fulfilling our commitments under the AOC."** (emphasis added) Congresswoman Julia Brownley then followed up, confirming, "So, regardless then of what the IG may be recommending, **your commitment is still to the agreement with the AOC.**" (emphasis added) To which Associate Administrator Keegan reiterated, "**We are committed to the agreement under the AOC."**

If the draft EIS is any indication, however, there seem to be some at work at lower levels of NASA trying to sabotage or undermine what the agency has committed to, to the Congress, to the State of California, and to our communities. This cannot be tolerated.

NASA is responsible for a huge amount of pollution at its property at SSFL. It solemnly signed a legally binding agreement to clean up all the contamination to background. It has reiterated its promises as recently as a few days ago to the U.S. Congress. We expect and demand and insist that NASA live up to its obligations under the AOC, completely and without any efforts to break those commitments.

From: gcompass@earthlink.net
To: MSFC-SSFL-EIS; Elliott, Allen (MSFC-AS01)
Subject: Compass Rose Final Comments
Date: Tuesday, October 01, 2013 9:48:36 AM
Attachments: CA-VEN-1072 final comments for 8-29-13 NASA meeting.doc

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I'm not sure you received the final comments by Compass Rose yesterday, so I am resending them.

Sincerely,
Gwen

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Final comments for the DEIS and NASA Consultant Meetings

Prior to signing the ROD:

The boundaries of the Traditional Cultural Property (TCP), CA-VEN-1072 and CA-VEN-1803, must be determined prior to any soil test excavation or proposal of any mitigation measures. Environmentally Sensitive Areas (ESAs) should be established, including a buffer zone (15m-30m?), around CA-VEN-1072, as well as CA-VEN-1803. According to archaeologist Al Knight, the dividing line between Area II (NASA), Area III (Boeing), and the Southern Undeveloped Area (Boeing) is more-or-less down the middle of the cultural deposit (midden) at CA-VEN-1072. If ownership of CA-VEN-1072 is indeed shared, this further complicates matters in terms of responsibility and will require a functioning cooperation between NASA and Boeing.

Establishing ESAs for CA-VEN-1072 and CA-VEN-1803

In consultation with Native Americans, archaeologists should complete an intensive re-survey of the area, using transects spaced in 5-15 meter intervals. Whichever cultural resource firm is hired, it would be highly advantageous if a few of the archaeologists had rock climbing experience (with credentials?), so that at least some of the normally inaccessible rock shelters, rock crevices, and rock ledges where artifact caches and/or rock art may have been hidden, could be inspected for their presence - particularly in the area of the Coca Test Stands. A sampling strategy of hand controlled excavations (e.g., Surface Scrapes, Excavation Units, and Shovel Test Pits) should be implemented to systematically define the boundaries of CA-VEN-1072 and CA-VEN-1803, and establish the ESAs. Each controlled excavation should be monitored by a local Native American with artifact identification experience. The results of the findings should be catalogued, analyzed, and presented as a written document to be included as part of the 36 CFR 800 compliance process.

Cultural Mitigation Measure #4 and 36 CFR 800

If Cultural Mitigation Measure #4 depends solely on the current knowledge of local archaeologists and anthropologists, then it must be considered inadequate. As part of 36

CFR 800, CA-VEN-1072 must be properly evaluated. Minimally, a complete evaluation needs to include all the information available about the site. Currently, NASA has chosen to ignore the potential information contained in the prior excavations completed in 1953, 1954, 1959, and 1960 at the site midden component. Although incomplete to date, Compass Rose Archaeological, Inc., Dr. Chester King, and Dr. Louis Tartalia have been conducting volunteer analyses of the collections. However, both NASA and Boeing should contribute monies to complete the analyses of the past collections of CA-VEN-1072 in order to comply with 36 CFR 800. It is the responsibility of the lead agency to know as much as possible about a cultural resource prior to establishing mitigation measures, particularly since CA-VEN-1072 has been listed on the National Register of Historic Places under criterion D - *that have yielded, or may be likely to yield, information important in prehistory or history.*

At this point, and based on the limited available data, it is simply assumed that the activities reflected at the CA-VEN-1072 midden constitute a sacred site. However, the types and/or diversity of activities that occurred in the midden portion of CA-VEN-1072, remain unknown. Greater data sets from CA-VEN-1072 would also allow the relationship to the archaeological sites located in Area IV (Boeing) to be analyzed and comprehended. To complete the analyses, monies would be needed to conduct special studies, including C14 dating, obsidian hydration and sourcing, botanical studies, as well as report write-up. This, however, would not constitute a complete mitigation. The Burro Flats collections of the 1950s and 1960 were excavated under different circumstances. Both the excavation and artifact identifications were conducted by relatively inexperienced students and volunteers. Screening of the excavated soils, when it occurred, was done in the field using relatively large-meshed screens (i.e. ¼ inch mesh) Units were not necessarily completed to sterile soil or bedrock; some were probably stopped at the end of the field class. Units were excavated in different sized levels, some were 12" thick and others were 6" thick.

In addition to completing the analyses of the prior collections, control samples should be taken from previously excavated areas to determine the types and diversity of small artifacts missed during the earlier collections. Further, samples should be obtained from the oven features at CA-VEN-1072 to determine what was processed and during what time periods. The establishment of the ESA and the completion of the additional work in the previously excavated areas of CA-VEN-1072, should also be part of the 36 CFR 800 compliance process.

The fact that the land containing CA-VEN-1072 is owned by NASA (Area II) and Boeing (Area III and the Southern Undeveloped Area), makes them both equally responsible for 36 CFR 800 compliance. Therefore, both NASA and Boeing should be jointly responsible for the costs incurred for completing the part of 36 CFR 800 compliance described above. This work should be completed prior to any further soil test excavations or proposal of any mitigation measures.

Implementation of the ROD

Following the methods instituted by the cultural resource management company, JMA (2012:15-22) in Area IV for Boeing, all vegetation removal around each individual or group of soil test sample(s) within the ESAs should be monitored by a qualified archaeologist and a local Native American, who has artifact identification experience. Each soil test hole in the ESAs should then be monitored by a qualified archaeologist and local Native American. It should be noted that the JMA method of monitoring of vegetation removal led to the recordation of numerous new archaeological sites during the soil testing that were missed during the previous surveys of Area IV.

Minimally, in areas outside the ESAs, all soil test holes should be monitored by a local Native American with artifact identification experience, after the vegetation removal is monitored by a qualified archaeologist and a local Native American. A predetermined area around demolition of any rocket test stands (minimally, the Coca Test Stands) and any associated soil test holes, should first be surveyed and then monitored during vegetation removal by a qualified archaeologist and a local Native American. Finally, each test hole should be monitored by a local Native with artifact identification experience, since the test stands exist on the same landform as the Summer Solstice sunrise notch, which was undoubtedly sacred to the local Native Americans.

The use of such terms as "minor" impacts in the Draft EIS is considered to be highly inappropriate to both the Native Americans and archaeologists. If a 4.5 to 8 inch hole was drilled through a sacred artifact or human bone, these impacts would not be considered "minor" to a Native American or an archaeologist, especially within a sacred site. The areas within and outside the ESAs where all "minor" earth disturbing activities, will be conducted, such as drilling holes, creating fences, etc., should be surveyed first, then monitored as described above.

Further, to describe archaeological negative effects as "local," may not be correct. It was hypothesized by John Romani in his MA thesis (1981) that CA-VEN-1072 was the "private" viewing area for religious practitioners during the Winter and Summer Solstices. The site may also have been used to prepare the cerebral and physical necessities for at least the "public" Winter Solstice (and possibly the fall *Hutash* Festival) ceremonies held at the village of *Huwam/Jucjauybit* (CA-LAN-413), located several miles downstream in lower Bell Canyon. Therefore, if this hypothesis is correct, any archaeological negative effect has the potential to be more "regional," and not merely "local."

The 1967 revised Calabasas USGS topographic map depicts Bell Creek as a "blueline" stream that flows next to (within 100 feet) or through CA-VEN-1072, depending on the outcome of the boundary investigations, thereby requiring a Section 404 Permit as issued by the Army Corps of Engineers. From the consultants meetings to date, it does not appear that the Army Corps of Engineers has even been considered as a consulting party, a point brought up by the SHPO in their comments on the Draft EIS on September 25. This may be considered quite egregious, since in fact the Army Corp should be a

cooperating, or even a responsible federal agency. Under any circumstance, their participation would assure an additional voice in the protection of the cultural resources on the SSFL. This is a grievous error and omission in the NEPA and Section 106 process so far, as well as in the Draft EIS.

Rocket Test Stands at the SSFL

Ideally, Compass Rose would like to see all nine of the test stands preserved, since, as understood, they are the least contaminated of the structures since they are located on or within bedrock. Most of the other contaminated structures (control buildings, pill boxes, etc.) can be demolished, with the preservation of at least single examples of the least contaminated of each). The Coca Stands may be the most important to our history of space flight, since they are associated with engine testing of both the Apollo and the Space Shuttle rockets. Unfortunately, they are the most contaminated and were also subjected to many structural changes. Nonetheless, Compass Rose would like to see the Coca Test Stands preserved for their association with the advancement of space travel. The Chumash Native Americans from the Santa Ynez Reservation would like to see them demolished, since they claim there is an effect on the sense of place within the Sacred Site (CA-VEN-1072) below. However, based on our experience while monitoring the Winter and Summer solstice events, the only structure visible from CA-VEN-1072 is a single tank (possibly Vessel V 100, LH2 tank or Vessel V 99, GH2 tank). If this structure is demolished, then no structures associated any with any of the nine test stands will be visible from CA-VEN-1072.

General comments on the environmental process for the SSFL clean-up

It is the opinion of Compass Rose that from the very beginning, the environmental process for the SSFL clean-up has proceeded incorrectly. There never should have been two entirely separate processes, CEQA for Boeing and NEPA for NASA, along with the completely different scheduling. The SSFL consists of a continuous landform with a continuous prehistory and a continuous history.

Furthermore, the presence of two "blueline" streams (one being Bell Creek) that extends through the entire SSFL – thereby crossing both the NASA and the Boeing properties - means that a Section 404 permit is required by the Army Corps of Engineers, a federal agency. Since Bell Creek extends next to or though CA-VEN-1072, means that the Army Crops should have been involved in the process from the beginning as a responsible or at least, a cooperating agency. Since Bell Creek crosses both NASA and Boeing land and a Section 404 permit is required by the Army Corps, this would seem to tie both agencies/entities together at the federal level! Also, a series of easements called "outgrants," allow NASA and Boeing to cross each other's land. There are also outgrants for water, utilities, etc., without which Boeing would not be able to operate. The easements (outgrants) were granted to Boeing (originally Rockwell International) by the U.S. government. Even though the outgrants were granted prior to any of the present environmental laws, this would still seem to tie the two entities together at the federal level. Furthermore, the fact, according to archaeologist Al Knight, that both NASA and

Boeing have land within the archaeological site, CA-VEN-1072, should have made them share responsibility for the cultural resources within the entire SSFL, or minimally, for all of Area II. Again, the Army Corps of Engineers should be a cooperating or responsible agency (minimally a consultant) under NEPA and the Section 106 process.

Based on the arguments above, NASA should have been the lead agency, Boeing a cooperating agency, and the Army Corps of Engineers a responsible or cooperating agency under NEPA, with all subject to Section 106, since NEPA tends to supersede State law (CEQA). In the worst case, this entire undertaking of the entire SSFL clean-up should have been subjected to a single, combined, EIR/EIS, subject to one schedule and one set of mitigation measures and procedures. As a result, the entire SSFL should be nominated as a single archaeological district. I believe that a complete analysis of the prior collections at CA-VEN-1072 will greatly help in defining the relationship with the sites in Area IV, which are owned by Boeing. This proposal is supported by the fact that there is a newly recorded rock art site in Area IV, and rock art is virtually always sacred to the local Native Americans. Furthermore, the archaeological district should also encompass the site complex in lower Bell Canyon that includes the village of *Huwam/Jucjauybit*, Bats Cave (the cave of Munits), Castle Peak (a shrine mountain), and several other sites. Compass Rose and the late John Romani, believe that the area of the entire SSFL was a "private" viewing site for the solstices and preparation area for the "public" ceremonies held downstream at the village of *Huwam/Jucjauybit* and Castle Peak, for the Winter Solstice and possibly for the fall Hutash Festival).

The tie between upper (SSFL) and lower Bell Canyon is also supported on a more practical level. Groundwater chemical contamination has been found in test wells in lower Bell Canyon as a result of NASA rocket engine testing activities, as stated by NASA in a previous consultation meeting. Thus, the entire SSFL and lower Bell Canyon site complex should be considered as a single discontiguous archaeological district.

Finally, although the environmental process completed thus far for the SSFL clean-up is totally inadequate and inappropriate by combining Federal and State and with different completion schedules, the overly strict requirements of the 2010 A.O.C. is probably the main underlying problem. The 2017 deadline for the total completion of the SSFL clean-up is unrealistic given the inadequacies in the Draft EIS and the NEPA and Section 106 process so far. The deadline must be extended so that at least most of these major problems can be resolved.

Furthermore, as supporters of cultural resource protection, both Native American and historic, the strict clean-up guidelines to "background" levels in the 2010 A.O.C. are inappropriate for proper protection of the historic properties within Area II. The clean-up should have been to the "residential" level, thereby taking into account the possible contamination in the surrounding communities, since the involved parties, NASA and Boeing, seem to want the entire SSFL to become some form of parkland.

Sincerely,
Dan Larson, Gwen Romani, and George Toren

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Subject:	Copy of letter RE: NASA-Santa Susana Field Lab NEPA
Date:	Friday, October 04, 2013 1:07:46 PM
Attachments:	pdf Santa Susana Field Lab Proposed Demolition.pdf

Mr. Elliot,

Please see attached copy for your records. Original will follow.

If you have any questions, please contact Mary Meyer at (805) 640-8019.

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October 4, 2013

Mr. Allen Elliot
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Subject: Draft Environmental Impact Statement for Proposed Demolition and Environmental Cleanup Activities at Santa Susana Field Laboratory, Ventura County, California

Dear Mr. Elliot:

The California Department of Fish and Wildlife (Department) appreciates this opportunity to provide comments on the above-referenced Draft Environmental Impact Statement (DEIS). The DEIS was prepared by the National Aeronautics and Space Administration (NASA) to evaluate potential environmental impacts from its Proposed Action to conduct demolition activities and remediation of contaminated groundwater and soil located on the NASA-administered property at Santa Susana Field Laboratory (SSFL).

The SSFL is located on the top of the Simi Hills and covers approximately 2850 acres. The DEIS addresses only the NASA-administered portion of the SSFL, including all of Area II (409.5 acres) and Area I (41.7 acres). The remaining acreage at the SSFL is currently owned by the Boeing Company (Boeing) and will also be subject to cleanup and remediation, to be addressed in collaboration with the Department of Energy (DOE).

State Environmental Review:

The California Department of Toxics Substance Control (DTSC) is preparing a separate Environmental Impact Report (EIR) under the California Environmental Quality Act (CEQA) (DEIR pg. 1-7). This state-led environmental review will be documented in a Programmatic EIR. DTSC will analyze the potential environmental effects of environmental cleanup activities occurring on SSFL-wide by NASA, Boeing, and DOE. The DTSC EIR is likely to be prepared following publication of NASA's EIS. DTSC will also prepare project-specific EIRs that evaluate the localized remedial activities (DEIS Section 1.3).

Overview of the Proposed Action:

The Proposed Action entails three primary components: 1) demolition of existing structures; 2) soil cleanup to background levels; and 3) groundwater cleanup. Existing buildings and infrastructure would be dismantled and contaminated subsoil removed. Soil remediation is anticipated to occur on a minimum of 105 surface acres, or about 23% of the NASA lands. Contaminated soil would be excavated to a minimum depth of 2 feet (in some places up to 20 feet) and disposed of at off-site locations Roughly 43 acres are covered with buildings, roads or parking lots, and 62 acres are open space supporting wildlife habitat. On open space, all

existing biological resources would be removed to allow for soil treatment and disposal. Between 320,000 and 500,000 cubic yards of soil would be transported off site. Fill would be imported from on-site borrow sites and off-site locations to replace about 1/3 of the soil and subsoil removed during remediation. Additional direct impacts to about 1/3 of the on-site project area could occur from ground water cleanup technologies that would alter surface and subsurface hydrology and may include dewatering. Adverse impacts to off-site downslope habitats could occur. The duration of groundwater treatment technologies may extend across years, decades, or centuries.

Habitats and Sensitive Species:

The SSFL project area occupies hilly terrain and is located in the Cretaceous Chatsworth Formation, supporting marine sedimentary rock including sandstone, shale and conglomerate. Generally, developed facilities and roads proposed for demolition are located in localized valleys between ridges of sandstone rock outcrop. Soil contamination areas are typically located in the valleys and associated stream channels. Groundwater contamination affects broad expanses of habitat including rock outcrops and extending off site. Ephemeral and intermittent drainages are present in the valley areas and carry runoff to adjacent downslope areas; this area is the headwaters of Bell and Dayton Creeks.

The project vicinity supports essential habitat for the state-listed rare plant species, Santa Susana tarplant (*Deinandra minthornii*), a perennial sub-shrub and geographic endemic typically found on sandstone rock outcrops and soils derived from sandstone. The predominant natural plant communities include Venturan coastal sage scrub (64 acres), chaparral (172 acres), coast live oak woodland (13 acres) and coast live oak riparian forest (9 acres) (DEIS Table 3.4-1). Sensitive wildlife species observed in the project area include the state- and federally-endangered least Bell's vireo (*Vireo bellii pusillus*); coast horned lizard (*Phrynosoma coronatum*), two-striped garter snake (*Thamnophis hammondii*) and loggerhead shrike (*Lanius ludovicianus*) (all California Species of Special Concern (CSSC). A ringtail (*Bassariscus astutus*), a California Fully Protected Species, was observed just outside the NASA boundary of Area II. The project vicinity is an important habitat linkage area providing connectivity between the Santa Susana Mountains to the north, the Simi Hills, and Santa Monica Mountains to the south (DEIS page 3-23).

Trustee Authority:

The fish and wildlife resources of the state of California are held in trust for the people of the state by the Department (Fish and Game Code Section 711.7(a)). The Department provides these comments as state trustee agency with jurisdiction over the conservation, protection and management of fish, wildlife, native plants, and habitat necessary for biologically viable populations of those species (Fish and Game Code Section 1802).

The Department is also California's designated natural resource trustee and representative authorized to act on behalf of the public as a trustee for natural resources pursuant to section 107(f)(2)(B) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). The Department will have a continuing interest in coordinating any natural resource issues as a result of proposed remedial activities at SSFL. The Department will consider the biological and natural resources at the site, the proposed remedial activities,

contaminants of concern and any potential resource impacts in identifying California's relevant and appropriate resource protection laws and regulations for the SSFL.

Specific Concerns and Recommendations

The following are the Department's specific concerns regarding impacts to biological resources and recommendations for additional avoidance and mitigation measures.

Evaluation Criteria for Analyzing Environmental Effects:

Table ES-1 identifies various impact evaluation criteria. Short term impacts are defined as limited to the immediate demolition and remediation period. The Department is concerned with this definition being applied to the groundwater remediation period, as the remediation activities themselves could extend across a timeframe of years, decades, or centuries (Table 2.2-8). The Department considers impacts extending beyond five years to be long term.

Evaluation criteria are defined as local where impacts are confined to within the boundaries of the NASA properties, and regional when they extend beyond those boundaries. The Department notes that impacts from ground water remediation treatments are frequently described in the DEIS as local and our review suggests impacts should be defined as regional because downslope and off site areas could be affected by altered hydrology.

Groundwater cleanup technologies:

The groundwater cleanup component of the Proposed Action will involve testing various technologies before they are employed across the groundwater treatment area. There is little description or quantitative information regarding the direct and indirect impacts to biological resources from implementing these technologies. The Department estimates that approximately 1/3 of the NASA lands could be physically impacted by groundwater treatment technologies (Fig 2.2-4). Associated alterations in hydrology, including potential dewatering, could directly and indirectly affect additional habitat areas. Adverse impacts are likely to occur to on site and downstream/downslope habitats reliant upon surface, subsurface and groundwater from the project area.

The DEIS states that additional habitat areas would be subject to topsoil removal for groundwater remediation in areas outside the soil cleanup footprint (DEIS 4-41). The Department was unable to find specific information regarding the extent and location of these additional soil removal areas, and impacts do not appear to be addressed.

Wells would be installed under various technologies and could extend 50 - 900 feet below the ground surface. The Pump and Treat technology is described as requiring the installation of "additional wells". The Department requests more information be provided regarding the number of new wells that are anticipated, well locations, and the impacts to biological resources from installation, operation and, maintenance. The DEIS also describes that 13,000 feet of above-ground pipeline would be added under Pump and Treat. The amount of pipeline necessary to implement other treatment technologies is not described.

Three additional technologies would involve installation of a network of wells described as being spaced 10 - 20 feet apart with interconnecting pipes (DEIS Sec. 2.2.3.2). There is little

information regarding how much physical habitat would be disturbed to install and maintain these wells and pipelines, or how they would be installed on steep rock outcrops and habitat areas. The Department anticipates additional adverse effects to occur from removal of wells and pipelines; impacts from removal are not identified.

The DEIS describes clearing vegetation to create pathways for well and borehole installation and pipeline configuration (DEIS pg. 2-31) under the In Situ Chemical Oxidation description, but it would appear that all the technologies that use wells, bore holes and pipes have potential to result in extensive clearing of vegetation in habitat areas, which could lead to mortality or displacement of wildlife in the Department's opinion. The DEIS analysis concludes that impacts to wildlife are minor and short term in areas subject to ground water remediation, in part because the "wells would be located far apart". At a spacing of 10 - 20 feet apart, the entire treated area would likely be adversely affected by habitat removal, ground disturbance and equipment. It is possible that the In Situ Chemical Oxidation technique may result in fewer impacts to biological resources and may better protect local soil moisture and hydrology, but the DEIS does not provide detailed analysis to evaluate whether or not certain technologies may pose fewer risks to on-site and off-site biological resources and habitat function. Effects on biological resources from the potential use of chemical oxidation, heat, and vacuum extraction are largely not described. The Department recommends that technologies be evaluated for their impacts to physical habitat features, biological resources and watershed function, and those with fewer adverse impacts on the environment should be employed. The Department would appreciate the opportunity to review and provide input to this evaluation.

Alteration in existing hydrology and potential dewatering for groundwater remediation will affect downslope streams and nearby springs, seeps, stands of phreatophytes and other vegetated habitats along channels. Areas of impacted ground water extend beyond the NASA boundaries of Area I and Area II (Fig 2.2-4). Surface water is currently being treated at various wells and is being released into existing outfalls depicted on Figure 3.6-1, and this is guided by the Ground Water Interim Measures Work Plan (GWIM) (DEIS 2-27).

The Department is concerned that surface water is being collected for treatment from specific local subwatersheds, but is released at outfalls located in a different subwatershed. Residents of Bell Canyon have raised this concern with the Department. We recommend that the GWIM be modified such that current and future pumping activities include new outfall locations which better maintain surface and subsurface hydrology for on-site and downslope biological resources. The DEIS does not seem to address impacts to biological resources from constructing additional outfalls and associated pipe systems necessary to reach those outfalls. Biological resource assessments for areas that could be impacted outside the NASA property do not appear to have been conducted.

The Department is concerned that seeps and springs may support unique biological resources and that adverse effects to these biological resources have not been addressed, while some seeps and springs have already been dewatered (DEIS 4-79). Impacts to water associated with seeps and springs are described as negligible and local, but should be described as moderate and regional.

The DEIS states that wells would not be located in wetlands and consequently, there would be no impact to wetlands from groundwater cleanup (DEIS 4-42). Alterations in site hydrology associated with groundwater remediation are likely to affect wetlands on site and downstream

and these impacts are not addressed in the DEIS. The wetland definition used in the DEIS does not identify springs and seeps as wetlands (DEIS 3-34), and is focused on areas of federal jurisdiction under the Clean Water Act.

Wetlands in the state of California are addressed in various Fish and Game Commission policies, and the state definition of wetlands relies upon the United States Fish and Wildlife Service wetland definition and classification system (Cowardin, et al. 1979). Springs and seeps constitute wetlands under state policy, and changes in water availability to these areas could potentially result in significant, regional and long term impacts to biological resources.

There is potential for springs and seeps to be recharged following soil excavation and disposal, via local infiltration associated with the creation of a series of shallow ponds that would replace ephemeral and intermittent stream reaches in specific locations (DEIS 4-77). The groundwater treatment component overlaps with these locations in several areas, which suggests that infiltration may be hampered by long term dewatering activities. Additional planning and study, with input from the Department, would appear necessary to precisely determine how to recharge specific springs and seeps, including those downslope and off site.

Soil Remediation Impacts:

Figure 2.2-2 shows the estimated boundaries of areas that would be subject to soil remediation, habitat removal, and subsequent excavation. This figure also depicts access and staging areas. There are numerous areas depicted on this figure where isolated areas are shown and are not located by existing dirt or paved roadways. The DEIS states that NASA would develop temporary access roadways (pg. 2-13) in those situations. The Department is concerned that direct and indirect impacts to habitat and wildlife from "temporary" roadways are not included in the impact analysis. Single or repeated passes of heavy equipment traversing such areas is likely to cause long term impacts along access routes, additional habitat removal, introduce weeds, alter runoff patterns, compact soils, and cause direct mortality to wildlife.

The DEIS describes that additional on-site borrow sites would be excavated to provide some fill material for remediation areas (DEIS 2-19; 4-77). The Department could not locate any further information regarding proposals for on-site borrow pits. Impacts to biological resources associated with this component of the project should be specifically addressed in the DEIS. .

Soils BMP-1 (associated with landslides) seems to be the only measure describing that following soil excavation, backfilled areas would be "sloped and if necessary compacted". We assume this likely applies to all areas that might receive backfill. The DEIS should identify the characteristics of the finished slopes, how they would be configured, and the degree of compaction proposed. Compaction rates need to be designed to ensure that native vegetation including shrubs and trees can successfully root into the new material.

The DEIS should further describe if acreage impacts include those required to create finished slopes at locations where excavations and backfill abut natural topography. If, as described, backfill volume is about one-third of the volume that would be removed, it is not clear how finished slopes would meet up with natural topography in areas with shortfalls of backfill (Table 2.4-1). It seems likely that adjacent acreage would be affected to achieve finished slope requirements beyond the boundary of excavation areas, and those impacts have not been identified.

Vegetation Communities

On-site plant communities were mapped in fall 2010 using a Holland 1986-based plant community classification (Appendix D). This mapping does not meet current standards for incorporating floristic based classifications that better describe local, regional and state-wide botanical diversity. The second edition of the Manual of California Vegetation should be utilized for the purposes of describing on-site vegetation at the alliance level (Sawyer et al. 2008). Additionally, the project area lies within the Santa Monica Mountains National Recreation Area, and vegetation in this general area has been addressed at a more specific local and regional level (Keeler-Wolf and Evens, 2006). It should be noted that this evaluation did not include field sampling of vegetation stands supporting Santa Susana tarplant.

Sensitivity rankings used in the DEIS are from the California Natural Diversity Data Base (CNDDB) and represent state-wide and global ranks that do not factor in local or regional rarity. The DEIS states that only 9% of the habitats on site are of high conservation priority (i.e. sensitive, Venturan coastal sage scrub and southern willow scrub). The majority of the acreage to be impacted is described in the DEIS as predominantly chaparral (a general term that does not describe a plant community), coast live oak woodland and riparian forest, and Venturan coastal sage scrub. The primary mitigation proposed for loss of or damage to these communities is seeding with commercially obtained seed on a subset of the remediated ground where backfill topsoil is available (Biology BMP-1). The amount of habitat area that would not be revegetated and therefore could be permanently damaged is undescribed.

The unique local and regional character and sensitivity of key on-site habitats and species were missed in the general nature of the vegetation analysis. Since sandstone rock outcrops are inherently valuable to plant and wildlife species and represent a specialized niche, vegetation types associated with sandstone outcrops are locally and regionally unique and therefore are considered sensitive by the South Coast Region of the Department. For example, two sensitive vegetation communities were identified on adjacent Boeing properties and are described below:

Steep Dipslope Grassland- this unique vegetation type was identified by SAIC (2009) during assessments of adjoining land in Area IV and the northern buffer. Stands are dominated by outcrops and varying depths of thin soil overlaying rock, creating conditions for dominance by bushy spike moss (*Selaginella bigelovii*) and a suite of associated species including native wildflowers and local, endemic geophytes (*Calochortus* sp); typically this habitat is on north facing slopes. This same habitat would be classified floristically as *Selaginella bigelovii* herbaceous alliance, and is state-ranked S3, which the Department considers to be locally and regionally rare (Sawyer et al. 2008). The DEIS should identify that this sensitive habitat type could be present on site and would be adversely affected by soil and groundwater remediation and impacts are potentially significant and long term. Areas supporting this unique habitat type should be identified on maps and marked in the field, and stands of bushy spike moss alliance should be protected from direct and indirect impacts.

Sandstone Outcrops Northern Mixed Chaparral- this vegetation type was identified by SAIC (2009) and represents the bulk of the habitats associated with the large sandstone outcrops in Area IV. This same habitat type is likely present on the NASA lands. SAIC identifies that this habitat on site typically supports the state-listed rare endemic *Deinandra minthornii* (Santa Susan tarplant). The combination of sandstone outcrops with diverse chaparral that also supports a rare local endemic suggests that this is likely a unique local and regional plant

association. The DEIS should identify that this is a sensitive habitat type that could be adversely affected by soil and groundwater remediation and impacts are potentially significant and long term.

Additional on-site habitat types reported in the DEIS are considered sensitive by the Department because of their high value for wildlife, proximity to stream channels, and continued declines in the local and regional area. Southern coast live oak riparian forest is considered regionally sensitive by the Department, and typically, these areas lie within the Department's streambed jurisdiction as they represent riparian resources. Coast live oak woodland is also reported from the area, and is also declining in the regional area. Vegetation affiliated with springs and seeps does not appear to be described in the DEIS. On-site and off-site woodlands, forests, riparian areas, springs and seeps are considered sensitive by the Department. The DEIS does not identify these habitats as sensitive and there are no proposals to ensure these specific habitats are replaced or restored. Impacts to oak woodlands and forests are potentially significant, regional and long term, especially given the time frame necessary for replacement oaks to mature sufficiently to provide shade, forage, acorns, cavities and crevice habitats.

The DEIS analysis of impacts to vegetation communities and sensitive plant associations relative to groundwater remediation activity seems to be limited in scope and analysis. The DEIS should describe the physical impact area necessary to access and install a system of wells and pipes and to maintain it over a protracted timeframe. Impacts are briefly identified as: 1) dewatering to remove subsurface moisture affecting vegetation; 2) vegetation could be physically disturbed; and 3) weeds could increase or spread. Adverse effects to habitats downslope from changes in soil moisture due to remediation activities are not addressed.

The DEIS indirectly describe how the function of stream channels would be altered by proposed soil and groundwater remediation activities. The DEIS concludes that impacts to topography from soil removal are negligible and short term, despite proposals to only backfill about 1/3 of the volume removed. Alteration of natural topography affects habitat development and function. Where stream courses are altered by excavation, how would stream flow and sedimentation processes be affected? If stream courses are replaced by instream "shallow ponds", will these reaches continue to transmit natural sediment loads to downstream areas? Where substantial soil volumes are removed and not replaced, how will this affect ground water recharge within local watersheds and downslope areas?

The DEIS concludes that impacts to native vegetation from soil excavation are significant and long term, after mitigation. Impacts to "high priority conservation areas" (ie. southern willow scrub and Venturan coasts sage scrub) are also considered significant and long term, but with mitigation, the DEIS concludes impacts are moderate. Biology Mitigation Measure-1 addresses this impact and indicates soil might be removed using pick axes, shovels, or vacuum trucks in sensitive habitats. Such methods would still result in disturbance to sensitive habitat areas and are unlikely to meaningfully reduce impacts. It may be feasible and beneficial to reduce impacts to adjoining woody vegetation such as trees and shrubs, located at the edges of excavation areas, by using such methods and immediately protecting exposed roots to prevent desiccation.

Sensitive Species Analysis

For the purposes of the DEIS analysis, sensitive species were defined as: a) plants or animals that are either listed by the United States Fish and Wildlife Service (USFWS) or by the state of

California (DEIS pg. 3-23) as threatened or endangered; b) federal candidates; c) California Species of Special Concern (CSSC); d) California Fully Protected Species; or e) state listed rare plants.

The DEIS does not address local, regional, and state wide rare plants which the Department tracks through the CNDDB. Special status vascular plants on Rare Plant Lists 1 and 2 generally are considered to meet the definition of threatened or endangered species and should be addressed in the DEIS. The DEIS does not address the potential for impacts to rare non-vascular plants which are also tracked in CNDDB.

The DEIS should address locally rare plant and animal species that have been identified in Ventura County and are currently listed as Locally Important Species.
These lists have been developed in consultation with local experts and represent local and regionally rare species that are not represented on state-wide or national lists. Species on these lists are considered to generally meet the definition of threatened, endangered, or rare, as defined in the California Environmental Quality Act (CEQA) Section 15380. The lists are updated annually through a documented process of consulting with local experts. The current lists can be found at this link: http://www.ventura.org/rma/planning/ conservation/locally-important-species.html

Sensitive Plant Species

Santa Susana tarplant

The general project area at the SSFL supports habitat essential for the continued persistence of Santa Susana tarplant, a state-listed rare plant species, and its native insect pollinators. The project site is in the center of this species' limited geographic range where the majority of the tarplant populations occur on the local Chatsworth Formation (sandstone). The DEIS indicates the species was observed in numerous locations on NASA properties and is distributed throughout Ventura and Los Angeles counties (DEIS 3-23). The DEIS should be modified to indicate this species is a highly restricted endemic and occurs only in localized areas in the Santa Monica Mountains and Simi Hills (CNDDB, 2013; Baldwin et al. 2012). The Chatsworth Formation in and around the SSFL area is the core habitat for this species.

The DEIS provides no quantitative evaluation of the numbers of individuals or acreage extent of occupied habitat for Santa Susana tarplant that would be directly or indirectly affected by remediation activities. Individual tarplants were mapped in the field with a global positioning satellite unit, but the DEIS does not overlay impact areas with this information (Figure 3.4.3). The amount of habitat occupied by Santa Susana tarplant that would be unaffected by direct and indirect impacts from the Proposed Action should be identified in the DEIS. The Department is therefore unable to fully evaluate the environmental consequences of the proposed action.

Potential adverse impacts to tarplant include direct loss of individuals and seed bank in areas subject to soil and groundwater remediation. Habitat for native insect pollinators and alternative pollen and nectar sources (i.e. other plant species they visit) would be eliminated in areas subject to soil remediation, and degraded in adjoining habitat areas and in groundwater remediation areas. A variety of adverse indirect effects are also likely to occur. Areas currently supporting soil conditions suitable for tarplant could be replaced with backfill from off-site

sources which could be unsuitable for subsequent re-establishment, leading to the permanent long term loss of suitable occupied tarplant habitat. Additional permanent loss of occupied tarplant habitat could occur at locations where top soil is not replaced or where reseeding is not successful at re-establishing native plant communities. .

Occupied habitat adjacent to remediated areas could experience a variety of adverse indirect effects, including: a) weed invasion associated with increased habitat fragmentation; and b) altered local hydrology, which could change sheet flow, runoff and infiltration patterns which sustain individual plants.

As shown in Figure 2.2-4, extensive areas would potentially be affected by groundwater remediation. Should wells be installed at 10-20 foot intervals as described, it is foreseeable that most of the acreage would be cleared of vegetation, driven on by heavy equipment and this would lead to significant long term adverse impacts to Santa Susana tarplant and most other plant and animal species who reside here.

Groundwater remediation technologies will also capture and remove subsurface water potentially leading to desiccation of surrounding habitat areas across a long time frame. The DEIS states that impacts to vegetation from changes in ground water availability would be minor, as plants around the SSFL are adapted to drought and repeated fires. In the Department's opinion, impacts of long term dewatering are likely to adversely affect most species of plants occupying the treatment zones. Even in summer months or during droughts, specific species of plants have their own unique soil moisture requirements that must be met or they will die. Santa Susana tarplants also utilize subsurface moisture for their survival and therefore, groundwater remediation could potentially reduce soil moisture below a level where they can survive dry periods and droughts; tarplant vigor, biomass, and reproductive output could be adversely affected.

It should be noted that native insect pollinators are essential components of Santa Susana tarplant habitat, and service a broad array of on-site and nearby off-site native plant species. Many native insect pollinators are various types of ground nesting solitary bees and flies. These insects have their own requirements for nesting, and often, areas with specific soil texture and soil moisture are relied upon for successful production of larvae. Dewatering and soil excavation could adversely affect such species.

The currently proposed mitigation for impacts to Santa Susana tarplant proposed in the DEIS is to avoid tarplants where practical and to train workers to identify and avoid it to the extent possible (Biology Mitigation Measure-2). No other mitigation is proposed.

The DEIS concludes that, with implementation of Biology Mitigation Measure-1, impacts to Santa Susana tarplant are minor, negative, local, and short term. The Department does not agree with this conclusion. Impacts to tarplant would be moderate to significant, negative, regional, and long term in our opinion. Impacts to tarplants are likely long term in areas where soil and groundwater remediation would: a) remove soils derived from Chatsworth Formation; b) where the proposed reseeding does not successfully restore native natural communities; and c) where topsoil is not replaced and no revegetation occurs. Impacts from groundwater remediation would also be long term at locations where the technology may operate for years to centuries (Table 2.2-8). We agree with the statement on page 4-43, indicating it can take years

for native species (ie. plants) to re-establish in disturbed areas and for that reason, impacts to tarplant should be described as long term.

The Department recommends additional mitigation measures and impact avoidance be incorporated into the final DEIS to more specifically address adverse impacts to Santa Susana tarplant.

A dedicated biological monitor should be present during grubbing and vegetation clearing in order to identify tarplants to be avoided in all areas where demolition, soil removal or groundwater treatments occur and including adjoining access and staging areas. A biological monitor should identify travel routes for drilling equipment and access which avoid tarplants and other sensitive plant resources. This information shall be mapped using geographic information systems. Acreage impacts and a tally of individuals affected should be provided.

Santa Susana tarplant growth and vigor should be monitored during groundwater remediation activities in representative areas to determine whether groundwater treatments are causing adverse effects.

A Santa Susana tarplant restoration plan should be prepared for Department review and approval and this plan should detail how tarplant habitat would be restored to conditions suitable for re-occupation by tarplants and other appropriate on-site local native species. Tarplant seed should be successfully re-introduced into localized restored habitats areas.

Enhancement of existing Santa Susana tarplant habitat in locations outside the soil remediation footprint through effective weed management could be considered as an additional mitigation measure to address impacts stemming from loss of occupied habitat during the remediation and revegetation period which are not addressed in the DEIS.

Braunton's milkvetch

The DEIS identifies the presence of the federally endangered Braunton's milkvetch (*Astragalus brauntonii*) and its federally designated Critical Habitat, to the west at SSFL Area IV on Boeing property. No Braunton's milkvetch were observed during field surveys of the NASA properties conducted in 2011. The DEIS states that potentially suitable soil conditions exist on portions of Area II and Area I for Braunton's milkvetch, however the DEIS concludes that there would be no impacts.

In spring of 2010, a hill just outside the boundaries of the Critical Habitat unit in Area IV was subjected to vegetation trimming for the purposes of conducting gamma testing by the EPA. Braunton's milkvetch was not detected there during project surveys but following vegetation trimming, the disturbance stimulated a population to emerge from dormant seed bank. The Department observed this habitat area in July 2013. Braunton's milkvech experienced intense direct herbivory on flower stalks by mule deer and most plants observed in 2013 had been topped, producing little or no seed as a result. In this localized area, cutting back shrub vegetation created browse conditions which were exploited by the local mule deer population, and this created negative impacts for Braunton's milkvetch reproductive output.

The Department is therefore concerned with the potential that Braunton's milkvetch may in fact occupy suitable soils in Areas II and Area I. The suitability of habitats in this area combined with

the response of Braunton's milkvetch dormant seedbank to disturbances in nearby areas at SSFL suggests that the DEIS should in fact recognize the potential for adverse impacts to potentially occupied habitat. Loss of soil seed bank and/or individuals producing flowers and fruits would be a significant adverse and long term impact.

Other State Rare Plant Species

The DEIS does not evaluate the environmental consequences of the Proposed Action on local, regional, and state tracked rare plant species.

A state rare plant species was identified in the 2011 spring surveys conducted on NASA lands. Slender mariposa lily (*Calochortus clavatus gracilis*) is state ranked S-2, and a California Native Plant Society (CNPS) list 1B-2 (threatened). Another regionally rare lily, *Calochortus plummerae*, was also observed. The DEIS does not address impacts to these species. The Department observed a previously undetected population of *Calochortus fimbriatus* (state ranked S-3 and CNPS list 1B) in mowed habitat in Area IV in July 2013. Downslope of Area II in Bell Canyon, a population of tiger lilies has been verified (*Lilium humboldtii* ssp. *oscellatum*) (CDFW files). These types of rare geophytes have narrow habitat preferences and are vulnerable to changes in soil moisture and herbivory pressure when they are exposed by removal of adjoining vegetation.

The Department is concerned that the imperiled shrub, Malibu baccharis (*Baccharis malibuensis*) may be present on NASA lands. This native shrub is extremely rare (state-ranked S-1 very threatened) and exists at a handful of locations with very few individuals (CNDDB, 2013). Vegetation mapping and surveys conducted by SAIC in 2009 for DOE in Area IV did not identify Malibu baccharis, but it was subsequently detected in 2010 during vegetation trimming by consultants with Envicom Corporation. Malibu baccharis was reported as co-dominant with chamise, suggesting it was common in the habitat where it had been overlooked, and these shrubs were apparently mowed for gamma testing (HydroGeologic and Envicom, 2011). Given that the species was not identified during field assessments on adjacent lands, there is potential for it to have been overlooked on NASA lands. The Department therefore requests that additional focused surveys be conducted to ensure that all Malibu baccharis are detected. Should it be found on site, it is imperative that a comprehensive seed collection be undertaken for both long term conservation and restoration purposes and a conservation strategy be developed, in consultation with the Department, to address adverse impacts.

Revegetation in Soil Remediation Areas

The DEIS describes that following soil remediation, seeding with commercially obtained native seed would occur on some portion of the impacted area that receives topsoil (Biology BMP-1). Seeding with propagules obtained from on-site populations of native trees, shrubs, and herbs is not proposed.

Department staff previously reviewed a seed mix proposed by Boeing for a nearby on-site demolition project and we raised a number of concerns regarding the proposed mix which we reiterate here. Commercially available native plant seed often is from limited, non-local sources that are potentially poorly adapted to local conditions and do not capture local genetic diversity. Few plant species on Boeing's palette with commercially available seed were sourced from within 30 miles of the SSFL area. Some species included in the Boeing palette were not known

to occur in the project area and other important species in the project area were not included in the seed mix. Additionally, annual non-native grasses and forbs were included in the seed mix and could reduce establishment of shrubs and trees.

The Department recommends commercially-sourced seed be limited to: a) sources from within 30 miles of the SSFL; b) from within the coastal Los Angeles basin; or c) from sources from Chatsworth formation-derived soils. Local on-site propagules should be collected and utilized to augment commercially-sourced seed. Seed should also be collected from obligate seeding species which require wildfire conditions to stimulate seed germination. Seeds should be cleaned, labeled and properly stored until needed and we encourage on-site seed collection be initiated early in the process to maximize the diversity and volume of material for future use.

On-site propagules should also be obtained for important tree species such as coast live oak (*Quercus agrifolia*), sycamore (*Platanus racemosa*), and California black walnut (*Juglans californica*). An on-site nursery could be established to produce and maintain material for subsequent outplanting. There may be challenges re-establishing vegetation due to the presence of herbivores such as mule deer, which are attracted to young plants and favored browse species. It may be necessary to use temporary fencing or caging to allow for favored browse species to re-establish, including oaks.

Biology BMP-1 discussion suggests that seeding would only occur at locations where topsoil is available. What is the source of top soil? If it is from off-site sources, it would likely contain weed and non-local plant propagules. Additional information is needed to evaluate the environmental consequences of using this material. If the topsoil contains weeds or a lot of annual grasses, re-establishment of native species could be impaired. It might be possible to control weeds on imported topsoil and then introduce new seed thereafter.

What is the expected outcome for future vegetation and soil protection where topsoil is not available and no seeding would occur? The DEIS does not identify what proportion of the excavated areas would be left in this condition. At such locations, impacts are potentially long term and permanent. The Department recommends that soil amendments be evaluated for use in locations where topsoil is unavailable. Certain native species may perform better than others and test outplantings could be used to determine appropriate palettes for such locations.

The Department recommends that local palettes be developed for each plant community to be removed by soil remediation or other forms of disturbance. Slope and aspect as well as local reference sites can be used to inform recommendations for revegetation for specific treatment areas. A site-specific revegetation plan is necessary in order to develop effective strategies to replace habitats impacted by soil remediation and ground water cleanup.

Biology BMP-1 includes a restoration goal of 50 percent native cover three years after disturbance in areas subject to seeding (DEIS 4-43). This standard would allow as much as 50 percent of the seeded area to be dominated by non-native weeds. Native cover is not defined (i.e. relative cover, foliar cover or absolute cover). Three years is generally not considered an adequate amount of time to restore native shrub communities such as coastal scrub and chaparral. It will be necessary to effectively control weeds prior to seeding with natives, which would extend the restoration period. Five to seven years seems more appropriate, and survival through at least one year of drought is necessary to demonstrate the re-established vegetation is resilient. The Department recommends that cover standards be developed for each plant

community target, and that cover values be established for each layer, i.e. herb, shrub, and/or tree layers. Woodland and forest habitats should include a longer revegetation period spanning at least ten years to ensure re-establishment has occurred and new individuals will survive periods of drought.

The discussion at Biology BMP-1 indicates it could take years for native species to re-establish in disturbed areas, but the DEIS concludes that after implementation of this BMP, impacts would be short term (i.e. over once remediation is complete). This conclusion is not supported by the information provided.

Erosion BMPs

Biology BMP-2 describes various soil stabilization measures that could be used in conjunction with reseeding or in locations where topsoil is unavailable. Some erosion control products such as erosion mats, straw waddles and others, contain non-biodegradable mesh which can entrap and kill wildlife. To avoid adverse impacts to wildlife, the Department requests that this measure be modified to ensure that such products are specifically prohibited. Most erosion control products are designed for temporary, short term use and it is not clear how such products would be effective at preventing long term erosion in locations where revegetation does not occur or is unsuccessful.

The Department also requests that no gabions be installed along or within stream channels, as the wire and mesh associated with these structures are also hazardous to wildlife and can break down and become a nuisance. For the purposes of stabilizing soils along stream channels, we recommend that only natural rock be used. Boulders, rocks and cobble associated with on-site stream channels should be retained or stockpiled for reuse following remediation, to the degree that this is feasible. Limbs, trunks, and woody debris could be retained onside and distributed to protect soil and increase habitat availability. Brush piles could also provide additional soil protection and cover for wildlife and could be placed in revegetation areas. Chipped native biomass free of weeds could be used to protect exposed soil surfaces, but should not be placed in stream channels or in locations where a native herb layer needs to be established.

Weed Management

The proposed action has potential to introduce new weeds to the SSFL site from off-site locations and for on-site weeds in ruderal locations to expand into areas disturbed by soil and groundwater remediation. Imported backfill and topsoil will also contain weed seeds and non-local plant propagules. On-site weeds in ruderal areas will pose an ongoing threat to efforts to revegetate nearby disturbed areas, and could reduce re-establishment of shrub and tree-dominated communities, exacerbating long term erosion.

Biology Mitigation Measure-3 indicates NASA would implement a weed management plan to eradicate noxious and invasive species. This measure should be modified to also address prevention of new weed invasions and spread of existing on-site weeds. The Department recommends that protocols be established to ensure that all vehicles and equipment that would operate in habitat areas are cleaned of soil and weed seeds prior to arriving at the SSFL site. Personnel and hand equipment/tools should also be checked and cleaned before accessing the area. On-site biological monitors should inspect equipment and personnel.

Equipment and personnel staging in disturbed areas on site may also convey weeds into currently weed free areas, so measures to prevent this from occurring are recommended. The California Invasive Plant Council has useful protocols for addressing weed invasion for land managers (http://www.cal-ipc.org/ip/prevention/landmanagers.php).

The Department would appreciate the opportunity to review and provide input to the weed management plan proposed under Biology Mitigation Measure-3.

Wildlife Assessments and Protection Measures

Wildlife surveys conducted for the DEIS are based upon a fall 2009 field survey (DEIS pgs. 33-23) documented in Appendix D. This fall evaluation states that wildlife surveys were opportunistic. Systematic active searches for specific non-federally listed wildlife species were not conducted (Appendix D pg. 3-2). During field surveys conducted in spring 2011, additional opportunistic wildlife species surveys were conducted concurrently with special status plant surveys (Appendix E pg. E-28) and are described as not systematic. Under these scenarios, on-site sensitive wildlife species could easily be missed or their extent underestimated, based upon the timing, weather, survey limitations and level of effort.

DEIS Table 3.4-3 lists the results of these field assessments and sightings are plotted in Figure 3.4-4. Four sensitive wildlife species were confirmed on site and include a single August sighting of the state and federally endangered least Bell's vireo; species of special concern: coast horned lizard, loggerhead shrike, and two-striped garter snake. A ringtail (California Fully Protected Species) was sighted just off site in rock outcrop habitat near a spring but is described as not present in the ROI (region of influence, Table 3.4-3). Boeing has documented additional sensitive wildlife species on adjoining properties and in the Department's opinion, these species have a high likelihood of occurring on NASA lands and/or downslope off site. Documented observations of species which could be adversely affected by the proposed project includes the California Fully Protected Species: white-tailed kite (*Elanus leucurus*) and golden eagle (*Aquila chrysaetos*); California Species of Special Concern: silvery legless lizard (*Anniella pulchra pulchra*), coast range newt (*Taricha torosa torosa*), western spadefoot (*Spea hammondii*), yellow warbler (*Setophaga petechial*), and San Diego desert woodrat (*Neotoma lepida intermedia*); and the CDFW Watch List coastal western whiptail (*Cnemidophorus tigris multiscutatus*), San Bernardino ringneck snake (*Diadophis punctatus modestus*), Cooper's hawk (*Accipiter cooperii*), Southern California rufous-crowned sparrow (*Aimophila ruficeps*) (Boeing, 2013). Given the opportunistic nature of the wildlife surveys in support of the DEIS for NASA lands, the DEIS should more fully evaluate the potential for adverse impacts based upon habitat suitability.

The extensive sandstone rock outcrops support a variety of crevices, ledges and cavities which serve as unique physical feature exploited by both sensitive and non-sensitive wildlife species. Golden eagles were documented nesting just off site to the north in spring 2011 (HydroGeoLogic and Envicom, 2011). A variety of species nest or roost within sandstone outcrops including white-throated swift (*Aeronautes saxatalis*), barn owl (*Tyto alba*), cliff swallow (*Petrochelidon pyrrhonota*), barn swallows (*Hirundo rustica*), canyon wren (*Catherpes mexicanus*), raven (*Corvus corax*), turkey vulture (*Cathartes aura*), golden eagle, honey bees (*Apis mellifera*), San Diego desert woodrat and various bats species (SAIC, 2009).

The wildlife that use these rock outcrop special habitat features are highly specialized and are often dependent upon them for reproduction, foraging, or predator avoidance. The stability and persistence of these features encourage the repeated use of specific areas as breeding habitat. Small mammals such as San Diego desert woodrat and native mice are found in this general habitat type. Rock shelters also provide very important roosts for bats. These features are important to a variety of reptile species as well and provide thermally favorable refuges, cover, and hibernacula. Snakes are particularly dependent on rock outcroppings for winter dens. Often, snakes are intimately tied to their hibernacula, returning to the same den their whole lives. The destruction of a den site often results in the reduction or elimination of local snake populations.

Coast live oak woodlands and chaparral habitats are also very high value wildlife habitat. The fall biological survey report for nearby Area IV and the northern buffer identifies the importance of coast live oak woodlands and chaparral to local and regional wildlife (SAIC, 2009).

Ringtail Impact Avoidance:

Ringtail sightings are extremely rare, and this California Fully Protected Species is likely occupying rock crevices in sandstone outcrops, foraging in nearby habitats and typically is not far from a water source. Ringtail should be described as potentially present on NASA lands at low density in areas with lower levels of human activity. Remediation of soil pockets in isolated habitat areas could adversely affect ringtail individuals or expose den sites. Depending upon the methods selected, ground water remediation wells or bore holes could puncture crevices and ringtail or their young could be directly killed or their dens damaged. Young could be abandoned, leading to direct mortality. Additional dewatering of seeps and springs could also compromise ringtail's ability to survive in the general area.

To avoid direct mortality to ringtail, the Department recommends that rock outcrop habitats and other locations slated for soil remediation or ground water remediation be evaluated by a knowledgeable biologist in order to locate all potentially ringtail-suitable caves, and crevices and this effort should include searches for hibernacula, and bat roosting and colony sites. Once located, these areas should be mapped and appropriate avoidance buffers should be established in consultation with the Department in order to prevent the location from being adversely affected by human activity and/or damaged by ground water boring, wells, or travel and access routes.

Impacts to Birds:

The impact analysis for project impacts to birds underestimates the severity of impacts from soil and groundwater remediation. The DEIS addresses only migratory birds and impacts are described as short term for the soil remediation component, while impacts to the native vegetation communities which support nesting and foraging bird populations are described as long term (DEIS pg 4-35). The DEIS states that it could take years for native vegetation to re-establish in disturbed areas and the species composition would likely be different, which suggests that impacts to wildlife including birds who rely upon native vegetation communities would likely extend over years as well, and therefore, this appears to be a long term impact.

Impacts to birds and other wildlife from the groundwater remediation component are also considered short term (DEIS 4-42), and described only as a minor disruption to wildlife. The

DEIS states that ground water treatments would involve additional wells that "would be located far apart"; thereby limiting disturbance during installation (DEIS 4-43). This description conflicts with the description of various ground water treatment technologies which would involve wells or bore holes installed 10-20 feet apart and operating for years, decades, or centuries. It is likely that installation and maintenance activities including the interconnected systems of pipes and electricity could cause further disruption of vegetation and associated wildlife.

Furthermore, the DEIS should acknowledge that Biology Mitigation Measure-4 does not address the permanent loss of nesting and foraging habitats for bird species should habitats no longer be suitable following remediation activities. The Department recommends that NASA undertake a more intensive effort to restore on-site habitats following remediation. The Department is available to work with NASA to develop goals and objectives for a more effective restoration effort.

Bird Species Avoidance Measures:

Fish and Game Code Section 3503 prohibits the take of birds and their nests regardless of their status under the Migratory Bird Treaty Act (MTBA). Fish and Game Code Sections 3503.5 and 3513 provide additional protection for raptors and other migratory nongame birds listed under the MBTA. Biology Mitigation Measure-4 addresses only migratory birds and indicates mitigation could include scheduling activities outside the nesting season, relocation, or compensatory mitigation. The Department recommends that work occur outside the active bird nesting season, as relocation or compensatory mitigation could still result in take of birds or their nests.

Proposed project activities (including, but not limited to, staging and disturbances to native and nonnative vegetation, structures, and substrates) should occur outside of the avian breeding season which generally runs from March 1- August 31 (as early as January 1 for some raptors) to avoid take of birds or their eggs. Take means to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill (Fish and Game Code Section 86), and includes take of eggs and/or young resulting from disturbances which cause abandonment of active nests. Depending on the avian species present, a qualified biologist may determine that a change in the breeding season dates is warranted.

If avoidance of the avian breeding season is not feasible, the Department recommends that, beginning thirty days prior to the initiation of project activities, a qualified biologist with experience in conducting breeding bird surveys conduct weekly bird surveys to detect protected native birds occurring in suitable nesting habitat that is to be disturbed and (as access to adjacent areas allows) any other such habitat within 300 feet of the disturbance area (within 500 feet for raptors). Surveys for active nests should also take place at any man- made structures that may be demolished on the project site. The surveys should continue on a weekly basis with the last survey being conducted no more than 3 days prior to the initiation of project activities. If a protected native bird is found, the project proponent should delay all project activities within 300 feet of on- and off-site suitable nesting habitat (within 500 feet for suitable raptor nesting habitat) until August 31. Alternatively, the qualified biologist could continue the surveys in order to locate any nests. If an active nest is located, project activities within 300 feet of the nest (within 500 feet for raptor nests) or as determined by a qualified biological monitor, must be postponed until the nest is vacated and juveniles have fledged and there is no evidence of a second attempt at nesting. Flagging, stakes, and/or construction fencing should be used to demarcate the inside boundary of the buffer of 300 feet (or 500 feet) between the project

activities and the nest. Project personnel, including all contractors working on site, should be instructed on the sensitivity of the area. NASA should provide the Department and USFWS the results of the recommended protective measures described above to document compliance with applicable State and Federal laws pertaining to the protection of native birds.

If the biological monitor determines that a narrower buffer between the project activities and observed active nests is warranted, he/she should submit a written explanation as to why (e.g., species-specific information; ambient conditions and birds' habituation to them; and the terrain, vegetation, and birds' lines of sight between the project activities and the nest and foraging areas) to NASA, the USFWS and the Department. Based on the submitted information, the wildlife agencies should determine whether a narrower buffer is appropriate for the purposes of avoiding take.

The biological monitor should be present on site during all grubbing and clearing of vegetation to ensure that these activities remain within the project footprint and that the flagging/stakes/fencing is being maintained, and to minimize the likelihood that active nests are abandoned or fail due to direct or indirect project activities. The biological monitor should send weekly monitoring reports to NASA, USFWS and the Department during the grubbing, and clearing of vegetation, and should notify the wildlife agencies immediately if project activities damage active avian nests.

Impacts to Bats:

The DEIS does not discuss measures to reduce mortality of bat species likely to reside on the project site. The project may result in injury or death to bats including special status bats which reside in the natural rock outcrops, in riparian areas, within trees slated for removal, or man-made structures that would be demolished on the project site. The Department recommends the following additional avoidance and minimization measures be incorporated into the project work plans and mitigation measures--

1. To avoid direct loss of bats in the rock outcrop habitats slated for soil or ground water remediation, a qualified bat specialist should identify all potential locations that may serve as maternity roosts or colonies, these areas should be mapped and avoidance buffers should be established in consultation with the Department.

2. To avoid the direct loss of bats that could result from removal of trees and/or structures that may provide maternity roost habitat (e.g., in cavities or under loose bark), the following steps would be taken:

   a) Tree removal should be scheduled between October 1 and February 28, outside of the maternity roosting season.

   b) If trees and/or structures must be removed during the maternity season (March 1 to September 30), a qualified bat specialist should conduct a pre-construction survey to identify those trees and/or structures proposed for disturbance that could provide hibernacula or nursery or colony roosting habitat for bats.

c) Each tree and/or structure identified as potentially supporting an active maternity roost should be closely inspected by the bat specialist a maximum of 7 days prior to tree disturbance to more precisely determine the presence or absence of roosting bats.

d) If bats are not detected, but the bat specialist determines that roosting bats may be present at any time of year, it is preferable to push any tree down using heavy machinery rather than felling it with a chainsaw. In order to ensure the optimum warning for any roosting bats that may still be present, the tree should be pushed lightly two to three times, with a pause of approximately 30 seconds between each nudge to allow bats to become active. The tree should then be pushed to the ground slowly and should remain in place until it is inspected by a bat specialist. Trees that are known to be bat roosts should not be cut up or mulched immediately. A period of at least 24 hours, and preferably 48 hours, should elapse prior to such operations to allow bats to escape. Bats should be allowed to escape prior to demolition of buildings. This may be accomplished by placing one way exclusionary devices into areas where bats are entering a building that allow bats to exit but not enter the building.

e) Maternity season lasts from March 1 to September 30. Trees and/or structures determined to be maternity roosts should be left in place until the end of the maternity season.

f) The bat specialist should document all demolition monitoring activities, and prepare a summary report upon completion of tree disturbance activities.

3. Should maternity roosts or bat colony sites be located in the project area, consultation with the Department is recommended to determine appropriate methods for avoidance and habitat replacement.

Wildlife Movement and Corridors

The proposed project will result in a substantial increase in traffic on local roads leading to and from the SSFL site. Heavy truck traffic will primarily use Woolsey Canyon Road and Valley Circle Boulevard. Local vehicles may utilize Box Canyon Road. Truck trips to remove contaminated soil are estimated at 26,441 and trips to bring in backfill from off site are estimated at 8,814 extending across a period of about two years (Table 2.4-1).

The truck and access routes traverse areas identified as a local and regional wildlife movement corridor (DEIS 3.4-2), and also go through local open space areas and natural preserves (Figure 4.5-2). The DEIS does not identify impacts to wildlife from roadkill associated with the increased traffic traversing off site and on site areas. Roadkill could be reduced by: a) including time restrictions that limit truck travel to full daylight hours only, thereby avoiding dawn and dusk when movement activity is high; and b) limiting speeds to 25 mph or less.

Wildlife Monitors

The proposed project will result in clearing natural habitat that supports many species of indigenous wildlife. To avoid direct mortality, the Department recommends biological monitors be on site prior to and during ground disturbance activities to relocate special status species and other wildlife species of low mobility that will be killed or injured by grubbing and ongoing

remediation activities. Wildlife should be relocated to adjacent appropriate habitat out of harm's way. Should state listed threatened or endangered species be encountered, incidental take authorization from the Department may be required.

The DEIR should acknowledge that capture and relocation of on-site common and special status species does not constitute effective mitigation for the purposes of offsetting project related impacts stemming from habitat loss.

Alternatives Analysis

The DEIS evaluates two alternatives: 1) No Action; and 2) the Proposed Project to clean up to background levels. This level means that clean up targets would be the most conservative, and would result in the greatest impact to soil and habitat (removal of up to 500,000 cubic yards of soil on approximately 105 surface acres). Alternatives 1 through 3 were eliminated from further consideration because they would not meet the previously agreed upon clean up levels (to background) described in the 2010 Administrative Order on Consent for Remedial Action (AOC) (DTSC 2010).

The Department notes that under Alternative 3, soil would be cleaned up to a level which is safe for recreational use of the project area (Table 2.4-1), which is a potential end use for the NASA properties as well as the adjoining Boeing properties. Alternative 3 would result in far fewer acres of impacts to habitat (6 acres) and cubic yards of soil removal (58,000) compared with the Proposed Project, and therefore this alternative would have far fewer substantial long term adverse impacts to biological resources and requires less backfill and restoration. Groundwater cleanup levels do not vary across the range of alternatives (Table 2.4-1), but there is potential for different treatment options to vary in terms of their impacts to biological resources.

This concludes the Department's comments. We recognize the tremendous environmental challenge and complexity associated with addressing past contamination of this biologically sensitive area. The Department looks forward to continuing to work with NASA and DTSC to address these issues. Should you have any questions, please contact Ms. Mary Meyer, Senior Environmental Scientist (Specialist) at (805) 640-8019.

Sincerely,

Edmund Pert
Regional Manager
South Coast Region

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Cc:	Elliott, Allen (MSFC-AS01); Fellows, Merrilee (HQ-LD000); GROMAN, JENNIFER A. (HQ-LD020); ZORBA, PETER D. (HQ-LP040); James Biederman; Bruce Rowe
Subject:	Definition of an artifact et al for the NASA DEIS
Date:	Thursday, September 05, 2013 4:04:06 AM
Attachments:	ACHP ARCHAEOLOGY GUIDANCE.pdf Anthropocene.docx

Dear Mr. Elliott,

I have been, and I continue to be concerned, that NASA signed the 2010 Agreement in Principle and the 2010 Administrative Order on Consent - to my knowledge - without review by NASA personnel or consultants that are qualified to understand Section 106, NEPA, and CEQA.

I researched the Section 106 Archaeology guidance, and while the term artifact is used, I do not see it defined. (document date 1/1/ 2009)

In the context of the Section 106 documents - in fact - I believe that they misuse the term artifact because they imply that an artifact is something is portable - it can be found on the surface or excavated and studied. I disagree with that interpretation.

I have gone to several textbooks on Physical Anthropology and Archaeology for the definitions of an artifact:

1. **artifact** - **Any physical remains of human activity.** (1)
2. Artifacts - Objects or materials made or modified for use by hominids. The earliest artifacts tend to be tools made of stone, or occasionally, bone.(2)
3. artifact - Any object, usually found at an archaeological site, that was made by humans. (3)
4. Artifact - An object (tool or ornament) showing human workmanship or modification.(4)
5. Feature - A large, complex artifact or part of a site such as a hearth, cairn, housepit, rock alignment or activity area. (4)
6. Site - The location of past cultural activity; a defined space with more or less continuous archaeological evidence. (4)

NASA astronauts - as our representatives from the United States - can look from space back at earth. These astronauts can see what features are of a geologic nature and which are anthropogenic in nature (caused or produced by humans).

In the short term, a hundred years from now, humans will look back to 2013 and see television sets, smart phones, and the computers of today, as artifacts of the past. The buildings that remain, the Space Shuttles, the Santa Susana Field Laboratory NASA test stands; all will be artifacts made by humans. So too are the cave paintings and other markings on these natural features at Santa Susana. While a cave or a stone outcrop may be a natural feature, it is the evidence of human activity that makes them artifacts or archaeological sites in my opinion.

I have attached a box from Chapter 11 of ***Stein and Rowe, Physical Anthropology***. It is Box 11- 5 called **The Anthropocene**. It is being sent in its text form from prior to publication. It is found on page 261 of that text. (1)

This box discusses the different epochs in the geologic scale - a proposed new epoch written by a geologist. The box is from: "J. Zalasiewicz, ***The Earth After Us: What Legacy Will Humans Leave in the Rocks?*** (Oxford:Oxford University Press, 2008), p. 15

My points to NASA are many:

1. **NASA is aware and has been aware of the many "artifacts": middens, mortar basins, tools, cave paintings, and other evidence of human activity on the U.S. Government property.**
2. **NASA is now aware that the Santa Ynez Band of Chumash - and many other Native American tribes - believe this area to be sacred land.**
3. **Archaeologists have placed the Burro Flats complex into the context of a discontiguous archaeological district. That term was first used in relation to this site to me by John Romani, and it has subsequently been used by Dan Larson of Compass Rose Archaeological.**
4. **While we may not see evidence of human activity from the past on the surface, digging in any area could potentially reveal or permanently damage unknown human remains, animal remains, or artifacts at depth.**
5. **The actions that NASA takes on the U.S. Government property at the level stated in the NASA DEIS under the clean up to the AOC is irreversible.**
6. **While NASA mentions "bounding" the Burro Flats site and data recovery - it is my belief that this action diminishes the sacredness of the site; it takes the artifacts from their place which removes their value of place and time; and there is the potential to encounter both human and animal remains that could be placed in burial positions with specific religious and ritual significance.**
7. **<u>Leave the Burro Flats site alone!</u>**
8. **I respectfully request that NASA request information from the Native American Heritage Commission (NAHC) or other applicable agencies to determine the MINIMAL boundaries of the Burro Flats complex location. In consultation with local archaeologists, it is the opinion of those archaeologists that NASA's archaeologists have reduced the size of the known area of the complex.**
9. **It is my opinion that this location (Burro Flats) should be fenced off and left undisturbed - permanently - as has been done at Lascaux or at the Painted Cave near Santa Barbara .**
10. **No sampling should be done in any known archaeological site areas without the concurrence of the NAHC and the SHPO.**
11. **DTSC can state in their final release of the property that this fenced area is to be used only by the Native Americans for ceremonial uses or language of a similar nature in a land covenant).**
12. **NASA needs to renegotiate the Administrative Order on Consent to reflect the new status of the U.S. Government property as Sacred**

Lands.

13. **NASA needs to more accurately define and use more words which reflect the cultural aspects of this site historically in any future agreements with the State of California.**

Respectfully submitted,

Christine L. Rowe
NASA Section 106 Consulting Party

(1) Philip L. Stein and Bruce M. Rowe - ***Physical Anthropology - 11th Edition*** - 2013 - page G-2
(2) Turnbaugh, William A.; Jumain, Robert; Nelson, Harry; Kilgore, Lynn - ***Understanding Physical Anthropology and Archaeology - Seventh Edition*** - 1999 - page 519.
(3) Feder, Kenneth L. and Park, Michael Alan - ***Human Antiquity - Second Edition - 1993 - page 461.***
(4) Glossary of Archaeological Terms - Native American Heritage Commission -
http://www.nahc.ca.gov/glossory.html

SECTION 106 ARCHAEOLOGY GUIDANCE

(available online at www.achp.gov/archguide)

(current as of 01/01/2009)

I. INTRODUCTION

A. Purpose of the guidance. The Advisory Council on Historic Preservation's Section 106 Archaeology Guidance is designed to assist federal agencies in making effective management decisions about archaeological resources in completing the requirements of Section 106 of the National Historic Preservation Act (NHPA) (www.achp.gov/nhpa.html) [16 U.S.C. § 470f] and its implementing regulations, "Protection of Historic Properties" [36 CFR part 800] (www.achp.gov/regs-rev04.pdf). To encourage both effective and efficient consideration of archaeology in planning, this guidance highlights the decision-making role of the federal agency in the Section 106 process. This document is also designed for use by State and Tribal Historic Preservation Officers (SHPOs/THPOs), Indian tribes, Native Hawaiian organizations (NHOs), and cultural resource management professionals when assisting federal agencies to meet their responsibilities under Section 106.

This document presents non-binding guidance.

B. Web-based presentation and long-term vision of assistance. This guidance is presented in an interactive, Web-based format as a series of questions and answers. It is designed to be a dynamic document, with examples used to illustrate the points and perspectives made here.

Each question has a unique answer. However, the answers complement each other in such a way that, when considering a specific question or topic, the user is strongly encouraged to access links to other answers and their questions, as suggested. Also, links to pertinent federal law, regulation, standards, and guidance are provided. Accessing this additional information offers the user a more thorough explanation.

We invite you to send your feedback on this guidance, your recommendations on additional archaeology topics that should be considered, and examples of successful Section 106 outcomes to archaeology@achp.gov.

C. Topics covered. The questions and answers are grouped under five main categories that mirror the steps in the Section 106 process (a complete list of questions can be found in the index at the end of this document):

- Getting started in the Section 106 process
- Section 106 consultation about archaeology
- Determining which archaeological sites are significant
- Reaching agreement on appropriate treatment
- Completing the Section 106 process

D. Terms used in the guidance. A ***historic property*** (or ***historic resource***) is defined in the NHPA [16 U.S.C. § 470w(5)] as any "prehistoric or historic district, site, building, structure, or object

included in, or eligible for inclusion on, the National Register of Historic Places, including artifacts, records, and material remains related to such a property or resource." Following National Register Bulletin No. 36, "Guidelines for Evaluating and Registering Archaeological Properties" (www.cr.nps.gov/nr/publications/bulletins/arch/), an ***archaeological site*** is "a location that contains the physical evidence of past human behavior that allows for its interpretation." The term ***archaeological site*** refers to those that are eligible for or are listed on the National Register (historic properties) as well as those that do not qualify for the National Register. The commonly used term ***cultural resource*** does not have a consistent or legal definition.

The ***significance*** of a property refers to its ability to meet one of the four National Register criteria (A-D) (www.achp.gov/nrcriteria.html). According to National Register Bulletin No. 15, "How to Apply the National Register Criteria for Evaluation" (www.cr.nps.gov/nr/publications/bulletins/nrb15/), "[t]he quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association" and that meet one or more of the four criteria (A-D). ***Integrity*** is the ability of the property to convey this significance through physical features and context. Historic properties are significant because they do meet these criteria and have integrity. Pursuant to Section 101(d)(6)(A) of the NHPA, properties of traditional religious and cultural significance to an Indian tribe or NHO may be deemed eligible for listing on the National Register (See "Consulting with Indian Tribes in the Section 106 Review Process" at www.achp.gov/regs-tribes.html).

Indian tribes, NHOs, ethnic or religious groups, communities, professional and other organizations, or the public may ascribe a cultural, historical, or religious ***value*** to an archaeological site. The term *value* here refers to the site's worth and importance to them and their experience, regardless of whether the site possesses National Register ***significance***. For example, an archaeological site may be of historical or cultural value to the Mormons, or to an African-American community (See the description of the African Burial Ground at www.achp.gov/casearchive/casessum03NY1.html), or to the Order Sons of Italy in America, with or without its meeting the criteria for listing in the National Register.

Mitigation is a way to remedy or offset an adverse effect or a change in a historic property's qualifying characteristics in such a way as to diminish its ***integrity***. ***Treatment*** is the act of mitigating those effects, or how one goes about implementing the mitigation measure(s) agreed upon in consultation. Thus, a mitigation plan for the undertaking may contain several treatment plans, one for each property being adversely affected. Data recovery is a common mitigation measure that, through implementation of a treatment plan, retrieves the important information present within an archaeological site that makes it eligible before the site's integrity is compromised or destroyed.

II. BACKGROUND

A. Archaeology under Section 106. The Advisory Council on Historic Preservation's (ACHP) primary involvement with archaeology is through Section 106 review. It has been estimated that more than 90 percent of the archaeological excavations conducted in the United States are done so pursuant to Section 106 of the NHPA.

Responsibilities for archaeology under Section 106 extend to undertakings such as construction projects and land and resource planning efforts occurring on federal lands, as well as those where federal agencies provide funding or issue licenses, permits, or approvals for actions on non-federal lands, including tribal, state, municipal, and private property.

Archaeological sites are identified and evaluated under Section 106 by federal agencies for their eligibility for listing in the National Register. Through consultation with stakeholders, such as State and Tribal Historic Preservation Officers, Indian tribes, and Native Hawaiian organizations, federal agencies take into account the effects of their undertakings on eligible or listed archaeological sites. Together, the agency and the consulting parties specified in the ACHP's regulations consider ways to avoid, minimize, or mitigate adverse effects, and it is in this consultation process that the finite and non-renewable nature of listed or eligible archaeological sites is considered, as well as the ***value*** these sites may have to different parties.

B. Origins of ACHP archaeology guidance. The extraordinary diversity of our nation's archaeological heritage is only one of the many national historic preservation issues that fall within the ACHP's broad agenda. The identification, analysis, and treatment of archaeological resources have always been a mainstay of the Section 106 process. Over the years, the ACHP has prepared several guidance documents that address archaeology in Section 106 review, including:

- Treatment of Archeological Properties: A Handbook (1980)
- Identification of Historic Properties: A Decision-making Guide for Managers (1988, joint ACHP-NPS publication)
- Consulting About Archeology Under Section 106 (1990)
- Recommended Approach for Consultation on Recovery of Significant Information from Archeological Sites (1999) (www.achp.gov/archguide.html)
- Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects (2007) (www.achp.gov/docs/hrpolicy0207.pdf)

Although the ACHP's "Treatment of Archeological Properties: A Handbook" (1980) is still cited, it has become dated. This current guidance does not replace this handbook but rather is designed to build on the foundation it established.

As with the *Treatment Handbook*, the current guidance has been developed under the direction of an Archaeology Task Force (www.achp.gov/atf.html) established by the chairman of the ACHP in 2003 to identify those new and recurring issues that should receive priority consideration and action by the ACHP. Following outreach to federal agencies, SHPOs/THPOs, Indian tribes and NHOs, and the professional archaeological community (Society for American Archaeology, the Society for Historical Archaeology, the American Cultural Resources Association, and the Register of Professional Archaeologists), the task force determined new Section 106 archaeology guidance was needed.

III. QUESTIONS AND ANSWERS ABOUT SECTION 106 ARCHAEOLOGY

A. GETTING STARTED IN THE SECTION 106 PROCESS

1. What are a federal agency's responsibilities under Section 106 of the NHPA?
Section 106 of the National Historic Preservation Act (www.achp.gov/nhpa.html) requires federal agencies to "take into account" the effects of their undertakings on historic properties and to provide the ACHP a "reasonable" opportunity to comment. Federal agencies meet these two requirements through the process set out in the ACHP's regulations, "Protection of Historic Properties" (36 CFR part 800) (www.achp.gov/regs-rev04.pdf).

[Related questions:
- What is the role of the federal agency official in the Section 106 process?

- What is the ACHP's policy on dealing with burial sites, human remains, and funerary objects?]

2. What is the role of the federal agency official in the Section 106 process?

The federal agency official is the individual who has "approval authority for the undertaking and can commit the federal agency to take appropriate action for a specific undertaking as a result of Section 106 compliance" [36 CFR § 800.2(a)], and who makes the decisions in each step of the Section 106 review process, following consultation with the parties specified in the ACHP's regulations. The ACHP, State Historic Preservation Officer/Tribal Historic Preservation Officer (SHPO/THPO) and other consulting parties advise and assist the federal agency official in this effort. In reaching decisions, a federal agency should seek to reconcile historic preservation with other important public values, such as its mission, objectives, costs and public benefits. The impact on archaeological resources is one of many considerations for an agency as it weighs its decisions.

[Related questions:
- Why should federal agencies consult with other parties about archaeology?
- Who consults with whom, and how?
- What is the role of applicants and their consultants/contractors in archaeology conducted under Section 106?
- What information is needed to decide on treatment options?]

3. What is the ACHP's policy on dealing with burial sites, human remains, and funerary objects?

On February 23, 2007, the ACHP adopted a new "Policy Statement Regarding Burial Sites, Human Remains, and Funerary Objects" (www.achp.gov/docs/hrpolicy0207.pdf) that, among other things, calls for federal agencies to avoid impacts to burial sites, human remains, and funerary objects unless absolutely necessary. When the federal agency determines that avoidance of impact is not appropriate, the agency first should consider active steps it may take to preserve the burial site in place. When the federal agency decides human remains or funerary objects must be disturbed, they should be removed respectfully and dealt with according to the plan developed by the federal agency, in consultation with others as specified in the regulations. The ACHP's policy does not prescribe an outcome or endorse any specific treatment. Rather, the level of documentation and analysis should be decided through consultation on a case-by-case basis. Implementation of this policy and its principles does not in any way change, modify, detract, or add to the Native American Graves Protection and Repatriation Act or other applicable laws.

[Related questions:
- Who consults with whom, and how?
- What special role do Indian tribes and Native Hawaiian organizations have in evaluating properties?
- What issues should be considered when consulting about mitigation?]

4. Does issuance of an ARPA permit constitute an undertaking requiring Section 106 review?

Section 4(i) of the Archeological Resources Protection Act of 1979 [16 U.S.C. 470cc(i)] states:

> "Issuance of a permit in accordance with this section and applicable regulations shall not require compliance with section 106 of the National Historic Preservation Act, as amended [16 U.S.C. 470f]."

Thus, federal agency issuance of an ARPA permit for archaeological investigations on public or Indian lands does not, by itself, trigger review under Section 106 of the NHPA.

However, the uniform regulations implementing ARPA [43 CFR § 7.12] state that "mere issuance of such a permit does not excuse the Federal land manager from compliance with section 106 where otherwise required." This means that if an ARPA permit is issued for archaeological investigations done in conjunction with an undertaking subject to Section 106 review, the federal land manager will still need to comply with Section 106 for the undertaking.

An example would be a federal undertaking on public or tribal lands, such as the building of a road or permitting of an energy development project that has the potential to affect historic properties. In these examples, the issuance of an ARPA permit for archaeological investigations designed to identify, evaluate, and mitigate eligible archaeological sites does not trigger Section 106 review. However, the overall undertaking for which these investigations are being carried out (i.e., the building of the road or the energy development project) is subject to Section 106 review.

[Related questions:
- What are a federal agency's responsibilities under Section 106 of the NHPA?]

5. Who owns the artifacts recovered from private land?

Artifacts recovered from private lands during archaeological survey and excavation during the course of Section 106 review are usually the property of the landowner, unless state or local law mandates otherwise. (Human remains are generally covered under specific laws.)

The issue of concern to many archaeologists, SHPOs, Indian tribes, and Native Hawaiian organizations is not always that of strict ownership but that of what happens to the artifacts. There may be tax incentives to donate artifacts to qualified institutions. The relevant SHPO should be contacted for up-to-date information on ownership laws and preservation incentives within a particular state.

Federal agencies should reach agreement with the private landowner on the disposition of any artifacts extracted from his/her land prior to commencing work on the land. (A related question that will be addressed in this guidance deals with federal agency responsibilities regarding the management of archaeological documentation produced as a result of Section 106 archaeology.)

[Related questions:
- What kind of information is necessary to evaluate the eligibility of an archaeological site?
- What issues should be considered when consulting about mitigation?
- What are a federal agency's responsibilities to complete Section 106 review?]

6. Can the NHPA be used to restrict access to information about an archaeological site?

Under the Freedom of Information Act [FOIA, 5 U.S.C. 552], members of the public have a right to access federal agency records, except to the extent that such records (or portions thereof) are protected from public disclosure by exceptions found under the Act. The third such exception under FOIA provides that an agency may withhold records "specifically exempted from disclosure by statute" [5 U.S.C. 552(b)(3)].

One of these statutes that specifically restrict disclosure is Section 304 of the National Historic Preservation Act [16 U.S.C. 470w-3]. Section 304 requires federal agencies, or other public officials receiving grant assistance under the NHPA, to "withhold from disclosure to the public, information about the location, character, or ownership of a historic resource…" if the agency and the Secretary of the Interior agree that its release may (1) cause a significant invasion of privacy, (2) risk harm to the

historic resource, or (3) impede the use of a traditional religious site by practitioners. Once a determination to withhold from the public has been made, the Secretary of the Interior, in consultation with the relevant agency, will determine who (if anyone) may have access to the information for NHPA purposes. If the information was developed as part of a Section 106 undertaking or under Section 110(f) of NHPA, the Secretary of the Interior must consult with the ACHP in making the above determinations regarding withholding and access. For purposes of Section 304 of the NHPA, the Secretary of the Interior acts through the National Park Service.

It is important to keep in mind several issues about the authority of Section 304 to restrict information:

- First, not all archaeological records, field notes, or data analyses are subject to withholding under Section 304 of the NHPA—only information about a property's "location, character, or ownership."

- The information excludable under the scope of Section 304 of the NHPA must be about a historic property. Information about an archaeological site that is neither listed, nor eligible for listing, on the National Register of Historic Places, would fall outside the protective scope of Section 304.

- Finally, a determination has to be made that release of such information may cause a "significant" invasion of privacy, may risk harm to the historic resource, or may impede use of a traditional religious site by practitioners. Archaeological information (including as noted above records, notes, or analyses, or parts thereof) that does not meet these standards regarding historic property status, type of information, and risk of invasion, harm or impediment of use, is not protected under Section 304.

This could have implications, for example, for an Indian tribe or Native Hawaiian organization that shares sensitive written information about an archaeological site with a federal agency to ensure that it is considered in Section 106 review. Should the federal agency determine that the site is not listed or eligible for the National Register, the written information collected about this site, including its location and sensitivity, would not be protected under Section 304.

Another federal law also addresses the issue of restricting certain kinds of information. Section 9 of the Archeological Resources Protection Act [ARPA, 16 U.S.C. 470aa-mm] specifically prohibits the release of information concerning the nature and location of archaeological sites excavated or removed under an ARPA permit unless the federal land manager determines that releasing the information furthers the purposes of ARPA and will not create a risk of harm to the resources [16 U.S.C. 470hh]. The purposes of ARPA [at 16 U.S.C. 470aa] are:

> *"to secure, for the present and future benefit of the American people, the protection of archaeological resources and sites which are on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals ...."*

Because ARPA only applies on public lands or Indian lands, information from archaeological sites on private lands or non-federal public lands is not protected under its terms.

[Related questions:
- What happens when a consulting party cannot or will not provide its views?

- How should federal agencies consider past planning, research, and studies in determining the appropriate level of effort for identification?]

B. SECTION 106 CONSULTATION ABOUT ARCHAEOLOGY

7. What is Section 106 consultation?

The ACHP's regulations define consultation as "the process of seeking, discussing, and considering the views of other participants, and, where feasible, seeking agreement with them regarding matters arising in the Section 106 process" [36 CFR § 800.16(f)]. By definition, then, consultation is an active exchange of ideas and information between a federal agency and other Section 106 participants that seeks consensus about what eligible or listed archaeological sites may be affected by an undertaking; why those properties are significant and of value, and to whom; and how any adverse effect to them might be avoided, minimized, or mitigated (See "Protecting Historic Properties: A Citizen's Guide to Section 106 Review" at www.achp.gov/citizensguide.html).

Federal agencies are encouraged to use, to the extent possible, existing agency procedures and mechanisms to fulfill the consultation requirements of the ACHP's regulations [36 CFR § 800.2(a)(4)]. For example, an agency may use its National Environmental Policy Act (NEPA) procedures to identify additional consulting parties. Usually, however, reliance on NEPA efforts alone will not meet the regulatory standard for consultation essential to Section 106 review because consultation requires interaction between the agency and consulting parties.

[Related questions:
- Why should federal agencies consult with other parties about archaeology?
- When does consultation begin?
- How can federal agencies foster more informed participation by stakeholders in consultation about archaeology?]

8. Why should federal agencies consult with other parties about archaeology?

The National Historic Preservation Act [16 U.S.C. 470h-2(a)(2)(E)(ii)] and the Section 106 implementing regulations require federal agencies to consult with other parties in the course of the Section 106 process. The active exchange of views and information among the federal agency and other parties with an interest in the effects of the undertaking on historic properties should begin in the early stages of project planning [36 CFR § 800.1(a)] and continue through all of the findings and determinations made during the Section 106 process [36 CFR § 800.2(a)(4)]. However, it is critical to recognize that, while consultation is required in each step of Section 106 review, final decision-making rests solely with the federal agency (See "Protecting Historic Properties: A Citizen's Guide to Section 106 Review" at www.achp.gov/citizensguide.html).

There are practical reasons why a federal agency should consult about archaeology. It is a way for the federal agency to gain information about the likely location and nature of historic properties that might be present in the area of potential effects prior to conducting any fieldwork. Through consultation, such as with those who might possess oral or traditional knowledge about an archaeological site, a federal agency may acquire information that helps in making a National Register evaluation or leads to a better understanding of a property's value to the community. In addition, consultation informs federal agencies about appropriate and culturally sensitive methods to use during any testing and excavation (See "Consulting with Indian Tribes in the Section 106 Review Process" at www.achp.gov/regs-tribes.html and "Native Hawaiian organizations and the Section 106 Review Process" at www.achp.gov/regs-nhos.html).

[Related questions:
- What are a federal agency's responsibilities under Section 106 of the NHPA?
- What is the role of the federal agency official in the Section 106 process?
- What information is needed to decide on treatment options?
- What kind of information is necessary to evaluate the eligibility of an archaeological site?]

9. Who consults with whom, and how?

Consulting parties fall into two broad groups:

a) Parties with a right to participate in consultation [see 36 CFR §800.2(c)(1) -(4)] are:

- The relevant SHPO and/or THPO, or the representative officially designated by the tribe for tribal lands;

- Indian tribes and NHOs that attach traditional religious and cultural significance to historic properties that may be affected by an undertaking. Indian tribes and NHOs determine what historic properties may be of traditional religious and cultural significance to them. Any tribe or NHO that makes such a determination must be invited by the federal agency to participate in consultation. A federal agency may also need to identify and consult with tribes that reside outside of the state or locality where the undertaking is to be located, because many tribes are now far removed from their ancestral lands (see "Consulting with Indian Tribes in the Section 106 Review Process" at www.achp.gov/regs-tribes.html and "Native Hawaiian organizations and the Section 106 Review Process" at www.achp.gov/regs-nhos.html).

- Applicants for federal assistance, permits, licenses, or other approvals;

- Representatives of local governments, and

- The ACHP, which also may enter consultation when it determines that any one of the criteria established in *Criteria for Council Involvement in Reviewing Individual Section 106 Cases* [36 CFR part 800, Appendix A] has been met. Even when not actively involved in consultation for a specific undertaking, the ACHP may provide federal agencies and other consulting parties with advice, assistance, and guidance regarding the conduct of Section 106 review, including help in resolving disputes [36 CFR § 800.2(b)(2)].

Consultation between federal agencies and Indian tribes should be conducted in a "sensitive manner respectful of tribal sovereignty," and must recognize the government-to-government relationship between the federal government and Indian tribes [36 CFR § 800.2(c)(2)(ii)]. This means the federal agency is responsible for initiating consultation with Indian tribes. This responsibility cannot be delegated unless the Indian tribe agrees in advance.

b) Other parties who may participate in consultation include the following [see 36 CFR § 800.2(c)(5)]:

- Parties with legal or economic interest in the undertaking or affected historic properties;

- Those concerned with the undertaking's effects on historic properties, such as individual tribal members with special knowledge or expertise in identifying properties of traditional religious and cultural significance to that tribe.

These parties may be identified by a federal agency and invited to participate in consultation, or such parties may submit a written request for consulting party status directly with the federal agency. However, the federal agency, following consultation with the SHPO/THPO, makes the final decision about which of these other parties will participate (See "Protecting Historic Properties: A Citizen's Guide to Section 106 Review" at www.achp.gov/citizensguide.html).

According to "The Secretary of the Interior's Standards and Guidelines for Federal Agency Historic Preservation Programs Pursuant to the National Historic Preservation Act" (http://fpi.historicpreservation.gov/TechnicalInfo/HistPres/FedAgencyGuidelines.aspx), in conducting consultation, a federal agency should:

make its interests and constraints clear at the outset;

- make clear any rules, processes, or schedules applicable to consultation;
- acknowledge the interests of others and seek to understand them;
- develop and consider a full range of options; and
- make an effort to identify solutions that will leave all parties satisfied.

[Related questions:

- When does consultation begin?
- Are federal agencies expected to pay consulting parties for Section 106 participation?
- How much consultation is enough?
- When does consultation end?
- What happens when a consulting party cannot or will not provide its views?]

10. When does consultation begin?

Federal agencies are advised to begin the Section 106 process early in project planning "so that a broad range of alternatives may be considered during the planning process for the undertaking" [36 CFR § 800.1(c)]. Early initiation of consultation helps agencies avoid delays later in review and head off potential conflicts.

In order to streamline environmental review, many agencies strive to coordinate Section 106 and National Environmental Policy Act (NEPA) requirements. When coordinating Section 106 and NEPA, federal agencies should be prepared to begin consultation early in the NEPA process, "when the purpose of and the need for the proposed action, as well as the widest possible range of alternatives, are under consideration" [36 CFR § 800.8(a)(1)].

It is important to note that the ACHP's regulations [36 CFR § 800.4(a)(3)] require federal agencies to seek information from certain parties, such as the SHPO/THPO, Indian tribes, or NHOs, before conducting an archaeological survey. It is imperative, therefore, that the agency initiate consultation prior to conducting any such archaeological fieldwork.

[Related question:

- What are a federal agency's responsibilities under Section 106 of the NHPA?]

11. Are federal agencies expected to pay consulting parties for Section 106 participation?

On April 26, 2002, the ACHP issued its official position on "Fees in the Section 106 Review Process," a statement designed to assist federal agencies in determining when it is appropriate to compensate a party in the Section 106 process. The entire text can be viewed at www.achp.gov/regs-fees.html.

- In summary, the NHPA and ACHP's regulations authorize federal agencies to contract with others to provide information for complying with Section 106. However, neither authority requires federal agencies to pay for any aspect of consulting party participation in the Section 106 process.

- For example, when the federal agency is seeking the views of an Indian tribe to fulfill the agency's legal obligation to consult under a specific provision of ACHP's regulations, the agency is not required to pay the tribe for providing its views. If the agency has made a reasonable and good faith effort to consult with an Indian tribe and the tribe refuses to respond without receiving payment, the agency has met its obligation to consult and is free to move to the next step in the Section 106 process.

- When an agency seeks to identify historic properties that may be significant to an Indian tribe, however, it may ask for specific information and documentation regarding the location, nature, and condition of individual sites, or actually request that a survey be conducted by the tribe. In that case, the agency essentially is asking the tribe to fulfill the role of a consultant or contractor. In such cases, the tribe would seem to be justified in requiring payment for its services, just as any other contractor. The agency may refuse to do so, but is still obligated to gather information necessary to support Section 106 decision making.

- Whenever the line between the two is not clear, the agency is "encouraged to act in a manner that facilitates, rather than impedes, effective participation in the Section 106 process.

[Related questions:
- When does consultation begin?
- How much consultation is enough?]

12. What is the role of applicants and consultants/contractors in archaeology conducted under Section 106?

The ACHP's regulations [36 CFR § 800.2(c)(4)] allow a federal agency to authorize an applicant (not consultants or contractors) for federal assistance, permits, licenses, or approvals to initiate Section 106 consultation. Under such an authorization, however, the federal agency maintains legal responsibility for all Section 106 findings and determinations, even though the applicant usually produces the documents and studies (including archaeological survey and testing reports) on which these decisions are based.

Federal agencies, as well as applicants, often rely on the services of consultants and contractors to prepare the information, analyses, recommendations, and studies needed during Section 106 review. Whenever a non-federal party prepares a Section 106 document or a study for review, the agency is responsible "for ensuring that its content meets applicable standards and guidelines" [36 CFR § 800.2(a)(3)]. The ACHP advises federal agencies to monitor its applicants and its consultants closely to ensure that the requirements of Section 106 are being followed.

A federal agency may not delegate to an applicant or any other non-federal party its responsibility to consult with federally recognized Indian tribes on a government-to-government basis. The federal government's responsibility to consult on a government-to-government basis with Indian tribes as sovereign nations is established through Executive Orders, Presidential memoranda, and other authorities, and is explicitly recognized by the ACHP's regulation [36 CFR § 800.2(c)(2)(ii)(B) and (C); see also "Consulting with Indian Tribes in the Section 106 Review Process" at www.achp.gov/regs-tribes.html].

While consultation with Indian tribes is a federal responsibility, federal agencies and tribes may mutually agree to allow applicants to initiate and carry out such consultation during the course of Section 106 review. To avoid any later misunderstanding, the ACHP recommends federal agencies and Indian tribes to document such agreements in writing. Any deviation from the government-to-government relationship between the federal government and Indian tribes should be agreed to as early as possible in the Section 106 process, particularly in advance of any survey and testing actions to identify National Register-eligible archaeological sites.

In the absence of such an agreement, a lack of response from the tribe to such a solicitation should not be interpreted as a lack of interest in consultation or in providing information. Rather, the tribe may choose not to respond to a query from an applicant (or its consultant or contractor) because this contact does not meet the requirement of government-to-government consultation. In those cases where a tribe has not responded to an applicant or its representative, the federal agency must contact the tribe to initiate consultation and ascertain its interest.

Before any steps are taken in Section 106 review, the federal agency first must notify the SHPO/THPO that it is authorizing an applicant (or group of applicants) to initiate consultation [36 CFR § 800.2(c)(4)]. By the time this notification is sent, the federal agency should have resolved how its government-to-government responsibilities will be fulfilled.

Following this notification, applicants and their authorized representatives may consult with the SHPO/THPO to initiate Section 106 review, identify and evaluate historic properties, and assess effects. The federal agency, however, remains responsible for participating in the consultation process when:

- initiating consultation with Indian tribes;
- it is determined that the Criteria of Adverse Effect apply to an undertaking;
- there is a disagreement between the applicant or their authorized representatives and the SHPO/THPO regarding identification and evaluation, and/or assessment of effects;
- there is an objection from a consulting party or the public regarding Section 106 findings and determinations, the implementation of agreed upon provisions, or their involvement in a Section 106 review; or
- there is the potential for a foreclosure situation or anticipatory demolition as specified in Section 110(k) of NHPA [36 CFR § 800.9(b) and (c)].

In determining the scope of work for archaeological fieldwork where listed or eligible archaeological sites of significance to Indian tribes may be involved, the applicant is advised that the federal agency has a responsibility to gather information from such tribes [36 CFR § 800.4(a)(3) and (4)]. Without this step, the identification effort might include measures an Indian tribe might consider inappropriate, insensitive, or insufficient. Therefore, the federal agency should ensure the applicant is aware of this requirement.

[Related questions:
- What is the role of the federal agency official in the Section 106 process?
- How do federal agencies meet the “reasonable and good faith effort” standard?
- How are eligibility determinations made in Section 106 review?
- How can federal agencies find out about appropriate treatment options and alternatives?]

13. How much consultation is enough?

While consultation establishes the context within which a federal agency takes into account the effect of its undertaking on historic properties, there is no hard and fast rule about how much consultation is enough. The ACHP's regulations call for consultation to be carried out in a manner "appropriate to the scale of the undertaking and the scope of the federal involvement" [36 CFR § 800.2(a)(4)], taking into account the nature of the undertaking and its effects on historic properties [36 CFR § 800.3(c)(3); (See "Consulting with Indian Tribes in the Section 106 Review Process" at www.achp.gov/regs-tribes.html and "Native Hawaiian organizations and the Section 106 Review Process" at www.achp.gov/regs-nhos.html)].

Where listed or eligible archaeological sites are likely to be involved, the federal agency should consider questions such as the following when planning for consultation:

- What is the significance of the site likely to be affected?
- What is the likely value of the site to living communities and cultural descendants?
- Is the nature of the undertaking the kind that may diminish the integrity of the site? For example, is the scale of the undertaking such that extensive ground disturbance, with the potential to destroy the site, anticipated? Or, if an Indian tribe or NHO attaches traditional religious and cultural significance to the site, will that association be damaged or destroyed?

[Related questions:
- How can federal agencies foster more informed participation by stakeholders in consultation about archaeology?
- What kind of information is necessary to evaluate the eligibility of an archaeological site?
- What information is needed to decide on treatment options?
- What are a federal agency's responsibilities to complete Section 106 review?]

14. When does consultation end?

Federal agency consultation responsibilities are met when the agency has completed the Section 106 process. If a Section 106 agreement has been executed, such completion includes implementation of those stipulations or provisions contained in the agreement. The federal agency should be able to demonstrate that it has:

- identified the appropriate consulting parties as early as practicable;
- provided them with adequate and timely documentation to participate effectively;
- involved them in Section 106 findings and determinations in a manner that is appropriate to the scale of the undertaking and its effects;
- allowed a reasonable opportunity for consulting parties to provide their views; and
- determined how to resolve adverse effects taking into account the views of consulting parties and the public or, failing to reach an agreement to resolve the adverse effects, requested, considered and responded to the ACHP's formal comments on the undertaking.

Often consultation about effects to eligible and listed archaeological sites is straightforward and non controversial, but this is not always the case. For example, consultation on the fate of an eligible or listed archaeological site that was once a small campsite may not warrant any face-to-face meetings. In contrast, consultation regarding a property of national significance, such as the African Burial Ground in New York City, which is valued by many different communities and groups, may require a much more intensive and lengthy effort (See the African Burial Ground in the ACHP's Case Digest in Fall 2001 [link at www.achp.gov/casearchive/casesfall01NY1.html], Summer 2003 [link at www.achp.gov/casearchive/casessum03NY1.html] and Fall 2003 [link at www.achp.gov/casearchive/casesfall03NY.html]).

[Related questions:
- Who consults with whom, and how?
- What happens when a consulting party cannot, or will not, provide its views?]

15. How can federal agencies foster more informed participation by stakeholders in consultation about archaeology?

To ensure consulting parties participate in an informed manner, federal agencies should present descriptions of archaeological investigations and recommendations using as little technical jargon as possible. Furthermore, it is in the interest of the federal agency to ensure that all recommendations and conclusions about the significance and treatment of listed and eligible archaeological sites are supported by clear and succinct statements showing the logical progression of decision-making. Experience has shown that sometimes what appears to be an objection raised by a consulting party about the treatment of an eligible or listed archaeological site may actually result from a misunderstanding caused by poorly presented technical information, or inadequately or incompletely described archaeological work (See "Protecting Historic Properties: A Citizen's Guide to Section 106 Review "at www.achp.gov/citizensguide.html).

[Related questions:
- What are a federal agency's responsibilities under Section 106 of the NHPA?
- What is the role of applicants and their consultants/contractors in archaeology conducted under Section 106?]

16. What happens when a consulting party cannot, or will not, provide its views?

The ACHP's regulations [36 CFR § 800.3(c)(4)] specify timeframes for consulting parties to respond to agency findings and determinations. When the regulations specify a timeframe for a response, the federal agency cannot proceed before that specified period has ended. Where no timeframe is given, agencies should expect a response within a reasonable time.

While consulting parties determine their level of participation in the Section 106 process, the refusal of a participant to consult or provide their views within a time frame specified in the regulations or a reasonable time frame does not stop the process. When a consulting party has been notified of a reasonable deadline for response but has exceeded that time limit, the federal agency may elect to extend the review period or may decide to proceed in the Section 106 process. In either case, the agency should ensure that it can document a reasonable and good faith effort to consult (See "Consulting with Indian Tribes in the Section 106 Review Process" at www.achp.gov/regs-tribes.html and "Native Hawaiian organizations and the Section 106 Review Process" at www.achp.gov/regs-nhos.html).

However, federal agencies and their contractors should be aware that there may be cultural prohibitions preventing or limiting information sharing, such as with archaeological sites that are properties of traditional religious and cultural significance to Indian tribes or NHOs. Where such a restriction exists, the agency should work closely with that consulting party to ensure sufficient information can be shared to support informed decision-making.

Section 304 of the National Historic Preservation Act provides protection from public disclosure of information about a historic property that might result in harm to the property, a significant invasion of privacy, or impediments to traditional religious practice at a site. For example, a tribe might be concerned that sharing information about the location of an archaeological site that contains human remains could make that site more vulnerable to the destructive activities of looters. The federal

agency should inquire into the reasons behind an Indian tribe or other consulting party's non-response since a concern protected by Section 304 may be involved.

The ACHP's regulations require federal agencies to make a "reasonable and good faith effort" to identify Indian tribes or NHOs that should be consulted and provide them a "reasonable opportunity" to share their views in all steps of the Section 106 process. In practice, this does not mean an agency must put the progress of the undertaking on hold indefinitely until all tribes or NHOs respond. When the designated tribal or NHO representative has been involved in consultation and received adequate information, the agency may proceed if no response is received within a reasonable time.

For tribal consultation, the ACHP strongly recommends the agency follow-up to ensure its request has reached the correct tribal representative and that the time provided for response took into account any tribal government procedures. For example, a federal agency may propose a response within 30 days. If the tribal council meets every 90 days, and must approve all tribal correspondence, the agency's time frame for response may not be reasonable. Federal agencies should take all reasonable measures to ensure a consulting party's views are considered as it moves forward through the Section 106 process.

[Related questions:
- What are a federal agency's responsibilities under Section 106 of the NHPA?]
- Are federal agencies expected to pay consulting parties for Section 106 participation?
- What is the role of applicants and their consultants/contractors in archaeology conducted under Section 106?
- When does consultation end?]

17. Can archaeologists participate in Section 106 review as consulting parties?

Yes. Archaeologists and professional archaeological organizations can be invited to participate in Section 106 consultation by a federal agency or may request consulting party status from the federal agency [36 CFR § 800.2(c)(5)]. However, unless they happen to be the applicants for the relevant undertaking, archaeologists and professional archaeological or preservation organizations are not parties with a right to consulting party status under the Section 106 regulations [36 CFR § 800.2(a)(4)]. Accordingly, the decision granting consulting party status for archaeologists and their professional organizations rests solely with the federal agency in consultation with the SHPO/THPO. Archaeologists and their organizations do have the right to express their views on an undertaking in the Section 106 process as members of the public.

[Related questions:
- Who consults with whom, and how?
- What is the role of applicants and their consultants/contractors in archaeology conducted under Section 106?
- How can federal agencies foster more informed participation by stakeholders in consultation about archaeology?

C. DETERMINING WHICH ARCHAEOLOGICAL SITES ARE SIGNFICANT: IDENTIFICATION

18. Does the federal agency have to identify or locate every archaeological site for Section 106 review?

No. The ACHP's regulations do not require the identification of all of the archaeological sites within the area of potential effects (APE). Rather, federal agencies are expected to make a "reasonable and

good faith effort" to identify historic properties, including archaeological sites listed or eligible for listing on the National Register in the APE. An agency's identification effort can be considered reasonable and in good faith when it has appropriately taken into account the factors specified in 36 CFR § 800.4(b)(1) - past planning, research and studies, the magnitude and nature of the undertaking and the degree of federal involvement, the nature and extent of potential effects on historic properties, and the likely nature and location of historic properties within the area of potential effects.

One of the reasons the ACHP's regulation contains a post-review discovery provision [36 CFR § 800.13] is that the level of effort is reasonable and in good faith, not 100 percent or exhaustive. The costs attendant with work stoppage because of a discovery should be reason enough for a federal agency to put forth a competent professional effort at the identification stage.

[Related questions:
- What are a federal agency's responsibilities under Section 106 of the NHPA?
- What is the "reasonable and good faith effort" regulatory standard?
- How do federal agencies meet the 'reasonable and good faith effort' standard?"
- Is every archaeological site eligible for the National Register?]

19. What is the "reasonable and good faith effort" regulatory standard?
In order to take effects into account as required under Section 106 of the National Historic Preservation Act, a federal agency must first "take the steps necessary to identify historic properties in the area of potential effects" [36 CFR § 800.4(b)]. To do this the federal agency:

> …shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. The agency official shall take into account past planning, research and studies, the magnitude and nature of the undertaking and the degree of federal involvement, the nature and extent of potential effects on historic properties, and the likely nature and location of historic properties within the area of potential effects. *The Secretary's Standards and Guidelines for Identification* (www.cr.nps.gov/local-law/arch_stnds_2.htm) provide guidance on this subject. [36 CFR § 800.4(b)(1), emphasis added].

This section of the ACHP's regulations establishes the regulatory standard as well as those factors that must be considered in meeting it.

[Related questions:
- What are a federal agency's responsibilities under Section 106 of the NHPA?
- With whom should a federal agency consult in determining how to meet the "reasonable and good faith effort" regulatory standard?]

20. How do federal agencies meet the "reasonable and good faith effort" standard?
While guidance on the scope of archaeological identification issued by SHPOs or other non-federal agencies often is helpful in determining the appropriate level of effort, it does not define the federal standard and must be considered guidance only.

Ultimately, it is up to the federal agency to thoughtfully consider and weigh the following factors in developing an effective and reasonable approach to the identification of archaeological properties in Section 106 review. The federal agency official makes a "reasonable and good faith effort" to identify historic properties by designing and implementing an identification plan that addresses the following factors [set out in the regulations at 36 CFR § 800.4(b)(1)]:

- "past planning, research and studies;"
- "magnitude and nature of the undertaking;"
- "the degree of federal involvement;"
- the "nature and extent of potential effects on historic properties," and
- the "likely nature and location of historic properties within the area of potential effects."

21. How should federal agencies consider the magnitude and nature of the undertaking, and the degree of federal involvement, in determining the appropriate level of effort for identification?

Undertakings with the potential for extensive ground disturbance generally will require a more involved effort to identify archaeological properties than those with less ground disturbance. For example, the proposed construction of a new multi-story federal complex with underground parking on a vacant city block may require an intensive survey and deep testing in order to identify eligible archaeological sites. On the other hand, construction of a surface parking lot may require investigations into only the top foot of the soil. Likewise, installation of a six-inch water pipe below the frost line with a Ditch Witch should warrant a significantly less intense effort and may not even involve any subsurface testing prior to laying the line, when compared to a large sewer main.

In determining the level of effort for identification, the regulations [36 CFR § 800.4(b)(1)] call for the federal agencies to consider the "degree of federal involvement" in the undertaking. Federal "involvement" as used here means the federal agency's degree of control or influence over the undertaking. Federal control and influence is highest when a federal agency proposes some ground-disturbing activity on federal land, such as an Army training area expansion.

Federal agencies that grant assistance or issue permits, licenses, or approvals may have a lesser degree of control or involvement over an undertaking. There are several reasons for this:

- Federal assistance and permitting agencies do not have the same degree of control as a land managing agency since they typically do not own the land.
- In most cases the applicant for the assistance or permit conducts the work needed for the federal agency to meet its Section 106 responsibilities, not the federal agency.
- Because these activities take place on non-federal lands (state, tribal, and private), federal agency influence on what the applicant does to help satisfy the Section 106 process is generally limited to conditioning the assistance, permit, or license with stipulations setting what the recipient will do, not necessarily how it will do it.

For example, for a gas pipeline project needing a certificate from the Federal Energy Regulatory Commission, it is reasonable to expect the applicant to apply professional tools, such as current and accepted predictive models, in order to identify eligible archaeological sites. It may not be reasonable, however, to expect the applicant to refine the predictive model by surveying all low and high probability areas.

[Related question:
- What are a federal agency's responsibilities under Section 106 of the NHPA?]

22. How should federal agencies consider the nature and extent of potential effects on historic properties in determining the appropriate level of effort for identification?

A federal agency is not expected to conduct a 100 percent survey of the area of potential effects. Rather, the identification effort should be conditioned by where effects are likely to occur and the

likely impact of these effects on listed or eligible archaeological sites. For example, archaeological identification efforts for a license renewal from the Federal Energy Regulatory Commission likely would not involve the entire area of potential effects (APE). Rather it would be directed to those locations within the APE that are experiencing project related effects associated with operation, usually along the shoreline. Likewise, identification of listed and eligible archaeological sites for a new highway project would be conducted within the APE where direct effects, such as ground disturbance from road construction, are likely. Archaeological testing, however, also should occur within the APE wherever destructive impacts can be reasonably expected to occur later in time, be farther removed in distance or be cumulative. In this example, testing should not be limited to the confines of the new road alignment because experience has demonstrated that highway interchanges tend to attract future development associated with the transportation corridor.

[Related questions:
- Why is the "area of potential effects" (APE) important in identifying eligible archaeological sites?
- How is the area of potential effects (APE) determined?
- Should the area of potential effects (APE) also be defined vertically?]

23. How should federal agencies consider the likely nature and location of historic properties within the area of potential effects in determining appropriate level of effort for identification?

The identification effort is based on what might be found and where it is likely to be located. In other words, the APE is the geographic area where identification occurs, but it doesn't necessarily follow that the entire APE must be subject to archaeological scrutiny. Generally, the level of effort would be expected to be more intensive if there is potential for the APE to contain an archaeological site of national significance or value to a living community.

[Related questions:
- What are a federal agency's responsibilities under Section 106 of the NHPA?
- Does the federal agency have to identify or locate all archaeological sites for Section 106 review?

24. How should federal agencies consider past planning, research, and studies in determining the appropriate level of effort for identification?

A review of previous archaeological work done within or in the vicinity of the area of potential effects (APE) is essential in determining the scope of the identification effort. For example, where portions of the APE have been subjected to archaeological survey using methods that conform to current professional standards, it may not be necessary to conduct additional fieldwork on those areas. Conversely, a more intensive effort reasonably would be expected for an APE that has been the subject of little or no previous archaeological study.

Federal agencies should evaluate the reliability and accuracy of any past work because that factor, as well as changing perceptions of significance, may affect what is considered "reasonable." In conducting such an evaluation agencies should recognize that archaeological work done prior to the 1992 amendments to National Historic Preservation Act may not have benefited from consultation with Indian tribes or Native Hawaiian organizations (NHOs). Accordingly, even though the APE appears to be well studied, any archaeological sites that had been identified previously, both those determined eligible and those found not eligible, may need to be reevaluated in consultation with SHPOs/THPOs, Indian tribes, or NHOs in order to fully appreciate the site's significance and value.

Review of existing information also assists in determining the types of eligible archaeological sites that might be present and their possible location. The lack of published regional archaeological information does not necessarily mean no eligible archaeological sites are present in the APE. When planning to conduct identification studies it is essential to consult with the SHPO/THPO, Indian tribes, or NHOs that might ascribe traditional religious and cultural significance to listed or eligible archaeological sites in the APE and others knowledgeable about the region and its past before any survey and field testing begins.

[Related questions:
- Why should federal agencies consult with other parties about archaeology?
- What is the role of applicants and their consultants/contractors in archaeology conducted under Section 106?
- What special role do Indian tribes and Native Hawaiian organizations have in evaluating properties?]

25. With whom should a federal agency consult in determining how to meet the "reasonable and good faith effort" regulatory standard?

In conducting its identification effort, federal agencies are required to consult with the SHPO/THPO to determine the scope of identification efforts, including the initial determination of the undertaking's area of potential effects, and to seek information from consulting parties and others about historic properties and effects to them. Federal agencies should also gather information from Indian tribes or NHOs to assist in identifying properties of traditional religious and cultural significance to them within the APE that may be eligible for the National Register.

However, federal agencies should be aware that "an Indian tribe or NHO may be reluctant to divulge specific information regarding the location, nature, and activities associated with such sites" [36 CFR § 800.4(a)(4)]. Accordingly, consultation with the SHPO/THPO, Indian tribes, NHOs, and other consulting parties should begin well before the archaeological survey is performed and continue until identification has been completed. This also means, in some cases, consultation with only the SHPO may not be sufficient to develop an appropriate scope of work for the identification and evaluation of archaeological sites.

Because Indian tribes and NHOs determine what properties are of traditional religious and cultural significance to them, it is particularly important to reach out to Indian tribes and NHOs to determine their level of interest in the undertaking and its potential to affect any such properties before initiating any archaeological field work. Failure to do so could result in the agency taking what may be inappropriate actions, such as the removal of materials from, or insensitive treatment of, historic properties or could result in the agency having to conduct additional or supplementary identification studies later in Section 106 review.

[Related questions:
- Who consults with whom, and how?
- What is the role of applicants and their consultants/contractors in archaeology conducted under Section 106?]

26. How are disputes about the "reasonable and good faith effort" standard resolved?

Federal agencies should seek the advice, guidance, and assistance of the ACHP in resolving disputes with other consulting parties on its level of effort to identify and evaluate historic properties [36 CFR § 800.2(b)(2)]. Since the ACHP established this standard, its views on what constitutes an appropriate level of effort to identify eligible archaeological sites deserves careful consideration in the Section

106 process. In the end, however, the ACHP's views are advisory and the federal agency makes the final decision about how much work is enough.

27. Why is the "area of potential effects" (APE) important in identifying eligible archaeological sites?

The APE is the geographic area(s) within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking [36 CFR § 800.16(d)]. Because the APE defines the geographic limits of federal agency responsibility for purposes of Section 106 review, archaeological survey necessary to identify and evaluate historic properties is carried out within its boundaries. Within the APE, however, the level of effort may vary considerably depending on such factors as anticipated effects and prior ground disturbance.

28. How is the area of potential effects (APE) determined?

The APE is defined by the federal agency, in consultation with the SHPO/THPO, prior to initiating identification efforts. It is therefore a good idea to start out with an APE that is reasonably broad enough to capture the full geographic extent of the undertaking's effects, and reassess it as more information is gathered.

An effect to a historic property occurs when an undertaking will alter those characteristics of the property that qualify it for the National Register [36 CFR § 800.16(i)]. In developing the APE for an undertaking, consideration must be given to those effects that will occur immediately and directly as well as those that are reasonably foreseeable and may occur later in time, be farther removed in distance or be cumulative, but still result from the undertaking.

The APE is not static, but should be adjusted as a federal agency further develops the details of the undertaking and learns more about potential historic properties and how they may be affected. The input of consulting parties is crucial to this informed revision and refinement of the APE throughout Section 106 review.

Most archaeological sites are considered eligible for the National Register principally under Criterion D, because of their potential to yield information "important in prehistory or history." This important information lies in the site's artifacts and features and their association (or context). Accordingly, any action that would alter a site's context would have an effect on its ability to yield information and thus its eligibility for the National Register. The most easily envisioned effect occurs when potential information (the site context) is threatened with destruction; the site or parts of it are bulldozed or plowed away.

Federal agencies, however, should not confuse delineation of the APE with the project's construction "footprint" since effects to archaeological properties are not restricted solely to direct physical impacts. By consulting with Indian tribes, NHOs, and others, the federal agency can ensure due consideration is given to all aspects of an archaeological site's National Register significance. This is especially important when the APE may contain archaeological properties of traditional religious and cultural significance to Indian tribes or NHOs, and/or that may be eligible for National Register listing under criteria other than Criterion D. Such properties, for example, could be affected not only through direct physical impact but also from the introduction of visual or atmospheric elements that would alter the property's setting and feeling.

[Related question:

- How do federal agencies meet the "reasonable and good faith effort" standard?]

29. Should the area of potential effects (APE) also be defined vertically?

Yes. Since an undertaking's effects are not restricted to the surface, in delineating the APE, a federal agency also should consider the potential for the undertaking's effects to occur above and below ground. Because the APE is three dimensional, agencies should consider how the undertaking might impact historic properties on the surface, above it, and below it.

In setting the APE's lower limits, the federal agency should rely on scientific and engineering analyses to define a depth beyond which alteration to any eligible or listed archaeological site, if present, is not reasonably expected to occur. This analysis should demonstrate that any such site, if present, would not be affected by the undertaking through changes in soil compaction or soil chemistry, for example. The challenge is to determine a vertical limit below which a knowledgeable person can reasonably say there will be no effect to the integrity of a site, should one be present.

The APE for construction of a surface parking lot, for example, might be quite shallow because its limited subsurface disturbance is unlikely to affect deeply buried archaeological properties. However, construction of an airport runway that is designed to support enormous weight, while still essentially a surface disturbance, could lead to compaction of buried archaeological properties, and thus would warrant testing to a greater depth.

In determining the geographic extent of the APE, the nature of the historic properties that might be present also should be considered to better understand the nature and magnitude of the effects that might apply. For example, a project that would construct over an eligible archaeological site deemed of religious and cultural significance to an Indian tribe may not cause physical damage to the property. However, depending on the property's significance, the proposed construction might be expected to diminish the property's integrity through loss of feeling or association. For this reason agencies are encouraged to consult early and be willing to refine the dimensions of the APE as more information is gathered during the course of Section 106 review.

[Related questions:

- How should federal agencies consider the likely nature and location of historic properties within the area of potential effects in determining the appropriate level of effort for identification?
- What kind of information is necessary to evaluate the eligibility of an archaeological site?]

30. What constitutes a "reasonable and good faith effort" to identify historic properties in accordance with the *ACHP's Policy Statement on Affordable Housing and Historic Preservation*?

Principle VIII of the ACHP's 2006 *Policy Statement on Affordable Housing and Historic Preservation* [Affordable Housing Policy, 72 FR 7387-7389] (http://www.achp.gov/polstatements.html) states that: "Archaeological investigations should be avoided for affordable housing projects limited to rehabilitation and requiring minimal ground disturbance."

Neither existing guidance from the Department of Housing and Urban Development [HUD; e.g., *Historic Preservation Fact Sheet #6, "When Should I do Archaeological Surveys?"* (http://www.hud.gov/utilities/intercept.cfm?/offices/cpd/environment/review/hpfactsheet06.pdf)] nor the ACHP's Affordable Housing Policy Statement provides a definition of what constitutes "minimal ground disturbance;" indeed, it is likely that a simple definition useful for purposes of affordable housing rehabilitation and applicable across the country is not possible. Rather than define the term the focus should properly be shifted to the question of whether or not an archaeological investigation

is needed in order to meet the "reasonable and good faith" regulatory standard for the identification of historic properties established by the ACHP's regulations.

In determining whether an archaeological survey is necessary, the ACHP's regulations set forth several factors that should be considered in meeting the "reasonable and good faith" test [36 CFR § 800.4(b)(1)]. Most importantly for purposes of affordable housing rehabilitation, these include consideration of the "magnitude and nature of the undertaking" and "the nature and extent of potential effects on historic properties."

Consider the magnitude and nature of the undertaking: The ACHP's policy pertains solely to rehabilitation of existing building stock, not new construction, demolition, or redevelopment. Therefore, most work is limited to bringing existing housing stock up to local code standards. In doing this work, rehabilitation might take place on the interior and exterior of the building, as well as on utility connections between the building and the street.

Examples of common rehabilitation activities that can cause ground disturbance include, but is in no way limited to, foundation repair, installation of exterior foundation drainage, upgrading of existing utility lines, and the delivery and staging of materials to the housing site. Given the nature of the undertaking, ground disturbance associated with affordable housing rehabilitation activities typically is limited in scope and predictable. Accordingly, the broader the scope and more intense the previous construction activities, the less likely are new construction activities to affect historic properties.

Consider the nature and extent of potential effects to historic properties: Typically, utility trenches for affordable housing projects, especilly in urban contexts, traverse small front yards from the building directly to the street. Most front yards already have been disturbed from previous construction and the installation of infrastructure. Accordingly, the placement of new utility lines in existing trenches should result in minimal or no new ground disturbance, and absent special circumstances, it would be appropriate to conclude that a reasonable and good faith identification effort does not require any archaeological testing. Similarly, repair of building foundations usually takes place in areas disturbed during the original construction of the building. When such rehabilitation activities are confined to such previously disturbed areas, identification efforts should not require any archaeological testing.

When new utility lines are to be installed in new trenches it still may be appropriate some times to conclude that no archaeological testing is necessary to meet the reasonable and good faith identification standard. Again, the agency official, working with the housing sponsor, needs to take into account several factors. One is the scope and degree of disturbance experienced when the target building was constructed and its infrastructure installed, as most front yards would have already been disturbed by these activities. This factor should not be considered alone, but must be weighed against the size and depth of the new trench. As the width and depth of a new trench increases so does the scope of the ground disturbance.

Because there is always the potential for National Register-eligible archaeological sites to be adversely affected in housing rehabilitation involving ground disturbance, the housing agency official and housing sponsor should work with the SHPO when negotiating Memoranda of Agreements (MOAs) to develop a plan for post-review discoveries in accordance with the ACHP's regulations [36 CFR § 800.13].

Delivery methods and staging areas also have the potential to affect historic properties, but the scope of these activities also can be minimized. Delivery may vary from dumping construction material to the use of a forklift for unloading. Materials may be staged in yards or adjacent lots, but also can be placed on existing driveways or roadways. Proper equipment used under the right surface conditions

sized appropriately for the job helps to reduce ground disturbance, making it reasonable to conclude that archaeological testing is not warranted.

Affordable housing officials and project sponsors should consider ways to minimize ground disturbance with those who will be carrying out the rehabilitation projects. Exercising caution and common sense, in conjunction with adopting measures that limit ground disturbing activities, can minimize ground disturbance and support the position that a reasonable and good faith identification effort does not need to include archaeological testing.

[Related questions:
- What is the "reasonable and good faith effort" regulatory standard?
- How do federal agencies meet the "reasonable and good faith effort" standard?
- Should the area of potential effects (APE) also be defined vertically?]

D. DETERMINING WHICH ARCHAEOLOGICAL SITES ARE SIGNIFICANT: EVALUATION

31. How are eligibility determinations made in Section 106 review?

The regulations require the federal agency to apply the National Register eligibility criteria in consultation with the SHPO/THPO and any Indian tribe or NHO that attaches traditional religious and cultural significance to the property [36 CFR § 800.4(c)(1)]. During such consultation, a federal agency may use in-house expertise or rely on information and recommendations provided by applicants or consultants/contractors. The federal agency, however, is legally responsible for decisions on National Register eligibility.

Most eligibility determinations made within the Section 106 process are called "consensus determinations" because agreement between the federal agency and the SHPO/THPO is all that is required; no formal nomination to or listing on the National Register is necessary. Consensus determinations that properties are not eligible should also be documented so that consulting parties and the public have an adequate basis upon which to evaluate the agency decision.

When the federal agency and the SHPO/THPO disagree about eligibility, the opinion of the Keeper of the National Register must be sought [36 CFR § 800.4(c)(2)].

[Related questions:
- Why should federal agencies consult with other parties about archaeology?
- What special role do Indian tribes and Native Hawaiian organizations have in evaluating properties?]

32. What are the consequences of eligibility determinations in the Section 106 process?

The determination that an archaeological site is eligible for the National Register subjects it to Section 106 review. This means the federal agency must then decide if the undertaking will alter that property's qualifying characteristics, and if so, whether it will do so in a manner that will diminish the property's integrity. If the agency determines there could be an adverse effect, then the agency consults further on appropriate measures to avoid, minimize, or mitigate that effect to the property.

In order to carry out these steps effectively, it is essential that the federal agency fully identify a property's qualifying characteristics. To do so, the federal agency should explore the full range of National Register criteria that may apply to an archaeological site.

Frequently federal agencies just assume data recovery is the mitigation measure that should be automatically selected to resolve adverse effects to sites considered eligible solely under Criterion D. In fact, other measures, such as site burial, might be as appropriate. Given the inherent flexibility of the Section 106 process and its emphasis on resolution through consultation, a range of archaeological solutions usually should be considered.

[Related questions:
- What special role do Indian tribes and Native Hawaiian organizations have in evaluating properties?
- What information is needed to decide on treatment options?
- What issues should be considered when consulting about mitigation?]

33. What special role do Indian tribes and Native Hawaiian organizations have in evaluating properties?

The ACHP's regulations acknowledge the special expertise that Indian tribes and NHOs possess in assessing the National Register eligibility of properties that may be of traditional religious and cultural significance to them [see 36 CFR § 800.4(c)(1)]. This means that the tribe's or NHO's opinions about, or position on, the National Register significance of a particular archaeological site as a property of traditional religious and cultural significance to that tribe or NHO should be given due consideration by the federal agency in making a final determination on eligibility.

[Related questions:
- What is the ACHP's policy on dealing with burial sites, human remains, and funerary objects?
- What is Section 106 consultation?
- Why should federal agencies consult with other parties about archaeology?
- What happens when a consulting party cannot or will not provide its views?]

34. What kind of information is necessary to evaluate the eligibility of an archaeological site?

Archaeological sites often, but not always, require some limited exploration to gather information needed to make an evaluation. However, there is a distinction between "testing" archaeological properties for identification and evaluation and "excavating" them for purposes of data recovery. Testing is aimed at determining if the site should be considered eligible for listing in the National Register. Generally, when testing an archaeological site, only a very small sample need be disturbed, but this varies on a case-by-case basis. While it is impossible to define a hard and fast standard, a rule of thumb is that testing is sufficient when enough is known about the nature, size, limits, and contents of the site to judge its significance and integrity against the National Register criteria.

Evaluation under each of the criteria should be done according to the professional standards of practice. The National Register Bulletin No. 36, "Guidelines for Evaluating and Registering Archeological Properties" (www.cr.nps.gov/nr/publications/bulletins/arch/), addresses the kinds of information needed to evaluate an archaeological site under the National Register criteria.

[Related questions:
- Is every archaeological site eligible for the National Register?
- Can you evaluate archaeological sites under Criteria A-C in addition to D?
- Does the presence of human remains make an archaeological site eligible for the National Register?]

35. Is a National Register nomination form required in a Section 106 evaluation of eligibility?

No. Section 106 eligibility determinations do not require filling out any National Register forms. However, the kinds of information called for in the forms, such as information on a property's boundaries, area(s) and period(s) of significance, integrity, deposits, and National Register criteria being considered are essential to making eligibility determinations under Section 106.

36. Is every archaeological site eligible for the National Register?

No. Not every archaeological site is eligible for the National Register because not all archaeological sites possess both significance and sufficient integrity to be considered eligible. Sites may be deemed *important* to a group or community, or people may feel that, as a place of ancestral occupation or activity these sites possess a *value* that should be recognized. However, in neither case does this automatically translate or equate to the requisite *significance* for National Register eligibility purposes.

To be eligible for listing on the National Register, archaeological sites must meet at least one of the four National Register criteria (A through D) established by the National Park Service and possess integrity. Significance relates to a historic property's ability to meet at least one of the criteria. As with any other kind of historic property, listed or eligible archaeological sites must be associated with significant events (Criterion A), or be identifiable with specific, important individuals (Criterion B), be of a distinctive type or period or have artistic value, or be a component of an identifiable historic district (Criterion C), or "have yielded or have the potential to yield, information important in prehistory or history" (Criterion D, as quoted from the regulations). When determining significance under criterion D, one must keep in mind that while all archaeological sites can yield some kind of information, the key is to determine if that information is *important.* Importance is best assessed when considered within a framework of a historic context.

Integrity is the ability of the property to convey significance through physical features and context. According to the National Register Bulletin No.36, "Guidelines for Evaluating and Registering Archeological Properties" (www.cr.nps.gov/nr/publications/bulletins/arch/),

> Integrity of location, design, materials, and association are of primary importance [for sites being considered] under Criteria A and B. Design, materials, and workmanship are especially important under Criterion C. Under Criteria C and D, integrity of setting adds to the overall integrity of an individual site and … district.

For example, context, or the association of artifacts, features, and other site characteristics, is considered essential for the archaeological site to convey information about the past (Criterion D). The context of an archaeological site subjected to regular plowing or looting may be sufficiently disrupted so that the site no longer possesses integrity of association. On the other hand, for an archaeological site where a significant event took place (for example, consideration under Criterion A) integrity of feeling and setting may be more critical than association.

Consequently, a site with excellent associative integrity still may not be eligible if several other similar sites have already been studied, because the kind of information it could provide is considered redundant, and/or not currently important to history or prehistory. [For more detailed information about, and examples of, integrity refer to National Register Bulletin No. 36, "Guidelines for Evaluating and Registering Archeological Properties" cited above].

[Related questions:

- What kind of information is necessary to evaluate the eligibility of an archaeological site?
- Can you evaluate archaeological sites under Criteria A-C in addition to D?]

37. Can you evaluate archaeological sites under Criteria A through C in addition to D?
Yes, it is possible for an archaeological site to be eligible under Criteria A, B, C, and D. The ACHP's Section 106 regulations call for the federal agency to consider how all of the National Register qualifying characteristics of a historic property may be affected by the undertaking [36 CFR § 800.5(a)(1)]. Accordingly, when conducting its evaluation, a federal agency should determine the full range of criteria that may apply to a property. National Register Bulletin No. 36, "Guidelines for Evaluating and Registering Archaeological Properties" (www.cr.nps.gov/nr/publications/bulletins/arch/), lays out a step-by-step process for evaluating sites under all of the criteria and provides useful examples.

[Related question:
- What special role do Indian tribes and Native Hawaiian organizations have in evaluating properties?]

38. Does the presence of human remains make an archaeological site eligible for the National Register?
Human remains, associated funerary objects, and the sites where they are found possess *values* beyond their importance as sources of information about the past. National Register Bulletin No. 36, "Guidelines for Evaluating and Registering Archaeological Properties" (www.cr.nps.gov/nr/publications/bulletins/arch/), also notes this distinction between an archaeological site's National Register *significance* and other *values* it may exhibit. Therefore, Section 106 users should be aware that even when a property has been determined eligible for the National Register only under Criterion D, the special nature of burials, which are widely recognized in law and practice as having special qualities, may also possess a value to living groups that extends beyond the interests of archaeological research. Burial sites may be considered properties of traditional religious and cultural significance to Indian tribes or NHOs, which could make the site eligible for the National Register under more than simply Criterion D. See National Register Bulletin No. 41, "Guidelines for Evaluating and Registering Cemeteries and Burial Places" (www.cr.nps.gov/nr/publications/bulletins/nrb41/) for further guidance.

For further direction in navigating the difficult and sensitive issues associated with the treatment of burial sites and human remains, see the ACHP's "Policy Statement Regarding the treatment of Burial Sites, Human Remains, and Funerary Objects" (http://www.achp.gov/news022307hr.html).

[Related questions:
- What is the ACHP's policy on dealing with burial sites, human remains, and funerary objects?
- What special role do Indian tribes and Native Hawaiian organizations have in evaluating properties?]

39. When should an agency reevaluate the National Register status of archaeological sites?
According to the ACHP's regulation, "[t]he passage of time, changing perceptions of significance, or incomplete prior evaluations may require the agency to reevaluate properties previously determined eligible or ineligible" [36 CFR § 800.4(c)(1)]. In deciding if reevaluation is warranted, a federal agency should consider the following questions, among others:

- How long ago was the determination made?
- Were Indian tribes or NHOs consulted about the eligibility of the archaeological site during the initial evaluation?
- Have Indian tribes or NHOs been consulted to determine if the archaeological site may be of traditional religious and cultural significance to them?

- What relevant physical changes to the archaeological site have occurred since the initial determination of eligibility was made?
- Does the archaeological site still possess integrity?

40. Is the loss of access by archaeologists to listed or eligible archaeological sites an adverse effect under the ACHP's regulations?

Some Section 106 stakeholders take the position that indefinite loss of access by archaeologists to known listed or eligible archaeological sites resulting from burial of the site under a road, parking lot, building, or other relatively permanent feature constitutes an adverse effect. They argue that since these historic properties will be unavailable for study indefinitely, the loss of access by archaeologists prevents a site that is eligible under Criterion D from yielding its "information important in prehistory or history." Some use this argument to support the notion that there is no limit to the depth of the area of potential effects. This argument concludes that federal agencies have an obligation under Section 106 to search for and evaluate deeply buried sites, even though such sites might lie below the depth of a particular undertaking's APE.

Such a position is not consistent with the ACHP's Section 106 regulations, which state that an adverse effect occurs when:

> an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register of Historic Places in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. [36 CFR § 800.5(a); emphasis added].

Accordingly, an action that will cause an adverse effect is one that will diminish an eligible or listed archaeological site's integrity. Since loss of access by archaeologists for study is unlikely to alter the qualifying characteristics of a National Register listed or eligible archaeological site in such a way as to diminish that property's integrity, it generally will not be considered an adverse effect by the ACHP.

E. REACHING AGREEMENT ON APPROPRIATE TREATMENT

41. What information is needed to decide on treatment options?

Consulting about possible options to resolve adverse effects should begin with basic information about the eligible or listed archaeological site and the nature of the federal undertaking. At this point in consultation, the federal agency has already determined the property is eligible for listing or is listed on the National Register. This basic National Register information—the property's boundaries, its integrity, all of its qualifying characteristics, and period(s) of significance—is critical to evaluate the appropriateness of measures proposed to avoid, minimize, or mitigate the adverse effects.

In many cases, federal agencies will be bound by other federal, tribal, state, or local laws, such as the Native American Graves Protection and Repatriation Act (NAGPRA—see www.cr.nps.gov/nagpra/) or state burial laws, that may dictate how the listed or eligible archaeological sites, especially those that contain human remains or funerary objects, are treated. The federal agency must identify and follow applicable laws and implement any prescribed provisions.

[Related questions:
- What is the role of applicants and their consultants/contractors in archaeology conducted under Section 106?
- What issues should be considered when consulting about mitigation?]

42. When is data recovery the appropriate treatment?

One of the strengths of the Section 106 consultation process is that there is no predetermined outcome. This means that a range of solutions is usually available for consideration by consulting parties. Contrary to the view held by some Section 106 practitioners, data recovery is not required by law or regulation. It is, though, the most commonly agreed-upon measure to mitigate adverse effects to archaeological sites eligible or listed under Criterion D, as it preserves important information that will otherwise be lost.

Under the ACHP's Section 106 regulations, an adverse effect occurs when:

> an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association [36 CFR § 800.5(a)(1)].

When an undertaking will diminish the historic property's integrity by destroying all or part of it, information contained in the property will be lost. Data recovery preserves at least some of that information. Thus, if the site cannot be avoided and preserved in place, and the federal agency determines it is eligible for the important information it contains and should be retrieved, some agreed-upon level of data recovery, analysis, curation, and reporting is appropriate in order to preserve that important information for the benefit of future generations.

43. What issues should be considered when consulting about mitigation?

An important goal of Section 106 consultation to resolve adverse effects is to identify an outcome that represents the broader public interest. Key issues in determining appropriate resolution of adverse effects include:

- What is in the public interest?
- What are the benefits to, or concerns of, the consulting parties, those they represent, and those who ascribe importance and value to the property?
- If the proposed mitigation is designed to advance our knowledge about the past, how will this knowledge be provided to the public, to schools, to tribes or NHOs, and to professional archaeologists?
- Will it enhance the preservation and management of listed or eligible archaeological sites in a region?

Related questions that should be considered by the federal agency and consulting parties include the following:

Why is the affected listed or eligible archaeological site important? Listed or eligible archaeological sites can be important for, among other reasons, their scientific or educational potential, their nature as traditional or sacred sites, or their potential as heritage tourism assets. Typically, archaeological sites are considered eligible for listing under Criterion D (they contain important information), but they are sometimes eligible under other criteria. Consideration of these various aspects of a site's importance in the consultation process creates opportunities for alternative treatments, in keeping with the concerns of the consulting parties.

How is the importance of one historic property judged relative to that of other properties? When making decisions about the value of one archaeological site versus another, it is important to consider

relative potentials of each to yield important information; significant gaps in knowledge that each property can fill; the National Register criteria represented by each site; and whether one property embodies multiple significance, to several groups, thus perhaps giving it a higher preservation priority. Federal, tribal, and state management or preservation plans may provide information on priority lists of research questions, important information gaps, archaeological site types, and other information that can help with this comparative analysis.

Does the affected property have potential to contain human remains? The potential for an archaeological site to contain human remains or funerary objects that will be disturbed should be evaluated before alternative mitigation can be considered. It is the ACHP's policy that human remains should not be knowingly disturbed unless absolutely necessary. However, if they must be disturbed, the remains should be removed carefully, respectfully, and in a manner developed in consultation with others as specified in the ACHP's regulations (See ACHP's "Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects" at (www.achp.gov/docs/hrpolicy0207.pdf)).

[Related questions:
- What are a federal agency's responsibilities under Section 106 of the NHPA?
- What is the ACHP's policy on dealing with burial sites, human remains, and funerary objects?
- What are the consequences of eligibility determinations in the Section 106 process?
- What special role do Indian tribes and Native Hawaiian organizations have in evaluating properties?
- How can federal agencies find out about appropriate treatment options and alternatives?]

44. What is "alternative" or "creative" mitigation?

These terms refer to alternatives to archaeological data recovery as mitigation for an undertaking's adverse effects. Such approaches can either be implemented alone or as part of a broader mitigation package. Examples of such alternatives may include:

- preserving selected eligible archaeological sites and incorporating them into heritage tourism plans while allowing others to be lost;
- burying sites under fill or incorporating them into the undertaking;
- using resources to develop syntheses of existing information on a region or area instead of, or in addition to, using them on data recovery;
- use of barriers to route traffic away from eligible archaeological sites;
- using resources to develop virtual or Web-based reports or educational media that otherwise would not be produced.

Another example of these alternatives is archaeological "mitigation banking." This term refers to the acquisition and preservation of archaeological sites away from the project area in return for doing little or no direct mitigation on sites within the area of potential effects.

This concept of "alternative" or "creative" mitigation is consistent with the definition of "mitigation" as used in the National Environmental Policy Act regulations of the Council on Environmental Quality [Section 1508.20(c)-(e)], where it includes:

> (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
> (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and

(e) Compensating for the impact by replacing or providing substitute resources or environments (i.e., "off-site mitigation").

45. Are there advantages to considering alternative mitigation?

There is no prohibition against alternative treatments in the ACHP's Section 106 regulations, and the law does not prescribe any specific measures to resolve adverse effects. The regulations [36 CFR § 800.6(a)] leave development of these measures to the federal agency consulting with other parties, calling for them to "develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties."

Recovery of an eligible or listed archaeological site's important information, and/or redirecting resources toward other preservation goals identified as more critical, is consistent with the purposes of the broader federal historic preservation program as set out in Sections 1 and 2 of the National Historic Preservation Act (NHPA). Other sections of the NHPA and guidance call for mitigation but are not specific. Section 110(b) of the NHPA calls for federal agencies to make "appropriate records … for future use and reference." This is reiterated in Standard 6 of the "Secretary of the Interior's Standards and Guidelines for Federal Agency Historic Preservation Programs" (http://fpi.historicpreservation.gov/TechnicalInfo/HistPres/FedAgencyGuidelines.aspx), which calls for agencies to "provide for appropriate recording of the historic property." Data recovery, however, is not the only way to construct a record when archaeological properties will be adversely affected by an undertaking.

The ACHP supports consideration of alternative mitigation and notes that:

> Appropriate treatments for affected archaeological sites, or portions of archaeological sites, may include active preservation in place for future study or other use, recovery or partial recovery of archaeological data, public interpretive display, or any combination of these and other measures [From the ACHP's "Recommended Approach for Consultation on Recovery of Significant Information from Archeological Sites" (www.achp.gov/archguide.html)].

In reaching decisions about appropriate treatment measures, federal agencies should weigh a variety of factors, including significance of the historic property, its value and to whom, and associated costs and project schedules. As mitigation decisions reached through consultation represent the broader public interest, they should be considered appropriate so long as they are legal, feasible, and practical.

By considering alternatives to data recovery, federal agencies can address how the community or the general public best benefits from the expenditure of public funds for preservation treatments. The public may derive greater benefit from a variety of data recovery alternatives or a combination of more limited data recovery and exhibits on excavation, brochures, site tours, public lectures, Web sites, documentary videos, and history modules for use in schools. Using these means to achieve broader public involvement can lead to increased appreciation of the past and a greater willingness to expend public funds in the pursuit of preservation goals.

46. How can federal agencies find out about appropriate treatment options and alternatives?

The ACHP encourages federal agencies, SHPOs/THPOs, Indian tribes, and NHOs, to develop priority lists of preservation strategies, mitigation plans, or programs for ready consideration in the consultation process. Many land managing agencies have preservation or management plans that contain lists of priority activities that could be implemented with sufficient resources. SHPOs have state preservation plans that set forth what is known about the history of their state, provide historic contexts for making decisions about significance, and identify gaps in archaeological knowledge. Some THPOs and tribes have, or are developing, preservation plans for tribal lands that may be

considered in consultation to resolve adverse effects. These kinds of plans, particularly those developed in consultation with other preservation stakeholders, are important to consider in providing a context for making site-specific treatment decisions.

[Related questions:
- Why should federal agencies consult with other parties about archaeology?
- What is the role of applicants and their consultants/contractors in archaeology conducted under Section 106?
- How can federal agencies foster more informed participation by stakeholders in consultation about archaeology?]

F. COMPLETING THE SECTION 106 PROCESS

47. What are a federal agency's responsibilities to complete Section 106 review?

A federal agency's responsibilities are met when the agency has completed the Section 106 process. If a Section 106 agreement has been executed, such completion includes implementation of those stipulations or provisions contained in the agreement (e.g., completion of a data recovery plan, analysis and curation of retained materials, final reporting of results in professional and public formats). Procedurally, the federal agency must be able to demonstrate it identified the appropriate consulting parties, provided them with adequate documentation [36 CFR § 800.11] so they were able to participate in consultation effectively, and provided a reasonable opportunity for consulting parties to exchange views about the identification of historic properties, the assessment of effects to them, and the resolution of adverse effects, as required under the ACHP's Section 106 regulations.

[Related question:
- What are a federal agency's responsibilities under Section 106 of the NHPA?]

INDEX OF QUESTIONS ADDRESSED:

III. QUESTIONS AND ANSWERS ABOUT SECTION 106 ARCHAEOLOGY

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1. What are a federal agency's responsibilities under Section 106 of the NHPA?
2. What is the role of the federal agency official in the Section 106 process?
3. What is the ACHP's policy on dealing with burial sites, human remains, and funerary objects?
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12. What is the role of applicants and their consultants/contractors in archaeology conducted under Section 106?
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19. What is the "reasonable and good faith effort" regulatory standard?
20. How do federal agencies meet the "reasonable and good faith effort" standard?
21. How should federal agencies consider the magnitude and nature of the undertaking, and the degree of federal involvement, in determining the appropriate level of effort for identification?
22. How should federal agencies consider the nature and extent of potential effects on historic properties in determining the appropriate level of effort for identification?
23. How should federal agencies consider the likely nature and location of historic properties within the area of potential effects in determining the appropriate level of effort for identification?
24. How should federal agencies consider past planning, research, and studies in determining the appropriate level of effort for identification?
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27. Why is the "area of potential effects" (APE) important in identifying eligible archaeological sites?
28. How is the area of potential effects (APE) determined?
29. Should the area of potential effects (APE) also be defined vertically?
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D. Determining which archaeological sites are significant: Evaluation

31. How are eligibility determinations made in Section 106 review?
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39. When should an agency reevaluate the National Register status of archaeological sites?
40. Is the loss of access by archaeologists to archaeological properties an adverse effect under the ACHP's regulations?

E. Reaching agreement on appropriate treatment

41. What information is needed to decide on treatment options?
42. When is data recovery the appropriate treatment?
43. What issues should be considered when consulting about mitigation?
44. What is "alternative" or "creative" mitigation?
45. Are there advantages to considering alternative mitigation?
46. How can federal agencies find out about appropriate treatment options and alternatives?

F. Completing the Section 106 process

47. What are a federal agency's responsibilities to complete Section 106 review?

Box 11-5

We look around us and see a landscape greatly altered by human activity. Yet let us imagine that a geologist, a far distant descendant of today's humans or, what is more likely, an alien from another world, comes to earth 100 million years from now. What evidence would our geological traveler find that would mark the fact that we, living in the 21st century, once inhabited the earth?

Geologist Jan Zalasiewicz has pondered this very question. He suggests that no hint of our tenure on this planet will be seen on the earth's surface. "Our planet is too active, its surface too energetic, too abrasive, too corrosive, to allow even (say) the Egyptian Pyramids to exist for even a hundredth of that time."[1] Yet, perhaps,some hint of our existence may be found in the sedimentary layers lying deep within the earth, brought to the surface by erosion and tectonic activity. What features of these sedimentary layers would provide the necessary clues?

The divisions of the geological time scale are defined in terms of major geological and paleontological events that can be observed in the layers of the earth. Many geologists have recently proposed that a new epoch be added to the geological time scale: the **Anthropocene.** The key events that would mark this new epoch would be signals of human activity that would be preserved in the stratigraphic record. These signals include human activities that have altered the earth to such an extent that geologists millions of years in the future will be able to spot signs of humankind's passing.

Future geologists will be able to see the results of earlier human presence by noting unique changes in the landscape caused by mining, road building, leveling of mountains, and the rapid building up of sediments behind river dams. Geochemical analysis will reveal the sudden appearance of chemical signals such as a layer of mercury associated with 1980s coal plants. Future paleontologists will observe the rapid extinction of a great many species in the fossil record and a major reduction in plant and animal diversity. Sedimentary beds will be formed from unique soil types caused by organic matter enrichment, cultivation, and overgrazing.

There is some debate as to when the beginning of this epoch should be set. Some suggest that it should begin at the start of the Industrial Revolution, but others feel it should be extended back to the beginnings of agriculture, and perhaps earlier. A proposal to add the Anthropocene to the Geological Time Scale has been formally made to the Stratigraphy Commission of the Geological Society of London. The proposal is awaiting further study.

[1] J. Zalasiewicz, *The Earth After Us: What Legacy Will Humans Leave in the Rocks?* (Oxford: Oxford University Press, 2008), p. 15.

From: Philip L. Stein and Bruce M. Rowe, *Physical Anthropology* 11th ed., New York: McGraw-Hill, 2014, page 261.

From:	Abe Weitzberg
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01); Fellows, Merrilee (HQ-LD000); peter.zorba@nasa.gov
Subject:	DEIS Comments
Date:	Monday, August 26, 2013 2:20:22 PM
Attachments:	DEIS Comments0001.pdf

Attached are my comments on the DEIS. I look forward to summarizing them in person at the public meetings.

Abe

_____

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August 26, 2013

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Re: Comments on Draft Environmental Impact Statement for Proposed Demolition and Environmental Cleanup Activities at Santa Susana Field Laboratory, July 2013.

Dear Mr. Elliott,

I am pleased to submit these comments and express my deep concern over the contents of the DEIS and the negative impacts of both of the two alternatives that are evaluated.

The document and the process that created it are flawed by the political interference that caused the removal from consideration of alternatives intermediate between two unacceptable extremes. The Proposed Soil Cleanup to Background/Detect would have significant negative environmental impacts and the No Action would leave contamination in place that most would agree should be removed. Surprisingly, the No Action appears to have far fewer negative environmental impacts than the proposed action.

Additionally, because the re-evaluation of significant negative impacts 'After Implementation of Best Management Practices and Mitigation Measures' for two resource areas, Cultural Resources and Biological Resources, are dependent only on the results of future consultations, there is significant uncertainty in the ultimate evaluation of these impacts. The possibility of additional behind-closed-doors political influence/coercion affecting these consultations is real, based on the actions leading to the removal of the alternatives from this DEIS.

The DEIS itself is overly optimistic and minimizes the amount of soil to be removed by neglecting the likely impacts of the very low soil remediation trigger levels coupled with the extensive confirmation sampling that would be required. Note that DTSC has stated that when the chemical LUT values were applied to the background locations false positives in the range of 20-25 percent were observed. The minimization of soil removal is further compounded by the assumption that all Best Management Practices and Mitigation Measures would be 100% effective in eliminating the negative environmental impacts. As will be discussed in later comments this is highly unlikely.

Finally, the removal of two feet of soil, with all of its lifeforms, from large portions of the NASA areas together with deeper excavations down to bedrock, plus replacement of only one-third of the removed volume would significantly reconfigure the landscape and could be characterized as

'moonscaping.' The likely unavailability of replacement soil meeting the SSFL cleanup requirements is also ignored in the DEIS, as the soils listed in the document have not been tested and found to be acceptable.

The focus of the majority of my comments is on the excessive negative environmental effects of the soil removal and transport to meet the requirements of the 2010 Agreement on Consent Cleanup to Background or Detect. The DEIS does not address the cost or schedule implications of this approach with constraints imposed by realistic budget expectations. This would likely extend the short term negative impacts of the remediation until they become long term, as the DEIS optimism is replaced by reality. Additionally, it is possible that the cumulative impacts of the remediation to be performed by DOE and Boeing when added to the NASA actions significantly exceed the estimates included in this DEIS. This is further complicated by the fact that the much larger Boeing areas will be remediated to Suburban Residential soil standards, with levels higher than the very low AOC LUT values. After the passing of time, soils from the Boeing areas will migrate to the other areas by wind and water mechanisms, negating any positive effects of the AOC soil remediation.

Optimism in all resource areas unrealistically overestimates the long-term benefits of Best Management Practices and Mitigation Measures, and attributes unquantified and unjustified cumulative future benefits of remediation actions in the Biological Resources, Health and Safety, Water, and Hazardous and Nonhazardous Materials and Waste resource areas. In practice, because of the high levels of naturally occurring dioxin, arsenic, and radionuclides in SSFL soils, the removal of contaminants above background and detect levels, only in about one-fourth of the NASA project site area, will not significantly change the overall risk. The claims of long-term moderate or significant benefits are unjustified. It is not sufficient to simply state that the removal of non-treatable soils or unquantified possible reductions in groundwater contaminant concentrations would have a long term benefit by reducing the potential for contaminant exposure or bioaccumulation, ***without first showing there is a present risk and it will be significantly reduced by the proposed action.***

The potential long-term benefits of the proposed soil remediation can be quantitatively shown to be truly negligible by noting that the 105 acres assumed to be remediated by NASA represents only about four percent of the total SSFL site area. Since the elevation of 'The Hill' varies between 700 and 1500 feet above the valley floor, we can assume a 1000 foot average and conservatively overestimate that NASA removes the top ten feet of soil which gives another factor of one percent. Thus 0.9996 of the background levels of radionuclides and chemicals would remain in place after remediation. We know from the background studies that the total agricultural cancer risk from radionuclides and chemicals is about 0.05 and that the remediation only addresses soil with contaminants above background or detect. Most of these local contaminants have risks in the 10^{-3} to 10^{-6} range, which are 50 to 50,000 times less than background risk. Removing these contaminants from the small fraction of soil leaves the total site risk essentially unchanged, and does nothing to lessen the potential for contaminant exposure or bioaccumulation in humans or wildlife.

The DEIS correctly states that all groundwater cleanup activities would alter existing water quality conditions appreciably and negatively. However, the claims of moderate, beneficial,

regional, and long term impacts are unreasonable. Considering the very large amounts of contamination present in the fractured bedrock and the long time horizon for their removal, up to 50,000 years, one could more accurately say that no meaningful changes would occur in the foreseeable future. This assumes that pumping is continued to ensure that contaminant plumes do not move away from the site.

If, as the DEIS clearly states, the Proposed Action has unacceptable short-term environmental impacts and the No Action Alternative leaves SSFL with too much contamination, the DEIS does not present viable alternatives to either the public or the decisionmakers. It should therefore be revised to include at a minimum those alternatives that were removed, which should then be prudently applied consistent with the ultimate planned use of the site.

Specific comments following the content of the DEIS are included as an attachment to this letter.

Sincerely,

Abraham Weitzberg, Ph.D.

w/ Attachment

Attachment A

Detailed Comments on Draft Environmental Impact Statement for Proposed Demolition and Environmental Cleanup Activities at Santa Susana Field Laboratory, July 2013

The following comments are listed in the order of the information as presented in the DEIS. There may be duplication between comments made on the Executive Summary and on the body of the document.

Page ES-2,

The CEQ letter states "*CEQ encourages agencies to carry out robust alternatives analyses that consider **all reasonable alternatives**, including those that are not within agencies' authorities. The real focus, however, must always be on a **meaningful consideration of alternatives**.*

and

In view of NASA's administrative cleanup resolution with the State of California, which turns upon NASA's commitment to clean the site to local background levels, CEQ's view is that – under this rule of reason – NASA is not compelled to consider less comprehensive cleanup measures as alternatives."

While NASA is not compelled to evaluate other alternatives, it is not forbidden from doing so. Without the intervention of Senator Boxer, as reported in the press, NASA would have evaluated robust alternatives without the negative impacts of both the proposed action and the no-action alternative. The AOC cleanup is infeasible and the No-Action, although undesirable, may be preferable.

For the record, the AOC soil requirement is ***cleanup to background or detect, without any consideration of risk***, not simply 'cleanup to background."

Page ES-4, Section ES-3. 1.2

NASA correctly states: *"Currently, excavation and offsite disposal is the only proven remedial technology to meet 2010 AOC standards..... even if one in the class is not able to be treated, then the class is considered non-treatable.....In the vast majority of contaminated areas on NASA-administered land at SSFL, the top 2 feet (ft) of soil contain non-treatable chemicals and cannot be remediated using any of the technologies. The only way to get the non-treatable chemicals to background levels (2010 AOC requirements) is by excavating and disposing the soil offsite and offsite disposal–an estimated 320,000 cubic yards (yd^3)."*

The capability of any treatment technology to meet the very low AOC requirements in any reasonable time period is not credible. The estimated 500,000 cubic yards should be used as a minimum value of soil to be removed, because the full impact of the AOC requirements plus the confirmation sampling is unknown at this time.

Page ES-5, Table ES-2

Beneficial Impacts on Biology and Hazardous Waste, as claimed in the Table, are nowhere discussed in detail and justified in the body of the report. Similarly, the acknowledged significant negative impacts are assumed to be uniformly reduced to moderate, minor, or negligible by use of Best Management Practices or Mitigation Measures which are assumed to be 100% successful. Such an assumption is unreasonable and unwarranted. As discussed in the cover letter, because of the high naturally occurring background concentrations of dioxin, arsenic and radionuclides in the soil, little net benefit from the remediation can be anticipated. The next two feet of soil will have almost the same or perhaps greater risk than the soil that is removed.

Section ES-5.1

Significant negative impacts are presented in detail.

Page ES-8, Section ES-5.2

Moderate negative impacts are presented in detail.

Page ES-9, Section ES-5.2.4

Moderate beneficial impacts are gratuitously inserted into the paragraph without any examples or substantiation. Such an apparent assumption is not warranted. Note there are no regional benefits claimed, although this is what motivates the long-time community activists.

Page ES-10, Section 5.3.3

Long-term beneficial impacts are assumed because the waste is removed from the site, but no information is presenting demonstrating that it now poses a risk on-site. In fact, the AOCs have been interpreted to preclude any risk assessment without language so stating. Without risk assessment, how can NASA claim that risks will be reduced?

Page ES-11, Table ES-4

This table is worthless and provides mis-information to the public and the decisionmakers. Without substantiation, most negative impacts are reduced as a result of Best Management Practices and Mitigation Measures based on an assumption, and all of the beneficial impacts are restated without justification.

Page ES-15, Table ES-5

For Biological Resources it seems strange to claim moderate, beneficial cumulative impact from removing contamination, when you have killed/removed all of the biological resources.

For Water Resources, it seems very questionable that possible small improvements in water quality in an area that is not anticipated to have residents that would subsist on the ground water could have significant beneficial impacts.

For Hazardous and Nonhazardous Materials and Waste, how is a significant, beneficial impact justified, when the waste may not now pose a significant risk. This would be particularly true for any waste that is currently buried on-site.

Page ES-16, Section ES-8.0

NASA states: "***The analysis assumes that the technologies considered are feasible, implementable, and effective……..***" If it is likely that, for the very low AOC cleanup levels, the technologies are infeasible, non-implementable, and ineffective, why is this not reflected in the DEIS?

Page ES-17, Section ES-12.0

NASA states: ":.. ***cleanup of soils to Look-Up Table values, would provide a beneficial long-term impact for the overall reduction of contaminants across the site and reducing exposing risk to wildlife and humans.***" There has been no case made that these contaminants now pose a risk to wildlife and humans, particularly in light of the high natural background of some of these contaminants. If NASA does not establish the current risk, how can they claim a future reduction from their proposed actions?

Page 2-19, Section 2.2.2.3

Document does not declare that the referenced replacement soils have been tested and found to meet the AOC requirements. Based on the failure of other candidate soils to meet the requirements, it must be assumed that these may not be found to be suitable.

Table 2.2-5

Why is the replacement of only one-third of the removed soil acceptable? What are the impacts of so altering the landscape and drainage?

Page 2-33, Section 2.4

Why did NASA eliminate the broad range of alternatives, as viable alternatives? It is clear that they have substantially less negative environmental impacts and meet cleanup criteria that are generally accepted throughout the United States.

Page 2-36, Section 2.4.1.4

When translating soil volumes into trucks, the analysis does not appear to take into account the fact that since there are far fewer trucks bringing replacement soil than are needed to remove excavated soil, the number of trucks to be considered in traffic studies must include the empty trucks that also will drive to and up Woolsey Canyon Road.

Page 4-27, Table 4.3-1

The impact on Cultural Resources is significant and negative. Mitigation measures would not eliminate negative impacts and one most assume that consultation will not alter the situation, unless there is political interference.

Page 4-36 and Page 4-49, Table 4.4-1

The assessment of impact on Wildlife from removal of non-treatable soils as moderate, beneficial, regional, and long-term by reducing the potential for contaminant exposure or bioaccumulation is a gratuitous fabrication, unless there is some evidence that such effects are or have been observed.

Since the vast majority of the impacts listed are negative, how can the whole be listed a beneficial? The analysis borders on fraud.

Page 4-54

Project Trip Generation –

Construction workers carpooling is a non-conservative estimate. By personal observation, they usually drive individually in pickup trucks rather than carpooling.

Woolsey Canyon should not be considered rolling terrain. It is a steep winding grade.

There seems to be no realistic account of the need for empty trucks to drive up to the site to receive their loads. In practice, with far less replacement soil than removed soil, and loaded trucks driven to a variety of destinations at different distances, this would come close to doubling the number of trips up and down Woolsey Canyon Road.

Trucks would not necessarily come from the dumps to which they would eventually deliver their loads and drivers would have to drive there to pick up their trucks if they did.

Page 4-63

Truck speeds and stopping distances are interesting, but do not seem relevant to the critical route up and down Woolsey Canyon Road.

Page 4-64, Table 4.5-1

Table assumption states that trucks arrive and depart between 7 am and 7 pm, which on average would be consistent with the stated practice of only working during daylight hours. However, in practice, the Los Angeles daylight varies considerably with about 16 hours at the summer solstice and slightly under ten hours at the winter solstice. Are the numbers of workers based on the assumption of two shifts with double traffic loads at shift change during the summer and single shifts with overtime during the winter?

Page 4-65, Table 4.5-3 and Page 4-69, Table 4.5-5

Analysis of traffic on Arterial Roadways and Safety of Truck Trips appears to be limited to numbers of trips, concluding that Levels of Service are not raised above LOS threshold and the safety is not significantly affected. This does not account for the fact that the trucks on Woolsey Canyon Road and Valley Circle will travel at greatly reduced speeds compared with passenger vehicles and the abilities of passenger vehicles to safely enter these roads from side streets will be significantly impacted and the risks of accidents increased. There is no runaway truck escape ramp on Woolsey Canyon Road and the steep grade poses an added risk from trucks.

Page 4-68, last sentence

It is difficult to understand how the addition of a significant number of trucks to the existing traffic load would not add to the number of truck accidents, even if the rate expressed as number of accidents per mile traveled per truck does not change.

Page 4-74, Table 4.5-6

Another example of a significant negative impact arbitrarily changed to minor negative impact, with no real changes made in the actual traffic load as part of the mitigation. The only real way to significantly mitigate the impacts of traffic is to decrease the number of trucks.

Page 4-79, Page 4-80

Groundwater Quality – Claims that in the long term groundwater and soil cleanup to LUT values would likely reduce groundwater contamination sources are overstated. The residual natural background arsenic and radionuclides over the entire site throughout its depth far outweigh the relatively small amounts of contamination that may be removed. Moreover, in the long term there is high probability that these contaminants will migrate from the Boeing areas which are being cleaned to Suburban Residential levels. The sentence beginning the third paragraph seems to state that groundwater is being cleaned up to LUT values. The LUTs apply only to soil.

Page 4-81, Section 4.6.3

The risk of harmful exposure is not estimated. Therefore lengthening it may or may not be consequential.

Page 4-84, Table 4.6-1

All Impacts with the exception of Water-6B are negative and local and some are long term. How can this translate into an Overall Impact that is beneficial, regional, and long term? There is no case made that any local actions regarding the water resource will have regional effects. These purported benefits are arbitrary and unsubstantiated. The very large amount of contamination contained in the fractured sandstone bedrock coupled with the slow rate of migration out of the

bedrock ensures that groundwater quality will remain essentially the same for centuries to come. Estimates up to 50,000 years have been made. While pumping should continue for the foreseeable future to ensure that contaminant plumes do not move away from the site, no credit should be taken for hypothetical future improvements in water quality.

Page 4-129, Table 4.9-1

How can any short-term benefits affecting worker health and safety have any long term benefits to the workers who are no longer working at the site? It has not been shown that the current levels of contamination pose a risk and after the workers leave the site they cannot be affected by on-site contamination.

Page 4-152, Table 4.12-2

All impacts shown are negative, yet the overall impact is claimed to be significant, beneficial, local and long term. Where are the benefits described and justified, or are they just assumed? How can all of the negatives be combined into a beneficial?

Page 4-167, Table 4.13-2

All impacts shown are negligible or minor, mostly negative, yet the overall impact is claimed to be significant, beneficial, and long term. How can this mixture of impacts be summarized as significant, beneficial?

Page 4-169, Section 4.14.3

It is unrealistic and not conservative to assume that the technologies are feasible and effective. The assumption can be made, but it is wrong to claim conservatism.

Page 4-154, Table 4.12-2
Where are the benefits described, or are they just assumed? How can all of the negatives be combined into a beneficial?

From:	Christine Rowe
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01); Fellows, Merrilee (HQ-LD000)
Subject:	DOE EIS Comments
Date:	Thursday, September 19, 2013 4:01:29 AM
Attachments:	all groups - table (1).pdf SSFL Final Draft _Orange Group Alternatives 062412 CR.pdf

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Dear Mr. Elliott,

For the DOE, in June 2012, I was a part of the "Orange group" for the alternatives for their EIS.

While the DOE did tell us that our mandate was to conform to the Administrative Order on Consent, our group focused on the "Nine Balancing Criteria of CERCLA" that Mr. Rick Brausch of DTSC had explained to us at a meeting were to be considered relative to the future clean up standards at Santa Susana.

That Power Point is a part of the explanation to the community of the Agreements in Principle that is a part of the NASA / DTSC Administrative Order on Consent. http://www.dtsc-ssfl.com/files/lib_pub_involve/meeting_agendas/64727_Agreements_in_Principle.pdf

I really appreciated some of the members of my group that were much more knowledgeable than I was on the California Native Plants, the wildlife at the site, etc. I focused more on health risk on and off site, trucks, and the cultural / archaeological aspects of the site.

I do hope that the final comments by all four groups - some of which I agree with - and some that I don't - these show the diverse thoughts relative to the SSFL cleanup. This is why the comments of one group over another should not outweigh just due to number - the scientific or legal basis for considering various alternatives related to the cleanup.

I am sure that I have stated that if the 9th Circuit upholds the ruling on SB 990, that NASA and DTSC should renegotiate the Administrative Order on Consent based on what Judge Walter said in his ruling.

I stand by that - it would be the easiest method of cleanup if all parties were subject to just one clean up standard - that all parties did commit to - the 2007 Consent Order. That is the risk based cleanup that I have always supported.

Please consider the Orange group's comments as a part of my comment on the NASA Draft EIS.

I should point out that since this document mentions structures - that this was in reference to AREA IV where no structures are considered eligible for historic preservation to the best of my understanding. And if they were - they are probably contaminated with both chemicals and radionuclides above the suburban residential standard. I do not support the demolition of all structures in AREA IV.

Least important - "meeting the 2017 deadline".

Respectfully submitted,

Christine L. Rowe

Date: June 28, 2012
Copies to:
Stephie Jennings
John Jones
John Wondolleck
Sandy Enyeart
Wendy Lowe

June 24, 2012

FINAL DRAFT

Remediation for Area IV and Northern Buffer Zone
Santa Susana Field Laboratory
Environmental Impact Statement
Alternatives Development Workshop
Orange Group
Warner Center Marriott, Woodland Hills, CA
June 9, 2012

SUGGESTED DISCUSSION TOPICS	*GROUP CONTRIBUTION*
Condition of the Property at Transfer • *What condition do you think the property should be in before transfer to Boeing* • *Describe what the property would look like* • *What would be left behind* • *What would the land look like*	At transfer, the property should be open space, highly invasive non-native plant species removed, re-vegetated with native habitat, preserving biological, botanical, cultural, and historical resources. All Federal, State, and local special status species will be protected. In particular, the major population of federally-endangered Braunton's milkvetch (*Astragalus brauntonii*) growing on the southwestern hills in Area IV will be undisturbed and protected, as will the major populations of Santa Susana tarweed (*Deinandra minthornii*) growing in the northern portion of Area IV. Smaller populations of Santa Susana tarweed growing on the rock outcrops around Area IV will also be protected from disturbance. The SSFL property will have a visitor's center focusing on history and educational issues relevant to the site. Replacement nesting/roosting structures shall exist on the site. (See Structure/Infrastructure below.)
Structure/Infrastructure • *Removal of uncontaminated debris, slabs?* • *Retain any structures for historic preservation purposes?* • *Approach, sequencing, how to prioritize* • *On-site storage of debris (pending transport to disposal) – where, how* • *Sorting of debris for disposal*	Remove all contaminated structures and infrastructure that cannot be decontaminated in place on a cost-effective basis. Where possible, consider re-using non-contaminated structures for the visitor center. Removal and de-contamination priorities shall be based on toxic risk assessments. Known or newly discovered historical /cultural sites shall be left undisturbed and be protected. Short-term (measured in days or weeks, not months) on-site storage of containerized debris shall be confined to unused paved parking lots. No land shall be cleared for the purpose. Sorting of debris shall be done at the site of removal. Recycling shall be given priority. Remove all unnecessary road paving. Maintain critical access roads and use existing, uncontaminated roads and parking lots to the extent possible. Assess need for remaining uncontaminated infrastructure using best management practices and /or on a case-by-case basis. Uncontaminated debris and slabs may be left in place. Replacement structures for sensitive species, such as raptors, shall be constructed near existing structures currently used by wildlife prior to their demolition.

SUGGESTED DISCUSSION TOPICS	GROUP CONTRIBUTION
Soil Contamination • *Thoughts regarding the balance between excavation and on-site treatment* • *How to minimize impacts on biological resources* • *How to minimize impacts on cultural resources* • *Prioritization, approach, sequencing under constrained budget scenarios* • *Contamination in the northern drainages?*	Toxicity is a major consideration in development of look-up tables. Conduct toxicity analyses on known areas of contamination. Prioritize clean-up areas by toxicity. Based upon prioritization, select best available treatment(s) for those most toxic areas first. Following that, focus on areas of lower toxicity. Minimize excavation by using a suite of alternative treatments, including on-site treatment, based on priorities (determined by toxicity analyses). This approach includes the assumptions: • That the prioritization process described above is carried forward through the look up table development and application; • Look up table numbers should be able to correlate with established EPA or State of California toxicity levels. The clean up process should be thoughtfully applied without deadline(s) as the driver. New treatment technologies should be continually sought. Cost-benefit analysis, based on toxic risk, shall be applied proactively and funds budgeted accordingly.
Disposal • *Preferences for radiological contamination* • *Preferences for radiological/chemical contamination (mixed)* • *Preferences for chemical contamination* • *Preferences for uncontaminated debris* • *Acceptability of recycling uncontaminated metals?* • *Prioritization, approach, sequencing under constrained budget*	For contaminated material: Subsequent to implementation of all treatment options, remaining contaminated materials would be taken to appropriate, licensed facilities. All other debris would be disposed of by landfill or recycling as appropriate, and include requirements as described in Structure / Infrastructure. Where necessary and feasible, local disposal, for example at Calabasas Landfill, is preferred over long-distance transport. Priorities should follow the recommendations indicated under Structure / Infrastructure, and cost-benefit analysis should be applied as indicated under Soil Contamination.

Transportation
• *Depending upon preferred disposal sites:*
  ○ *Transportation modes*
  ○ *Routes*
  ○ *Logistics, as needed*
  ○ *How to minimize traffic impacts*
  ○ *How to minimize noise?*
  ○ *How to minimize air emissions and climate impacts?*
  ○ *How to maximize safety*
• *Method and route for transporting fill material*
	Minimize number of loads and transportation of waste from site by truck by making every effort to treat soil on –site. Follow established routes and select route based upon contaminant types, concentrations, and load weights. For example, Chatsworth route may not be appropriate, because it is a narrow two lane road through a residential and light commercial area, and the road may not be designed to support hours of heavily-loaded truck traffic. Look to minimize shipping distances when selecting approved and /or licensed disposal locations. Best management practices should be utilized to protect the public health by minimizing noise and air pollution; trucks should be required to utilize new technologies such as alternate fuels, new hybrid engines, and/or engines with low emissions.
	Transportation activities should occur during the hours between 0900 and 1430 to avoid rush hours and school arrivals and departures., and to prevent accidents that could occur by trucks driving on Woolsey Canyon after dark
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SUGGESTED DISCUSSION TOPICS	GROUP CONTRIBUTION
Groundwater • *Technology options* • *Prioritization, approach, sequencing under constrained budget*	Expand GETS. Pump groundwater to prevent further contaminant migration. Explore data gaps on seeps and springs. Install vapor extraction system where necessary. Continue with tests that are in place, but accelerate groundwater treatability studies to include present and future technologies. Tritium in groundwater: allow natural attenuation with continued monitoring. Priorities should follow the recommendations indicated under Structure / Infrastructure, and cost-benefit analysis should be applied as indicated under Soil Contamination. Groundwater and soil treatment must be considered and treated at the same time to prevent recontamination of new soil by groundwater.

Additional Actions
• *What else might be necessary to accomplish the desired condition:*
  ○ *Backfilling?*
  ○ *Recontouring?*
  ○ *Revegetation?*
  ○ *Long-term monitoring?*
  ○ *Restoration of the northern drainages?*
• *Would your proposed alternative accomplish your desired condition?*
	Backfilling should be minimized, and its placement should be timed to lessen erosion potential.
	Backfill soils should be similar to what was taken from the contaminated area.
	Any recontouring should be minimal, should consider natural drainage patterns, and should be performed for remediation purposes only after soil disturbances.
	Re-vegetation should be site-specific, consist of local, native plant species and should allow for re-colonization of Area IV by native plant species from adjacent habitat.
	Long-term monitoring will be performed and will include monitoring of soils, drainages, historical, archaeological and biological resources that are protected or listed (or when these resources are discovered during the remediation process). Clean-up impacts to the Northern Buffer Zone should be minimized to the extent possible.
	Systematic monitoring of plants growing on contaminated soils should be instituted to evaluate the effectiveness of contaminant uptake, degradation, and potential adverse effects on consumer species.
	The group believes its suggestions for conditions at transfer can be accomplished.

SUGGESTED DISCUSSION TOPICS	GROUP CONTRIBUTION
Total Package • *What is most important, least important* • *What is urgent?* • *Brainstorm predictable impacts – positive and negative* • *Is the alternative as robust as possible?* *Any weaknesses that should be addressed*	Most important: Review results of site assessments and toxicity characterization. Prioritize clean up accordingly based upon toxicity to humans and biota. Least important: Meeting the 2017 deadline. Urgent: There is a need for rumor control and a reliable, responsive source of information dissemination to combat exaggerated claims of negative health and safety impacts emanating from the site. Possible positive impacts: Public health and safety will be protected; the SSFL site will be restored to open space; and native habitat will be protected and restored as necessary. There is a lessening of fear levels in surrounding communities, a growing appreciation of the natural beauty and cultural history of the site, and involvement by local residents in staffing and in volunteering at the onsite Education Center. Possible negative impacts: Transportation of hazardous waste and non-hazardous waste and infrastructure and all transportation associated risks and drawbacks, including damage to the site environment, roads, etc., health and safety impacts for the community living in the area which include potential lung and other illnesses associated with traffic, the potential for accidents and spills, and noise. Increased contamination of other areas (other landfills) that may be impacted by AREA IV and NBZ remediation. Maintenance and security considerations may impact long-term site access for humans and wildlife. Weakness to be addressed: There is a potential for failures of treatment methodologies, lack of clarity as to the end state desired, failures or obstruction due to political interference, failures or obstruction from a proliferation of misinformation, and / or deliberate disinformation campaigns.

	Blue Group	Orange Group	Salmon Group	Yellow Group[1]	
Summary Statement	Cleanup SSFL Area IV environment in such a way as to not cause damage to the existing ecosystem in excess of need.	Orange Group members believe that DOE should produce a full-scope EIS that takes into consideration a full range of alternatives not limited to the clean-up to background for soils stipulated by the Administrative Order on Consent/Agreement in Principle We would appreciate a sincere effort on the part of the Department of Energy to adopt a comprehensive approach in the EIS that unequivocally covers the potential damage to the natural environment, water, air and public health resulting from a wholesale removal of soils. The wholesale removal of soils with low to high levels of contaminants is a poorly-conceived method intended to clean up the site to an ill-defined or impossible-to-define "background."	We feel strongly that DOE should take all steps necessary to obtain sufficient funds to implement the Administrative Order on Consent (AOC) on the agreed schedule. DOE should take all steps necessary to meet the 2017 schedule. There should be no back-tracking and DOE should focus on implementing the AOC. In addition, DOE should work in cooperation with the California Department of Toxic Substances Control to prepare a joint Environmental Impact Statement/ Environmental Impact Report (in compliance with the National Environmental Policy Act and the California Environmental Quality Act).	At the beginning of the cleanup & throughout the cleanup process, consider the entire SSFL property's condition at transfer & potential end use Establish point-based prioritization system (similar to LEED system for Green Construction certification) for all activities Minimize creation of new risks and new problems as we solve old ones Engage California companies and California residents in any new jobs created Minimize soil movement by use of alternative treatment technologies; careful sorting of contaminated materials to keep as much out of disposal facilities as possible; preserving uncontaminated infrastructure, vegetation, & soil Establish a place open to the public with potential for one or more museums, research laboratories, etc. that documents the site's history and remediation and provide facilities for research on remediation relevant to the SSFL	
				Building preservation variation: Preserve uncontaminated structures	***Building demolition variation:*** Remove all buildings in Area IV, as all structures have been declared NOT significant

[1] *The Yellow Group presents variations on points where participants' preferences diverged, as shown in parallel columns.*

	Blue Group	Orange Group	Salmon Group	Yellow Group[1]	

Condition of the Property at Transfer	Complete mitigation supportive of native habitat including cultural resources, flora, and fauna.
	Property should be conducive to integration with open space/parkland.
	Its infrastructure should support such open space/parkland use.
	Property should commemorate the history of the Site.
		At transfer, the property should be open space, highly invasive non-native plant species removed, re-vegetated with native habitat, preserving biological, botanical, cultural, and historical resources. All Federal, State, and local special status species will be protected. In particular, the major population of federally-endangered Braunton's milkvetch (*Astragalus brauntonii*) growing on the southwestern hills in Area IV will be undisturbed and protected, as will the major populations of Santa Susana tarweed (*Deinandra minthornii*) growing in the northern portion of Area IV. Smaller populations of Santa Susana tarweed growing on the rock outcrops around Area IV will also be protected from disturbance. The SSFL property will have a visitor's center focusing on history and educational issues relevant to the site. Replacement nesting/roosting structures shall exist on the site. (See Structure/Infrastructure below.)	Clean the property to the AOC's requirement of background. This is not an alternative but a requirement, consistent with the Purpose and Need statement. Following cleanup, Area IV should be clean enough to serve as a wildlife corridor, in a near-natural state similar to the state of property prior to the installation of buildings.	• Using a collaborative process, consider the entire SSFL property's condition at transfer and potential end use as clean-up decisions are made and implemented.
				• Establish a decision-tree process to preserve and document site history and history of cleanup
				• Maximize sustainability
				• Keep uncontaminated infrastructure wherever possible
				• Don't create new problems as you solve the old ones
				• Establish a space open to the public but with limited private vehicle access to minimize future environmental damage
				• Preserve peripheral slabs for public parking, so shuttles can take people on the site
				• Preserve archeological features
				• Foster the natural state:
				  ○ Return the site to the original state as near as possible and practical: try to ascertain and reestablish what was there prior to development, at the same time as you maintain positive features currently in place, like the oak forest
				  ○ Do not create additional damage during cleanup – for example, avoid cutting down existing vegetation and spray painting the rocks, as was done during characterization
				Minimize soil movement to reduce truck traffic	

				Building preservation variation: Keep uncontaminated buildings wherever possible	**Building demolition variation:** Remove all buildings in Area IV. Do not support attempting to save any structures in Area IV. All structures have been declared NOT significant already.

	Blue Group	Orange Group	Salmon Group	Yellow Group[1]	
Structure/Infrastructure	Remove all structures except those that can be appropriately repurposed (e.g. – the million dollar hole – building 56, sodium pump test facility) Option A – Leave non-contaminated/stable subsurface structures and footings in place Option B – Remove building foundations, roads and road base for appropriate off-site management. Option C – Same as Option B with on-site management Remove roads after the A, B, or C option	Remove all contaminated structures and infrastructure that cannot be decontaminated in place on a cost-effective basis. Where possible, consider re-using non-contaminated structures for the visitor center. Removal and de-contamination priorities shall be based on toxic risk assessments. Known or newly discovered historical /cultural sites shall be left undisturbed and be protected. Short-term (measured in days or weeks, not months) on-site storage of containerized debris shall be confined to unused paved parking lots. No land shall be cleared for the purpose. Sorting of debris shall be done at the site of removal. Recycling shall be given priority. Remove all unnecessary road paving. Maintain critical access roads and use existing, uncontaminated roads and parking lots to the extent possible. Assess need for remaining uncontaminated infrastructure using best management practices and /or on a case-by-case basis. Uncontaminated debris and slabs may be left in place. Replacement structures for sensitive species, such as raptors, shall be constructed near existing structures currently used by wildlife prior to their demolition.	Remove contaminated roads, pads, etc. as required by the AOC. Remove uncontaminated pads and foundations as needed to investigate for the presence of contamination. This is not an alternative but a requirement, consistent with the Purpose and Need statement. Short-term, on-site contained storage is acceptable, but should not exceed 30 days.	Establish a process for evaluating infrastructure for beneficial use prior to demolition. The idea is to avoid unnecessarily filling trucks with non-contaminated infrastructure.	
				Building preservation variation: Establish a process for evaluating structures for beneficial use prior to demolition. Avoid unnecessarily filling trucks with non-contaminated structures. Focus on things that must be done. Apply a point system to determine whether it is more cost-effective to keep or demolish each structure. Retain all uncontaminated structures that can potentially be turned to beneficial use (like the Annenberg Foundation Malibu Creek project – see attachment). This would be part of the program to reduce the amount of soil that is moved around. Set aside “appropriate” buildings for future use as museum(s) and related facilities, such as Science of Remediation or Laboratory for Future Projects (such as testing of technologies) and Education. View this as part of making the site self-sustaining cost-wise… “Build it and they will come,” meaning colleges and universities.	**Building demolition variation:** Remove all buildings in Area IV. Do not support attempting to save any structures in Area IV. All structures have been declared NOT significant already.

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Soil Contamination	Remediate soil to level consistent with ultimate land use. Avoid removal to the extent possible. Step 1: Develop hierarchy of area's cultural and ecological assets based on balancing criteria in NEPA and CEQA. Step 2: Select from suite of technologies for soil remediation based on Step 1. Give preference to in-situ remediation. Step 3: Perform soil removal minimizing potential for water run-off and migration of contaminants to other areas of SSFL and off-site. Make sure room is left for possible future options, not explored at this time. Work In order of these priorities. 1. In-situ Treatment 2. On-site Treatment 3. On-site Containment 4. Isolate sources of multiple contaminants mixing to prevent further mixing. 5. Other Option 6. Other Option 7. Any Other Option 8. Soil Removal to Off-site Location (last resort/last option) ** Remediate highest risk areas first. ** Implement phytoremediation immediately	Toxicity is a major consideration in development of look-up tables. Conduct toxicity analyses on known areas of contamination. Prioritize clean-up areas by toxicity. Based upon prioritization, select best available treatment(s) for those most toxic areas first. Following that, focus on areas of lower toxicity. Minimize excavation by using a suite of alternative treatments, including on-site treatment, based on priorities (determined by toxicity analyses). This approach includes the assumptions: • That the prioritization process described above is carried forward through the look up table development and application; • Look up table numbers should be able to correlate with established EPA or State of California toxicity levels. The clean up process should be thoughtfully applied without deadline(s) as the driver. New treatment technologies should be continually sought. Cost-benefit analysis, based on toxic risk, shall be applied proactively and funds budgeted accordingly.	For contaminated soils, cleanup to meet the AOC standard of background by 2017 as stipulated in the AOC as follows: 1. Remediation in-situ (in place) using technologies that have been demonstrated to be effective and timely where possible. 2. Excavate and treat on-site using technologies that have been demonstrated to be effective and timely where possible for soils that cannot be remediated in-situ. 3. Excavate no more than necessary (e.g., aiming to not excavate soil to a depth deeper than where the contamination is located) for those soils that cannot be treated using 1 or 2 (above). 4. Remove that which must be removed as soon as possible. 5. For contamination found in relatively inaccessible parts of the northern drainages, consider a. Installation of catchment basins in more accessible locations downstream and introduction of water at or above the location of the contamination to allow accessible impoundment to remove and/or treat contamination. Flush with water, collect in a catchment, and treat or remove with vacuum trucks for remote disposal. b. Use of mules and/or helicopters to minimize disturbance. 6. Consider use of soil vapor extraction to address volatile organic compounds in the soil.	• To reduce the volume of contaminated soil to be removed, identify and treat the gradients of less contaminated soil surrounding the "pink blobs" so this less contaminated, now treated, soil can remain on-site. • Use existing buildings for soil treatment. • Ensure "outlier" contaminated soils (those that occur outside the sphere of the main contaminated areas) are treated or removed. • Evaluate sorting out uncontaminated on-site soil and mixing it with soil that has low levels of contamination to bring the mixed soil within the levels required by the Look-up Tables. • Have a system for making decisions about moving soil. Always use alternate technologies over "muck and truck." Model the system on the US Green Building Council, LEED Certification System. (The highest level is Platinum.) Use a system that already exists and take the emotion out of decision-making. • For remaining characterization of site soils, test plant materials that grow in the soil to be tested. • During remaining characterization and cleanup, ensure that all workers are properly wearing personal protective equipment for all tasks. • Evaluate whether the entire SSFL is a "traditional cultural property" and ensure active on-going consultation with Native American populations in the area. • Have a soil treatment options system that includes a parallel evaluation of the site for areas that have "sensitive" issues, such as archeological or biological or safety issues and therefore call for special treatment. Some areas may call for sequestering, for example, the steep incline in the northern drainages.

	Blue Group	Orange Group	Salmon Group	Yellow Group[1]
Disposal	Categorize waste by level of contamination. • Dispose of most contaminated soil first. Only most contaminated soil goes off-site to appropriate landfill (closest and least expensive) • Treatment of treat waste streams to separate components to maximize on-site disposal and minimize off-site disposal requirements. • Recycling of uncontaminated metal and other recyclables should be pursued whenever possible	For contaminated material: Subsequent to implementation of all treatment options, remaining contaminated materials would be taken to appropriate, licensed facilities. All other debris would be disposed of by landfill or recycling as appropriate, and include requirements as described in Structure / Infrastructure. Where necessary and feasible, local disposal, for example at Calabasas Landfill, is preferred over long-distance transport. Priorities should follow the recommendations indicated under Structure / Infrastructure, and cost-benefit analysis should be applied as indicated under Soil Contamination.	For radiological contamination: The three options identified by DOE for disposal of radiological contamination (Nevada National Security Site in Nevada, Energy Solutions in Utah, and Waste Control Specialists in Texas) seem acceptable. DOE should choose between the three based on the following considerations (in order of importance): • Minimize the distance that contamination must be shipped • Minimize impacts on communities already negatively impacted by environmental hazards (environmental justice considerations) • Select a disposal site that can accept rail shipments (presuming rail transportation is selected for transport to disposal site) • Minimize cost. For mixed waste (containing both radiological and chemical contaminants): follow the same considerations listed above to select the most appropriate disposal site from among the same three disposal sites identified for radiological contamination. For waste containing chemical contamination, follow the same considerations listed above for selection from among licensed facilities that can accept chemical contamination Before any excavated material can be shipped to a disposal site not licensed to receive radiological or chemical contamination, that waste must be proven to be uncontaminated. This group prefers that no metals be shipped for recycling based on prior bad experiences. Minimize the quantity of material to be disposed (soil and construction debris) by using any material that is clean (based on the AOC) on the site in areas where fill is needed.	• First priority is treatment to reduce need for disposal • Place high priority on on-site sorting of waste to minimize creation of mixed waste • Place high priority on using California-based companies, such as disposal sites for non-radioactive waste • Strive for solutions that are characterized by longevity, with the goal to avoid recontamination • Develop a matrix system for easier and more efficient decision-making on disposal that recognizes cost, jobs, local impacts, environmental justice, health effects, safety, etc. For example, safety must be a factor in deciding what to do about characterizing and cleaning up the steep inclines in the northern drainages. • Reduce debris by good sorting – concrete slabs can be recycled as shade pavilions. Don't remove them if it is not necessary. • Recycle metals, equipment, building materials • Use a point system for setting priorities under a constrained budget

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Transportation	MINIMIZE!!! Minimize off-site transportation requirements by on-site treatment and containment. • Assess feasibility of improving existing fire roads from northern drainage area to Southern Pacific rail spur • Evenly distribute transportation routes for disposal • Evaluate railroad option • Consider current and projected traffic conditions along suggested routes: especially Woolsey Canyon, Lake Manor Drive, Plummer, Topanga Canyon Blvd. and the 118 freeway. e.g. (rush hour, overloaded intersections, current traffic impacts, ability for trucks to navigate existing roadways (i.e. – turns)) • Mindful of invasive species control with vehicles coming on and off Site. • - Timing of trucks driving off-site (i.e. – one every 5 minutes)	Minimize number of loads and transportation of waste from site by truck by making every effort to treat soil on –site. Follow established routes and select route based upon contaminant types, concentrations, and load weights. For example, Chatsworth route may not be appropriate, because it is a narrow two lane road through a residential and light commercial area, and the road may not be designed to support hours of heavily-loaded truck traffic. Look to minimize shipping distances when selecting approved and /or licensed disposal locations. Best management practices should be utilized to protect the public health by minimizing noise and air pollution; trucks should be required to utilize new technologies such as alternate fuels, new hybrid engines, and/or engines with low emissions. Transportation activities should occur during the hours between 0900 and 1430 to avoid rush hours and school arrivals and departures., and to prevent accidents that could occur by trucks driving on Woolsey Canyon after dark.	Mode of transport: 1. Off the mountain, consider using a modular conveyor system with dust controls (either an enclosed belt or sealed containers for the materials being conveyed) or (if that won't work) trucks using modular containers. Conveyance system may also be suspended cable – think zip line or ski lift – to which the containers are attached 2. To the disposal site, consider rail option of transferring onto rail. Evaluate use of transfer points on both sides of the county line (e.g., Simi Valley and Chatsworth) 3. If the Texas disposal site is selected, consider using ship transport relying on Port Hueneme or Los Angeles harbor 4. If trucks must be used, use electric or natural gas to minimize air emissions 5. If trucks must be used, employ truck washing/ decontamination (including tires) to avoid moving contamination off the site Routes: 1. Off the mountain, consider developing an existing fire road from Area IV into Simi Valley OR through Ahmanson Ranch (possibly to Van Nuys rail yard for transfer to rail transport) as an alternative to Woolsey Canyon Road 2. If trucks down Woolsey Canyon Road, consider alternative routes from the bottom of Woolsey and consider spreading out the impact by rotating among multiple route options 3. Consider upgrading roads to compensate for damages to be incurred For fill: Use on-site material for fill and on-site re-contouring whenever possible. If must use off-site fill, use the same mode of transportation and routes as for excavated materials	• Ensure road infrastructure from top to bottom of mountain is safe o Include a bike lane and turnouts on Woolsey Canyon/Valley Circle so cyclists are not run off the road o Establish a clear definition of ownership of the road o Use natural gas for fuel and other environmentally protective steps o Rework/reconstruct the intersection at Woolsey Canyon and Valley Circle o Incorporate safety measures, including live monitors, strict enforcement of speed limit • Maximize safety to community and to drivers • Minimize fill to be brought in • Minimize bringing new materials to SSFL that will have to be taken away later • Coordinate transportation among all parties responsible for SSFL cleanup to minimize impacts to community and the environment • Keep jobs in California for chemical waste disposal • Build temporary treatment plant in Area IV for SSFL chemical waste – then dismantle after cleanup

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Groundwater	Priority: Focus on source removal to minimize impacts to groundwater (vadose zone) • Continue SSFL site-wide coordination of groundwater investigation and remediation. This includes Area IV. • Continue monitoring forever, including seeps and springs. • Continue treatment using existing systems • Explore new technologies as they become available • Treated groundwater should go back into the ground on-site…. If this is not possible, retain for discharge during the appropriate season (wet season) in consideration of biological resources • Groundwater treatment technologies can't cause a bigger problem than what we're trying to fix (i.e. fracking)	Expand GETS. Pump groundwater to prevent further contaminant migration. Explore data gaps on seeps and springs. Install vapor extraction system where necessary. Continue with tests that are in place, but accelerate groundwater treatability studies to include present and future technologies. Tritium in groundwater: allow natural attenuation with continued monitoring. Priorities should follow the recommendations indicated under Structure / Infrastructure, and cost-benefit analysis should be applied as indicated under Soil Contamination. Groundwater and soil treatment must be considered and treated at the same time to prevent recontamination of new soil by groundwater.	Implement radically-enhanced pump and treat system (better than Boeing's current or previous Groundwater Extraction Treatment System) to treat the groundwater and control further spread of contamination In parallel, aggressively investigate, test, and implement, in a timely fashion, advanced technologies (that have been demonstrated to be effective) to treat groundwater contamination Install long-term monitoring wells, including at the base of the Santa Susana Mountains where they intersect with the Simi Valley alluvium to detect migration of contaminants It is possible that Tritium cannot be addressed as it is too difficult to separate from water for treatment; short life means quantity will diminish significantly in relatively short period of time	• Use phytoremediation and other alternative technologies to reduce soil movement and draw contamination toward "neutralization" points • Keep native plants and use plants that reduce secondary impacts, i.e., if the plants are non-native, make sure they do not cause other adverse impacts • Use treated groundwater to irrigate phytoremediation plants; in reusing treated groundwater, store it as close to original location as possible • In event of constrained funds: o Use funds where they will have the best and most beneficial effects o Halt contaminant migration patterns

	Blue Group	Orange Group	Salmon Group	Yellow Group[1]
Additional Actions	Backfill – Use locally sourced and similar type and seed bank, reuse on-site soil when possible Re-contour Re-vegetate – local natives All actions done in consultation with other appropriate state resource agencies including State Parks, Fish and Game, and Santa Monica Mountains Conservancy. Create and implement SSFL Integrated Restoration and Resource Management Plan before hand-over to Boeing. Make property accessible for educational opportunities. Property should be conducive to integration into regional open space parkland and Rim of the Valley planning. Integrate property into Santa Monica Mountains National Recreation Area or similar national park service entity (i.e. Rim of the Valley) Create an Endowment Must address cumulative impacts with Boeing and NASA. Bury non-contaminated debris on-site. Conduct a cost-benefit analysis of all possible levels of activity on the Site. Cleanup visible debris in northern drainage area.	Backfilling should be minimized, and its placement should be timed to lessen erosion potential. Backfill soils should be similar to what was taken from the contaminated area. Any re-contouring should be minimal, should consider natural drainage patterns, and should be performed for remediation purposes only after soil disturbances. Re-vegetation should be site-specific, consist of local, native plant species and should allow for re-colonization of Area IV by native plant species from adjacent habitat. Long-term monitoring will be performed and will include monitoring of soils, drainages, historical, archaeological and biological resources that are protected or listed (or when these resources are discovered during the remediation process). Clean-up impacts to the Northern Buffer Zone should be minimized to the extent possible. Systematic monitoring of plants growing on contaminated soils should be instituted to evaluate the effectiveness of contaminant uptake, degradation, and potential adverse effects on consumer species. The group believes its suggestions for conditions at transfer can be accomplished.	For the Sodium Burn Pit, a permanent remedy is needed for contamination in, near, and beneath (including the bedrock) the former sodium burn pit, including the Northern Buffer Zone, as previous cleanup work was to provide an interim remedy only. A final remedy is needed for long-term protection, consistent with the AOC. Backfilling, re-contouring, and re-vegetation to restore the landscape to the desired condition (wildlife corridor). Long-term monitoring to assure on-going effectiveness. Maintain complete records in a form that will last to memorialize all known information and maintain those records in a form that can be accessed using existing technology in perpetuity.	• Revegetation should include native plant species that are beneficial to erosion control, as well as those that are efficient in uptake of potential remaining contaminants • Establish responsible contour of land to protect drainages, prevent erosion, etc. • Establish long-term monitoring to ensure no recontamination and to make sure contaminants do not move (as with groundwater) • Long term monitoring should also include phyto-data as far as contaminant uptake, number of cycles, to demonstrate progress and how alternative solutions are applied and their success measured. • Establish mechanism for coordinated decision-making among all parties to ensure cooperation, information sharing, etc. • Provide for active dust suppression by a guy with a hose (meaning a human who can judge how much water is just right – not too much or too little)

	Blue Group	Orange Group	Salmon Group	Yellow Group[1]	
Total Package	Cleanup SSFL Area IV environment in such a way as to not cause damage to the existing ecosystem in excess of need. Priority: Protect, don't Destroy! 2nd Priority: Ultimate (best and highest use) – PARKLAND and HABITAT LINKAGE 3rd Priority: Ecological functionality and cultural resource protection • Contain and treat as much as possible on-site. • True cleanup, not relocation • Regional Coordination • Site-wide Coordination • Document historic significance of Area IV • Scientific decision-making	Most important: Review results of site assessments and toxicity characterization. Prioritize clean up accordingly based upon toxicity to humans and biota. Least important: Meeting the 2017 deadline. Urgent: There is a need for rumor control and a reliable, responsive source of information dissemination to combat exaggerated claims of negative health and safety impacts emanating from the site. Possible positive impacts: Public health and safety will be protected; the SSFL site will be restored to open space; and native habitat will be protected and restored as necessary. There is a lessening of fear levels in surrounding communities, a growing appreciation of the natural beauty and cultural history of the site, and involvement by local residents in staffing and in volunteering at the onsite Education Center. Possible negative impacts: Transportation of hazardous waste and non-hazardous waste and infrastructure and all transportation associated risks and drawbacks, including damage to the site environment, roads, etc., health and safety impacts for the community living in the area which include potential lung and other illnesses associated with traffic, the potential for accidents and spills, and noise. Increased contamination of other areas (other landfills) that may be impacted by AREA IV and NBZ remediation. Maintenance and security considerations may impact long-term site access for humans and wildlife.	Most important – Get started and get finished	• Make it safe while protecting what's there today • Least important: the political "win" • Most urgent: identify all potential contaminant pathways so that best priorities can be established • Positives: we'll have a clean site • Negatives: Land-use limitations must be detailed for perpetuity, as we believe it is inappropriate to consider any part of Area IV for residential land-use, due to known groundwater impacts likely to exceed the several generations required to complete that cleanup. • The vision: A site that shows it was cleaned up with green technology, striving for a reduced foot print, … (complete with each of the two variations below)	
				Building preservation variation: …keeping uncontaminated buildings (such as Building 9 with the movable roof) so that they might be used for a museum to showcase site history, remediation technologies, and responsible reuse (as examples)	***Building demolition variation:*** …removing all buildings in Area IV, as all structures have been declared NOT significant already.

	Blue Group	Orange Group	Salmon Group	Yellow Group[1]
		Weakness to be addressed: There is a potential for failures of treatment methodologies, lack of clarity as to the end state desired, failures or obstruction due to political interference, failures or obstruction from a proliferation of misinformation, and / or deliberate disinformation campaigns.		***Please note that the Yellow Group provided an exhibit to illustrate their vision for the future,***

From:	Nicole Bernson
To:	MSFC-SSFL-EIS
Subject:	Draft EIS comments
Date:	Tuesday, August 27, 2013 1:56:35 PM
Attachments:	Englander Comment Letter.pdf

To Whom it May Concern,

Attached please find a comment letter on the Draft EIS for the NASA parcel SSFL clean-up from Los Angeles City Councilmember Mitchell Englander.

Kind regards,

Nicole Bernson
Deputy Chief of Staff

Office of Councilmember Mitchell Englander
Council President Pro Tempore
City of Los Angeles

200 N. Spring Street, #405
Los Angeles, CA 90012
(213) 473-7012

www.cd12.org

MITCHELL ENGLANDER
LOS ANGELES CITY COUNCILMEMBER, TWELFTH DISTRICT

August 27, 2013

Allen Elliott,
SSFL Program Director,
NASA
MSFC AS01, Building 4494,
Huntsville, AL 35812

RE: DRAFT EIS FOR REMEDIATION OF GROUNDWATER AND SOIL ON THE NASA-ADMINISTERED PROPERTY AT THE SANTA SUSANA FIELD LABORATORY

Dear Mr. Elliott, Allen –

As the Los Angeles City Councilmember representing the Twelfth Council District, I represent the West Hills and Chatsworth communities that will be most affected by the truck traffic associated with the proposed clean-up.

While I have long advocated for the full clean-up of the site and the Agreements on Consent between NASA and the DTSC, I feel compelled to express my extreme disappointment at the lack of consideration for other methods of soil and demolition debris removal from the site.

The transportation proposal involves 142 truck trips per day for a three-year period. Assuming a 260-day work year, this equates to 36,920 trips per year and nearly 111,000 over the three-year life of the project. These trucks are expected to have vehicle weights of up to 80,000 pounds and will traverse some of the most high-traffic arteries in the area, including Topanga Canyon Boulevard, Roscoe Boulevard, Valley Circle Boulevard and Plummer Street.

The proposed routes are shared by many schools in proximity to the site, and therefore pose additional vehicle emission exposure risk to children who walk or bike to school.

The City of Los Angeles has proposed a $3 Billion infrastructure improvement project to repair 8,700 miles of failed streets within a ten-year period. Much of this damage to City streets has been caused by the very type of heavy vehicle traffic proposed for this clean-up. The wear and tear to City streets is expected to add to this deterioration and pushing the cost of that repair onto the City taxpayer is unacceptable.

I feel compelled to add that it is quite unbelievable that some other option for conveyance of the contaminated material from the site was not studied – other than the truck routes proposed. By your own evaluation, the impacts are significant, negative, regional and long-term. This does not even take into account the concurrent work that will be done on the other SSFL parcels that will result in an unbearable cumulative impact for the area.

City Hall Office • 200 N. Spring Street, Room 405 • Los Angeles, CA 90012 • Phone (213) 473-7012 • Fax (213) 473-6925
Chatsworth Office • 9207 Oakdale Ave. • Chatsworth, CA 91311 • Phone (818) 882-1212 • Fax (818) 701-5254
www.CD12.org

The traffic, environmental impacts and deterioration of City of Los Angeles infrastructure compel another look at alternatives – including some type of conveyance from the site directly to rail. I believe that most residents would prefer this option – even if it lengthens the time-period for the clean-up past the 2017 date.

I appreciate your attention to these comments.

Sincerely,

MITCHELL ENGLANDER,
Los Angeles City Council President Pro Tempore
Councilmember, Twelfth District

From:	Kelly, ThomasP
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01)
Subject:	EPA Comments on NASA"s DEIS for the Proposed Demolition and Environmental Cleanup Activities for the Santa Susana Field Lab
Date:	Monday, September 30, 2013 7:42:29 PM
Attachments:	20130227.pdf

I have attached EPA's letter to NASA on their DEIS for Demolition and Proposed Cleanup Activities at the Santa Susana Field Lab. EPA has a statutory responsibility to review and comment on all Draft Environmental Impact Statements.

Normally we allow the recipient to receive our comment letter a few working hours prior to sending it to the individuals copied on our letter. Due to the possible government shutdown tomorrow, I am sending our comments to everyone today. In the event of a shutdown, I will be unable to return calls or email messages until I return to the office.

Tom Kelly
Environmental Review Office (CED-2)
U.S. EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

(415) 972-3856

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,

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

EPA DETAILED COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR PROPOSED DEMOLITION AND ENVIRONMENTAL CLEANUP ACTIVITIES AT THE SANTA SUSANA FIELD LABORATORY VENTURA AND LOS ANGLES COUNTIES, CALIFORNIA (CEQ 20130227), September 30, 2013

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

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[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>

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

From:	Mcaninch, Jonathan
To:	MSFC-SSFL-EIS; Lisa Treichel; Christine Lehnertz; same_superintendent@nps.gov; NPS WASO EQD ExtRev
Cc:	Patricia Port
Subject:	ER #13/0532 Comment Letter and Enclosures
Date:	Friday, September 27, 2013 1:55:47 PM
Attachments:	ER 13_0532_Comment_Letter.pdf er130532_des_ssfl_NPS_Table_1.pdf 11_NPS_Figure_1_HabitatLinkageRegSetting.pdf

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Hi All,

Please find attached the comment letter and enclosures for ER #13/0532 -- Draft Environmental Impact Statement (DEIS), Proposed Demolition and Environmental Cleanup Activities for the NASA administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, CA.

Thank you,
Scott

--
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IN REPLY REFER:
(ER 13/0532)

Filed Electronically

27 September 2013

Allen Elliot
Santa Susana Field Laboratory Project Director
National Aeronautics and Space Administration
NASA MSFC AS01, Building 4494
Huntsville, Alabama 35812

Subject: Draft Environmental Impact Statement (DEIS), National Aeronautics and Space Administration (NASA), Proposed Demolition and Environmental Cleanup Activities for the NASA administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California.

Dear Mr. Elliot:

The Department of the Interior has received and reviewed the Draft EIS prepared by National Aeronautics and Space Administration (NASA) for the proposed demolition and environmental cleanup activities for the Santa Susana Field Laboratory (SSFL) in Ventura County, California. The Draft EIS identifies and analyzes a no-action alternative and one action alternative for cleanup to background.

In National Park Service's (NPS) scoping letter dated September 22, 2011, NASA was asked to consider three topics relevant to conservation planning at the site:

1. NPS manages the National Register of Historic Places. SSFL was a center of scientific research during the Cold War and during early to recent space exploration; several structures from this era remain on the site. The 2008 NASA Historic Resources Survey and Assessment (revised 2009) concluded that nine structures and three historic districts are eligible for the register. In addition, SSFL contains a prehistoric site complex that was listed on the National Register in 1976.

2. SSFL is adjacent to the Santa Monica Mountains National Recreation Area. As such, it provides a wildlife linkage between lands within the NPS boundary and the adjacent Simi Hills and Santa Susana Mountains. SSFL also contains archeological sites related to archeological sites found within the NPS boundary.

3. SSFL is part of the Rim of the Valley Special Resource Study (RIVA SRS), authorized by Congress in the Consolidated Natural Resources Act of 2008 (P.L. 110-229-May-2008).

The NPS is concerned that the Draft EIS inadequately addresses these three topics. Furthermore, NPS finds that expressed purpose and need will not be fulfilled by the action alternative, as currently proposed. Our concerns and suggested modifications are summarized below; in addition we have enclosed a table with more detail on specific issues and text corrections.

SSFL's and the NASA component's location within the greater public park land and open space setting is not adequately disclosed (Affected Environment).

There is no regional vicinity map to illustrate the contextual setting of SSFL and the NASA portion among protected parkland, open space, and surrounding communities. The attached Figure 1 clearly illustrates the nexus of the proposed Project site and the surrounding regional parkland and open space setting. Maps in the Affected Environment and Appendices D and E either have no parkland identification or are missing several areas of public park land and protected open space. None of the maps includes the NPS-SMMNRA boundary. The SMMNRA boundary is shared with the southwestern boundary of SSFL. As noted previously, SSFL is ecologically continuous with the NPS-administered SMMNRA. The prehistoric archaeological sites are also connected to the greater prehistory and Native American cultural heritage of the Simi Hills and Santa Monica Mountains. It is critical to illustrate the parkland setting to more accurately disclose the project's potential for impacts to natural and cultural resources beyond the boundaries of SSFL and the NASA portion and to more fully disclose the site's current and potential future role in the region's ecology and recreation.

The Draft EIS has an incomplete description of important cultural resources in the Affected Environment (Section 3.3) and defers essential treatment to the subsequent planning (Section 4.3).

The action alternative, as currently proposed, would remove National Register-eligible historic cultural resources and potentially encroach upon and/or destroy prehistoric cultural resources. The effects on cultural landscapes, traditional cultural properties, and the Native American sacred site are uncertain because of the limited information provided in the Draft EIS.

The impacts to cultural resources clearly are adverse and significant for both historic architectural features and archeological resources. Section 106 consultation is still underway. The Draft EIS only suggests mitigation measures that might be considered, with nothing certain and final impacts stated as "Pending consultation" in Table ES-4. Thus, both the impact analysis of cultural resources and consideration of mitigation measures are difficult to evaluate. Because of the preliminary nature of information on archeological resources, clean-up impacts, and mitigation measures, the EIS does not allow for meaningful public input on cultural resource impacts. Instead, the only option for input is through participation in the limited group composed of community consulting parties that advise NASA on Section 106.

The Draft EIS does not have complete information on any aspect of the cultural resource setting. The impacts on archeological resources are uncertain because very limited information is available on the significant site complex associated with the Burro Flats Painted Cave, much of the data being extremely outdated. In addition, the analysis of impacts to cultural resources is also likely inadequate because of the limited soil testing for contaminants in areas rich in archeology, such as the Burro Flats area. Should testing at the outer limits of the cleanup footprint indicate additional soil removal to reach the Look-Up Table values, additional impacts to archeological resources would follow. These uncertainties increase the need to presently

identify feasible mitigation measures for the extensive archeological resources in this site complex. The ongoing Traditional Cultural Property and cultural landscape studies and the ongoing consultation on the Native American Sacred Site make impacts and appropriate assignment of mitigation measures even more difficult to consider.

The inventory of architectural resources representing the rocket test stands and related facilities is not well described in the Draft EIS, although an in-depth study was conducted by NASA contractors. Lack of comprehensive descriptions of the nationally significant historic districts and lack of images of the test stands make it difficult for readers of the EIS who have not visited the site to understand the full potential of these historic resources and the possible impacts of their removal.

The Draft EIS presents the possibility that some historic structures could be preserved, however it does not define how preservation of any structures would be reconciled with project goals and objectives. The Purpose and Need statement requires cleanup to background levels and the project description calls for complete demolition and hauling away of virtually all structures.

The Draft EIS has substantial shortcomings in describing biological resources and characterizing the severity of the proposed action's impacts. The Draft EIS also does not disclose adequate, feasible mitigation measures for either cultural resources or biological resources.

The Draft EIS indicates implementation of the action alternative would have mostly significant negative impacts and some moderate negative impacts on almost all resource categories that offer benefits to resources on neighboring NPS lands. Executive Summary Table ES-4 lists significant, negative, regional, long-term impacts on biological resources from project implementation. Environmental Consequences Section 4.4.1.3 (pg. 4-35) supports the finding. However, Table ES-4 also lists a moderate, beneficial, regional, long-term impact attributed to increasing the area of undeveloped habitat and from removing contamination. After mitigation, the Draft EIS finds impacts from the action alternative on the majority of topics are mostly at the level of impact of the no action alternative (Table ES-4).

We find this conclusion to be potentially incorrect due to the insufficiency of biological resource surveys and the potentially incorrect assumption that remediated areas will recover their biological diversity and ecological function. Extensive research in remediation of abandoned mine sites indicates that restoration of functional soil and vegetation communities after remediation is extremely difficult to achieve. However, the post-mitigation final impact level on both cultural and biological resources is still pending agency consultations. NPS finds the action alternative, as currently proposed, has the potential to have great irreversible negative impacts on native habitat and associated flora and fauna and wildlife movement.

The Draft EIS undervalues the NASA property's open space and habitat contribution to wildlife movement through the greater SSFL and surrounding open space setting (Section 3.4.2).

NPS cannot overemphasize that SSFL, including the NASA property, contributes to habitat connectivity owing to juxtaposition with contiguous open space and park land and because of the diversity and overall quality of the on-site native habitat.

The Draft EIS states:

> "SSFL habitat and species diversity, physical attributes, and geographic location make the area a potentially important route for species migrations. Open space at SSFL could play a role for habitat linkage among the Santa Susana Mountains, the Simi Hills, and possibly, the Santa Monica Mountains (NASA, 2011b). However, the NASA-administered portions of SSFL are outside of the critical habitat corridors in the region identified by the U.S. Fish and Wildlife Service (USFWS) (Figure 3.4-2) (Ventura County, 2005)" (pg. 3-23).

There are several errors in this statement. The citation is incorrect and fails to reference the key report on the habitat linkage between the Sierra Madre and the Santa Monica Mountains (South Coast Missing Linkages Report, Penrod, et al. 2006). The presentation that SSFL could only "possibly" play a role connecting habitat into the Santa Monica Mountains illustrates a lack of familiarity with research on habitat connectivity in this region. The exclusion of NASA property from the habitat linkage is overly conservative and presents a narrow interpretation of the complex set of factors used to model and map a wildlife habitat linkage.

The Environmental Consequences assessment of wildlife impacts (Section 4.4.1.3, pg. 4-36) perpetuates the Affected Environment's inaccurate presentation that the NASA portion of SSFL is not part of any wildlife movement corridor. By asserting that the NASA property is not part of a wildlife movement corridor, the Draft EIS inappropriately lacks analysis of effects on wildlife movement through the cleanup areas.

The Draft EIS minimizes the extent of impacts on several sensitive species owing to non-systematic wildlife surveys.

The Draft EIS bases impacts on listed species on wildlife surveys that were opportunistically conducted during the special-status plant surveys (Appendix E, Section 2.2, pg. E-28). Therefore, no USFWS or other rigorous protocols were followed when looking for species that were endangered, threatened, or of special concern. Appropriate survey protocols may have led to discovery of several more sensitive species than observed in the fall 2010 and spring 2011 biological surveys, with associated negative impacts to those species.

The Environmental Consequences' contaminant impacts on wildlife are not substantiated (Section 4.4.1.3) and impacts from loss of native habitat are not considered.

The Draft EIS states that contaminants on-site, such as mercury and polychlorinated biphenyls (PCBs), could result in wildlife mortality owing to ingestion that becomes concentrated in animals higher in the food chain. This may be occurring at the site, although the Draft EIS offers no studies to substantiate contaminant levels in wildlife either residing within or moving through the site. It is possible that a more significant impact could result from the removal of native habitat and soils and following habitat type conversion than the negative impact of ingestion of contaminated vegetation or soils.

The subsequent EIS should provide an analysis of the impacts of contaminant ingestion on wildlife based on contaminant levels in vegetation and typical ingestion rates and possible accumulation rates in the food chain versus impacts on wildlife from the complete loss of native habitat for the foreseeable future.

The Draft EIS references an inadequate vegetation survey and obscures the importance of rocky outcrop habitat by including it within other vegetation types.

The Draft EIS refers only to Appendix D, the 2010 fall field work report dated February 2011. However, Appendix E does provide a more extensive list of species observed in spring, 2011, and the information is presented accurately and more comprehensively. Relevant information in Appendix E should be incorporated in the analysis prepared for the subsequent EIS.

Rocky outcrop habitat should be included as a habitat type in Table 3.4-1. The incorporation of rocky outcrops into other types, as presented in Appendix D, limits the disclosure of rocky outcrop habitat as a critical substrate for the state-listed Santa Susana tarplant. Appendix E has a much more comprehensive description of the rocky outcrop habitat on-site and its value as substrate for the Santa Susana tarplant. The Draft EIS project description and impact analysis notes that excavation of rocky outcrops would be avoided, yet rocky outcrops are part of other habitat types that will be destroyed during soil removal. The rare plant surveys conducted also incorrectly conclude that no *Astragalus brauntonii* (Braunton's milkvetch) is present on site.

This species has an extensive and long-lived seedbank and NPS and others' research indicates that it can appear in sites where it was not previously seen after a vegetation clearing event such as a fire. The fact that appropriate habitat is present should be taken as an indication that the species may be present and impacts to the species from clean up may occur.

Inadequacy of Mitigation measure Biology BMP-1 (Section 4.4.2).

Mitigation measure Biology BMP-1 should not be considered either a best management practice (BMP) or a mitigation measure for the irreversible effects of habitat and native soil removal. Biology BMP-1 recommends reseeding with a commercially available native seed mix that is of the same composition of plants that currently exist at SSFL. A three-year implementation program is recommended, with a goal of 50% native cover at the end of the timeframe. The Draft EIS offers no long-term management plan for restoration. Lack of long-term monitoring is a primary reason for revegetation failure. In addition, obtaining native seed can be difficult and ensuring genetic appropriateness of seed is also difficult.

Numerous invasive species are also present on site and are likely to colonize disturbed soils and outcompete native plants seeded on disturbed soils. NPS finds that it is likely that Biology BMP-1 would result in habitat type conversion and loss of biodiversity.

Biology BMP-1 should also not be considered an effective mitigation measure for long-term wind and water erosion. Without the long-term monitoring and ongoing treatment, erosion of soils would become a long-term negative impact if restoration of plant cover is not successful.

The action alternative project description does not identify any confirmed replacement soil source.

The proposed action would replace removed soils at a backfill volume of one-third of the removed volume. The Draft EIS lists potential sources of backfill topsoil (Section 2, pg. 2-19), but fails to analyze whether the suggested sources would be the same soil type(s) as removed soils and whether or not the soils would be guaranteed uncontaminated and free of invasive weed

seeds. Given that soil treatment is the key element in the cleanup action alternative, a clear identification of the replacement soil source and its suitability is a critical factor in defining a viable cleanup program which needs to be included in the subsequent EIS.

The soils impact analysis does not take into account indirect impacts of remedial grading (Section 4.2).

The 500,000-cubic-yard estimated maximum soil removal could be significantly increased based on the need to resolve unforeseen unstable soils. There is also an inherent risk of determining the point at which the soils meet the Look-Up Table's background levels and limits on detectability. Unanticipated expansion of the grading footprint has the potential to exacerbate potential impacts on archaeological resources or sensitive species and native habitat.

Supplemental or the final EIS should consider Santa Ana wind events to fully assess fugitive dust impacts (Section 4.7).

The Draft EIS asserts that fugitive dust is likely to be deposited within or near the project site (pg. 4-104). The Draft EIS fails to consider Santa Ana high-speed wind conditions that occur throughout the year, and mostly during the fall through early winter months. Santa Ana winds come from the northeast and would carry contaminated fugitive dust onto state and federal park land within SMMNRA in the Simi Hills southwest of SSFL. The subsequent EIS should fully consider how to contain contaminated fugitive dust during Santa Ana high- speed winds and low humidity conditions when 105 acres of ground surface may be exposed.

Supplemental or the final EIS should address land use as an impact topic (Section 2).

Land use as an impact analysis topic was dismissed (Table 2.5-1). The Draft EIS states: "Existing and proposed land uses do not conflict with federal or state land use plans, policies, regulations, or laws. Therefore, no impacts to land use would occur". NPS has several concerns about dismissing land use from impact analysis.

The NPS Rim of the Valley Corridor Special Resource Study is not referenced.

As set forth by Congress, the purpose of the special resource study is to determine whether any portion of the Rim of the Valley Corridor study area is eligible to be designated as a unit of the National Park System or can be added to an existing NPS unit through a boundary adjustment to Santa Monica Mountains National Recreation Area. The NPS anticipates providing the public with a draft study report early in 2014, and the final report will be transmitted to Congress at the end of 2014. NPS staff is currently completing environmental analysis of a range of alternatives and developing recommendations for the study area. All of the preliminary alternatives include SSFL and the NASA property, and consider the cultural resources at SSFL nationally significant.

The study also recognizes the natural landscape at SSFL that contributes to the critical habitat linkage between Los Padres National Forest and the Santa Monica Mountains. The NPS urges that the forthcoming study be referenced in the subsequent EIS under a land use topic that informs the public of this and other studies or plans which may be affected by the action alternative.

NPS finds the resulting landscape from cleanup to background needs to consider impacts to the management goals and objectives of surrounding park agencies.

The greater land use setting around SSFL is largely public native open space parkland—the vast majority of which is managed by agencies with missions to preserve and protect natural and cultural resources and to provide resource-dependent public recreation. SSFL open space is continuous with both the ecological and cultural resource setting associated with NPS-administered Santa Monica Mountains National Recreation Area. In its current state, SSFL provides ecological benefits for NPS and other park lands. These benefits include wildlife corridors and population "reservoirs" of rare plants. The subsequent or final EIS needs to consider the project's consequences for the surrounding parkland land use and other agencies mandates for managing these parklands.

The possible action by Congress affecting the future of the SSFL area should also be considered.

In conclusion, the NPS finds the Draft EIS does not adequately address the stated Purpose and Need for the project.

The stated need for the proposed action is "to protect human health and the environment, to meet the requirements of the 2010 AOC by the completion date of 2017, to reduce ongoing maintenance costs, and to prepare the property for disposition" (Section 1.2).

The action alternative, as currently proposed, does not fully meet the stated need to protect the environment.

Based on our previous comments on the inadequacy of biological surveys, the inadequacy of evaluation of impacts, and the inadequacy of mitigation measures, we are concerned that the action alternative, as currently described, is not capable of meeting the goal of protecting the environment. Although the action alternative would remove contaminants – a benefit – as currently proposed it also would adversely impact soils, habitats, corridors and vegetation – long term unacceptable consequences.

The action alternative seeks to achieve "background levels" for contaminants at the site. Based on the need to remove or treat 500,000 cubic yards of native soil, the resulting disturbance will render the landscape into an unnatural assemblage of vegetation, soils, topography, and wildlife diversity, and the overall aesthetic and ecological condition will be artificially disjointed from the surrounding natural parklands. In this sense, the post-cleanup environment would be very unlike the reference sites on NPS lands within the SMMNRA used for the chemical and radiological background level studies. Indeed, the proposed cleanup may exacerbate negative site conditions, such as non-native invasive plant proliferation, habitat type conversion, and reduced wildlife diversity.

The Draft EIS does not demonstrate the project would reduce maintenance costs.

NPS did not find in the Draft EIS adequate discussion of the costs to be incurred in order to adequately implement the action alternative. Therefore, it is unclear whether the action alternative, as currently described, is capable of achieving the stated need to reduce maintenance costs, particularly compared to the no action alternative.

The NPS appreciates the opportunity to provide comments about information needed in order to prepare the subsequent EIS. For clarification, if needed, regarding our comments, or for further assistance in addressing these concerns and recommendations, please contact David Szymanski, Superintendent, Santa Monica Mountains National Recreation Area, (805) 370-2344.

Sincerely,

Patricia Sanderson Port
Regional Environmental Officer

Enclosures:
NPS Figure 1. Regional Map of SSFL Parkland and Open Space Context
NPS Table 1. Detailed Comments

cc:
Director, OEPC
Regional Director, NPS, San Francisco, CA
OEPC Staff Contact: Lisa Chetnik Treichel

No.	Page Number, Section, or Reference	Comment/Proposed Revision
1.	Regional Park Land Setting Affected Environment Section 3 and Appendices D & E	Maps in Section 3 and Appendices D and E either have no parkland identification (Figures 3.4-2, Wildlife Migration Corridor and 3.10-1, Transportation Network), or are missing several areas of public parkland and protected open space (Figure 3.12-3). Several maps in the Draft EIS appendices are also absent any parkland identification (Appendix D, E). None of the maps include the NPS-administered Santa Monica Mountains National Recreation Area boundary. The SMMNRA boundary is shared with the southwestern boundary of SSFL.
1.	Cultural Resources Executive Summary pg. ES-7 Table ES-4, pg. ES-12	The Executive Summary states "Demolition would have a significant, negative, local, and long-term impact to all of the historic architectural resources." The historic structures have been deemed eligible for the National Register. Thus, the impact would be beyond local since the Determination of Eligibility deemed the test stand resources were of national significance. Impact would be national.
2.	Cultural Resources Affected Environment Section 3.3	The archaeological resources in Area II have been identified through surface surveys in a heavily vegetated and rugged, sometimes inaccessible landscape that precludes reliable identifiable of archeological resources in much of the project area. The Draft EIS assumes that subsurface archeological resources throughout the developed areas are likely to be disturbed. At the one clearly significant archeological site complex (Burro Flats Painted Cave), site boundaries were left undetermined. Either a thorough review of the existing documentation or intensive surface survey/mapping would have resolved this, but neither appears to have been conducted. The 1975 National Register nomination form, based on a 1973 archeological survey report, describes a huge midden area within the extensive site complex (CA-VEN-1072) that should have been mapped in order to define the affected environment at this location. As described in the Draft EIS and the associated cultural resource study (Appendix C), the site would appear be focused on the main pictograph panel, but the midden area could be an equally significant site component, one that might contain buried house structures and human burials. At present, all knowledge about this area is based on unpublished and largely unanalyzed data collected by avocational and field school excavations over a half century ago. The boundaries for the Santa Ynez Band of Chumash Indians' Sacred Site have not yet been determined, and it is unclear how this applies to the Area of Potential Effect. The Traditional Cultural Properties (TCP) and Cultural Landscape Assessment are still underway to determine whether there is a TCP that is eligible for listing on the National Register. Without additional information, it is impossible to know how these potential resources comprise portions of the affected environment.
3.	Cultural Resources Appendix C-51 Section 6.1.2	Statement that limited Holocene soils are present in most of APE is questionable. North 1/3 of area has several areas of deep soils.
4.	Cultural Resources Appendix C-52	Recommended plan for dealing with "unanticipated discoveries" at VEN-1072 is inadequate for an eligible archeological site that has demonstrated subsurface potential of great significance. The recommended approach would barely suffice for twentieth-century style "salvage archeology."

5.	Cultural Resources Appendix C-52 Section 6.1.4 Affected Environment Section 3.3.3.1, pg. 3-15	Sacred Site is assumed to encompass the entire APE. What is this based on? Santa Ynez has expressed concern about VEN-1072 and the documented Native American occupation which is clearly focused on the south 1/3 of APE.
6.	Cultural Resources Appendix C-52 Section 6.1.5 Affected Environment 3.3.3.2, pg. 3-15	TCP study is underway, but no results are provided in draft EIS. It is not clear if there is a TCP at this point. How relevant is the TCP to the DEIS. The survey report and EIS may be premature at this stage of TCP identification.
7.	Cultural Resources Appendix C-36-37	The description of the Burro Flats Painted Cave (CA-VE-1072) is extremely superficial, as is the summary of previous work conducted there. The authors claim to have fully re-documented the site complex to resolve inconsistences and problems with previous work, when these issues were actually resolved in 1991 by Al Knight and colleagues. Although Knight's work and subsequent publications are not acknowledged, his nomenclature for incorporating multiple previous site designations into a single complex (VEN-1072) is adopted. The 2007 record by CH2MHill is actually very limited and produced little new information except for a new map of the site superimposed on aerial imagery. The south and west site boundaries are undefined, although the report elsewhere includes recommendations that imply that basic site parameters including site boundaries have been determined.
8.	Cultural Resources DEIS Section 3.3.3.3 pg. 3-16	Again, the EIS states that numerous multiple sites were re-recorded in 2007 to form one larger site (VEN-1072) and reduce misinterpretations and inconsistences. In fact, this work was conducted over a decade earlier by Al Knight as independent research that was permitted by NASA, but done for purposes of Section 106 compliance or with any linkage to the current undertaking.
9.	Cultural Resources Environmental Consequences Section 4.3.1.1 pg. 4-17	Demolition of buildings and facilities is said to be a minor impact and no adverse effect because of previous disturbance, including piping and other facilities in and around VEN-1072. However, intact subsurface archeological deposits are routinely found adjacent to areas which have previously been trenched and otherwise impacted for installation of utilities. With no prior subsurface evaluations of depth, character, and integrity, the currently existing data from the site indicate that adverse effects are much more likely to occur. Because of partial loss that has already occurred, the remaining archeological resources at this extremely important site are especially important.
10.	Cultural Resources Environmental Consequences Section 4.3.2 pg. 4-25	Regarding Measure #3, suggesting a "more in-depth ethnographic study" that would build on the 2013 TCP study is meaningless when all that has been said at this point is that the TCP study is currently underway. There is no reason to believe that additional subsequent research would be productive without knowing anything about what has already been learned from this type of research.

11.	Cultural Resources Environmental Consequences Section 4.3.2 pg. 4-25	Regarding Measure #4, "use of local archeologists and anthropologists with knowledge of the area" to determine site boundaries and gain a better scope of the site sounds like work that should have already been done before impacts could effectively be evaluated. It also imposing on the local community to help NASA do work that is normally a very intensive and sometimes expensive professional service done by paid contractors. This sounds like suggesting that a volunteer effort to remedy current deficiencies in site knowledge would somehow help mitigate partial destruction of VEN-1072. These deficiencies are not unanticipated. They have been discussed in previous 106 Consulting Party discussions, and the NPS Cultural Resource Manager at SMMNRA has suggested twice in those conversations that new fieldwork and testing were needed to define site parameters. In one conversation, NASA agreed to arrange site testing at VEN-1072 to remedy the deficiency. That clearly has not taken place.
12.	Cultural Resources Environmental Consequences Section 4.3	The Draft EIS suggests that total demolition of the historic architecture might not be necessary if preserving one or more historic structures is selected as mitigation for the removal of other historic resources. What technical constraints are involved? Exactly where preservation-over-demolition might be feasible is not identified in the Draft EIS. If one test stand could be preserved, why not preserve more of these nationally significant structures? Suggested mitigations for impacts to prehistoric archeological resources actually consist of remedial documentation to provide information that typically is used for planning data recovery or other mitigation measures commensurate with an undertaking of this type and scale. As described also in the Affected Environment, the existing data are not adequate for scoping and designing effective mitigation for impacts.
13.	Biological Resources Affected Environment Wildlife "Migration" Corridors Section 3.4.2	Figure 3.4-2 illustrates the habitat linkage area, but lacks habitat quality information and does not show park land and open space in the vicinity of the property. Thus, the figure does not adequately illustrate the location of this property in the context of existing parkland and important habitat. Please see attached NPS Figure 1 for a more accurate illustration of the greater park land and open space setting.
14.	Biological Resources Affected Environment Wildlife "Migration" Corridors Section 3.4.2	The citation upon which the Draft EIS statement is based incorrectly references U.S. Fish and Wildlife Service (USFWS) as the source for critical habitat corridors in the region. USFWS maps critical habitat for listed species and is not responsible for mapping critical habitat linkages for wildlife movement. The correct reference would be the South Coast Missing Linkages project report (Penrod et al. 2006: Penrod, K., C. Cabañero, P. Beier, C. Luke, W. Spencer, E. Rubin, R. Sauvajot, S. Riley, and D. Kamradt. 2006. South Coast Missing Linkages Project: A Linkage Design for the Santa Monica-Sierra Madre Connection. Produced by South Coast Wildlands, Idyllwild, CA. www.scwildlands.org, in cooperation with National Park Service, Santa Monica Mountains Conservancy, California State Parks, and The Nature Conservancy.). The South Coast Missing Linkages report was the product of a major collaborative effort among a dozen governmental and non-governmental organizations. This landmark report on wildlife habitat linkages is not cited in the Draft EIS.
15.	Biological Resources Affected Environment Wildlife "Migration" Corridors Section 3.4.2	The Draft EIS's statement that "SSFL *could* play a role for habitat linkage among the Santa Susana Mountains, the Simi Hills, and *possibly* into the Santa Monica Mountains" (pg. 3-23) (emphasis added) is incorrect. The South Coast Missing Linkages report identified the entire SSFL, including the NASA portion, as an important habitat area containing habitat for 19 of the 20 species considered in the habitat linkage analysis (the 20th species was the southern steelhead trout; the study found no currently existing habitat for this species in the area studied). SSFL presents a continuum of native habitat types; there is nothing distinguishing habitat on the 451-acre NASA property versus the rest of the 2,850-acre site and its service to wildlife living within or moving through SSFL and beyond into parkland within Santa Monica Mountains National Recreation Area. With that observation, the South Coast Missing Linkages report included open space within SSFL in a priority habitat linkage design connecting the *Santa Monica Mountains* through the Simi Hills and Santa Susana Mountains to the Sierra Madre.

16.	Biological Resources Affected Environment Wildlife "Migration" Corridors Section 3.4.2	The Draft EIS's statement that the mapped habitat linkage excludes the NASA property is overly conservative and presents a narrow interpretation of the complex set of factors upon which to map a wildlife habitat linkage. The Missing Linkage report's mapped linkage area was defined through delineation of the top one percent (1%) of habitat as identified by a GIS least-cost model. The modeled linkage does not mean that areas outside the critical linkage map are unimportant to the wildlife corridor. The mapping also does not imply that outside areas are unimportant habitat or unimportant to wildlife movement. The fact that the NASA property is not included in the critical linkage map only means those parcels were not selected as the top 1% of the habitat. The NASA portion of the SSFL is immediately adjacent to the 1% critical habitat linkage area and appears in the South Coast Missing Linkage report's 3% and 5% habitat linkage areas.
17.	Biological Resources Affected Environment Wildlife "Migration" Corridors Section 3.4.2	The Draft EIS uses the phrase "wildlife migration corridor" throughout the document, although this phrase presents a limited purpose for protecting habitat for wildlife movement. The appropriate phrase is "wildlife habitat linkage."
18.	Biological Resources Special Status Wildlife Appendices D and E	The Fall 2010 (Appendix D) and Spring 2011 (Appendix E) biological surveys did not conduct systematic wildlife surveys (see Appendix E p. E-28 for information). Surveys were for vegetation, and wildlife that was encountered was incidentally noted. Therefore, no USFWS or other rigorous protocols were followed when looking for species that were endangered, threatened, or of special concern. For sensitive, threatened, or endangered birds: Point counts, area searches, and nest searches should have been conducted. For sensitive, threatened, or endangered aquatic amphibians: Stream surveys during the day and night should have been conducted. • California red-legged frogs (*R. draytonii*) – The local population of *R. draytonii* is about 3.5 miles away from SSFL. Movements of frogs from the local population to sites less than 1 mile away have been documented every year since 2009. It is unknown whether adult frogs would travel the 3.5 miles to SSFL, but USFWS survey protocols should be followed to determine if there are *R. draytonii* on the NASA property. Suitable breeding and year-round habitat exists on the property. For sensitive, threatened, or endangered terrestrial herpetofauna: cover boards, visual surveys, transect walks, pitfall trapping, or comparable census methods should have been conducted. For sensitive, threatened, or endangered Desert woodrats: Sherman trapping at nests should have been conducted. Incorrect Information in Appendix D Table 2 (p. 4-10 to 4-12): • Mountain garter snake (*Thamnophis elegans*) is not found in this area. Most likely, the surveyors saw a two-striped garter snake (*Thamnophis hammondii*) and misidentified it because they were not familiar with the local species. • Bobcat species name should be *Lynx rufus*. • Mountain lion species name should be *Puma concolor*. • Wild pig (*Sus scrofa*) has not been detected before in this area. It is highly unlikely that wild pigs are in the area of SSFL because they have not been detected in other park sites like Cheeseboro Canyon or Upper Las Virgenes Canyon. The report does not say what the "sign" of pigs was. NPS staff will follow up on this.

19.	Biological Resources Affected Environment Special Status Wildlife Section 3.4	Species that were not detected does not mean they were not there. Survey methods were not appropriate to make the conclusions that are made in this table and in Appendix D and E (see below). - Desert woodrat (*Neotoma lepida*) – not detected during observations but highly unlikely that woodrat species in SSFL is this species of special concern, as the habitat is highly suitable to this species. Without night surveys and trapping, there is no way the surveyors could have determined what species of woodrat was found. - Fairy shrimp species – not detected during observations but no aquatic surveys (i.e. dip net, kick net) were done. - Spadefoot toad (*Spea hammondii*) – personal communication from a reliable source (local biological consultant) told me (K. Delaney) that ponds at SSFL Area IV were breeding grounds for this species. SSFL has highly suitable habitat for this species, it has been documented in the CNDDB in this area, and individuals have been captured in the Simi Hills (by NPS) and at Chatsworth Nature Preserve (by Southwestern Herpetological Society) within the last 10 years. It is possible that this species could also be found on the NASA property. - Coastal California gnatcatcher (*Polioptila californica californica*) – suitable habitat is found nearby. More extensive surveys during the spring breeding season should have been done to confirm non-detection of this species.
20.	Biological Resources Environmental Consequences Special Status Wildlife Section 4.4 pp. 4-30, 4-31	- Fairy shrimp: Finding of "no expected impacts" is premature given no surveys were done for these species. - Coast horned lizard: 1. Three juvenile lizards were observed during the surveys, the report only states the 1 lizard seen during Fall 2010 surveys. 2. The conclusion that the population of coast horned lizards is small because only 1 individual was observed during surveys is incorrect. A population size cannot be determined from a few incidental observations. 3. The observation of juvenile lizards suggests a healthy breeding population of this sensitive species 4. The impact of the proposed action on this species would be *moderate to significant*, *negative*, *local*, and *short term*. - Two-striped garter snake: NPS finds the proposed action on this species would also be *moderate to significant*, *negative*, *local*, and *short term*.
21.	Water Resources Wildlife Environmental Consequences Section 4.6	All actions that affect surface water (ponds and streams) would affect native amphibian breeding habitat. Native amphibians known to breed on the property include the Western toad, Pacific tree frog, and spadefoot toad. Effects from the proposed action to surface water would have *significant, negative, local* and *short term* impacts to native amphibian breeding.
22.	Biological Resources Wildlife Affected Environment Table 3.4-3	Please correct typo: "gnatcatcher" is misspelled.

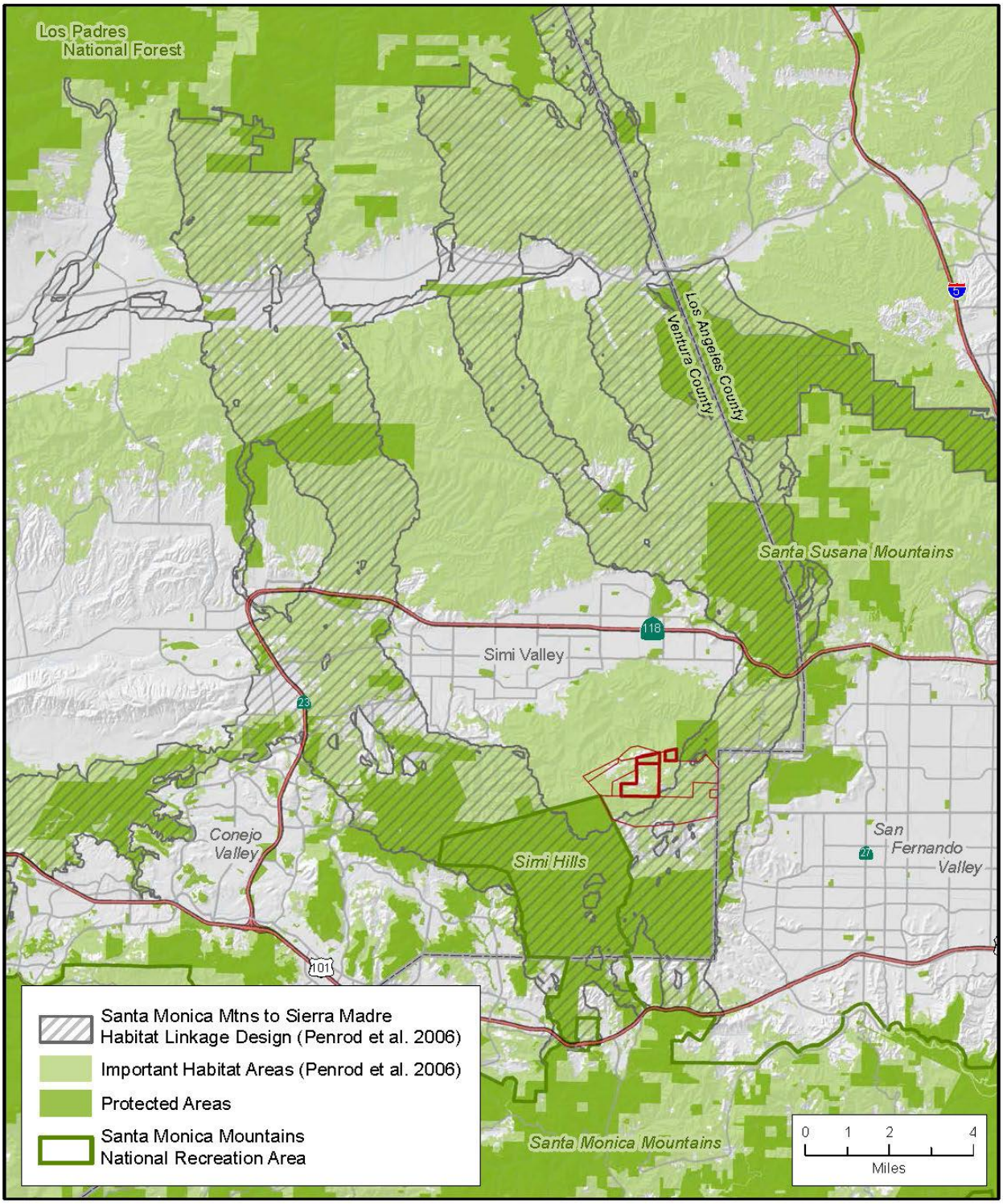
23.	Environmental Consequences Biological Resources Section 4.4.1.3 Section 6 Biology BMP-1	Biology BMP-1 is unrealistic. Removal of 500,000 cubic yards of soil would be akin to a quarrying operation, thereby removing all native substrate and rendering no opportunity for soil crust regeneration and associated native recolonization. Studies of native revegetation efforts at mining reclamation sites have found lack of success, and typically the result is conversion to non-native plant populations and loss of native diversity ("*Does post-mining rehabilitation restore habitat equivalent to that removed by mining? A case study from the monsoonal tropics of northern Australia*." Author S. Gould. Wildlife Research 38(6) 482-490, November 2011). Soil properties (physical, chemical, organics like roots that hold soil together, microbial properties) need to be similar to the native soils. Replacement soils would be unconsolidated and subject to wind and rain erosion, particularly when vegetation is not yet established. What metrics would be used to determine soil integrity and to what extent would the replacement soils be compacted during installation? Biological soil crusts are particularly important in arid and semi-arid places, including many areas of soils in the Santa Monica Mountains and Simi Hills. The following link to a study on soil crusts describes the importance of soil crusts to plant establishment: http://sbsc.wr.usgs.gov/products/pdfs/Belnap_et_al_ch21_Influence_on_soil.pdf. Removal of the top two feet or more of native soils would also eliminate the native seed bank. The proposed seeding alone would not be sufficient. Plantings from local sources of stock would be necessary. Control of invasive plant propagules would be important to avoiding noxious plant spread, assuming the imported replacement soils could be deemed weed-free. Long-term site maintenance is recommended—ten or more years for such a large area of high disturbance, or until the plant cover is a self-sustaining native community. The three-year monitoring period proposed in the Draft EIS is considerably too short for such an extensive area of disturbance.
24.	Biological Resources Vegetation Environmental Consequences Section 4.4.1.2 pg. 4-31	The statement that impacts to native vegetation communities is short-term is unsupported by data. What evidence indicates ability to successfully restore the native vegetation communities that were present, after soil is removed? Ecological restoration is extremely difficult and simply re-seeding areas where 2 to 20 feet of topsoil has been removed seems unlikely to result in restoration of a functioning native ecosystem. Impacts should be reclassified as long-term and possibly permanent losses.
25.	Biological Resources Vegetation Environmental Consequences Section 4.4.1.2 pg. 4-31	The Draft EIS states "Over time, the demolition would increase the amount of undeveloped, vegetated area and would have a moderate, beneficial, local, and long-term impact." This statement in unsupported by data. Please provide additional data to support this claim. NPS experience in the Santa Monica Mountains National Recreation Area, as well as other studies in the ecological restoration literature, suggests that if the removal areas do become revegetated over time, the likeliest outcome is that they will be non-native annual grassland or other non-native herbaceous weeds. NPS studies of seeding in the Santa Monica Mountains have found it to be an ineffective treatment for the most part without large amounts of hand-weeding post-seeding.
26.	Biological Resources Vegetation and Land Cover Types Affected Environment Section 3.4.1	The Draft EIS refers only to Appendix D, the 2010 Fall field work report dated February 2011. Appendix D includes vegetation survey reports that are difficult to assess owing to mixing of old and new taxonomy without identifying synonymy, listing by common names (species are not grouped by family and genera), and misspelling of several scientific names. The findings in Appendix D were based on plant survey lists from 2008, 2009, and fall 2010 (pg. D-78, Appendix D). A more comprehensive field effort was carried out in spring, 2011, and resulted in the report dated December 2011, presented in the Draft EIS as Appendix E. Appendix E has a more extensive list of species observed in spring, 2011, and the information is presented accurately and more comprehensively. NPS finds Appendix E should be referenced in the Draft EIS, because Appendix D insufficiently presents vegetation and land cover types.

27.	Biological Resources Environmental Consequences Santa Susana Tarplant Section 4.4.1.1 pg. 4-30	Impacts to Santa Susana Tarplant are not adequately evaluated. Please identify what portion of the population at SSFL would be destroyed by soil removal/remediation activities. Also, please identify that seed production and seedling survival rates in remaining population are high enough to support population viability into the future. Also, please evaluate vulnerability of the population under climate change to show that the individuals lost during soil removal will not be critical to future population survival.
28.	Biological Resources Environmental Consequences Braunton's Milkvetch Section 4.4.1.1 pg. 4-30	Impacts to Braunton's milkvetch are not adequately evaluated. Braunton's milkvetch appears to have a long-lived seedbank and a meta-population type dynamic in natural areas. NPS has had Braunton's milkvetch show up in previously unrecorded areas after a fire or other form of soil disturbance (exposing surface soils to the light) (NPS, unpublished survey data can be provided upon request). These more transitory populations may play an important role in the long-term persistence of these species (a regional population viability analysis is needed to evaluate the role of these transitory populations in the long-term persistence of the species). If appropriate habitat exists in the ROI, negative impacts to this species should be assumed and mitigated appropriately rather than assuming no impacts because no plants above ground were observed. Alternatively, an extensive series of soil samples could be collected and germinated in the greenhouse to test for the presence of Braunton's milkvetch in the seedbank.
29.	Biological Resources Vegetation and Land Cover Types Affected Environment Section 3.4.1, pg. 3-24	*Plantago erectus* should be corrected to *Plantago erecta*. (In 2nd paragraph below Table 3.4-2)
30.	Biological Resources Vegetation and Land Cover Types Affected Environment Section 3.4.1, pg. 3-35	No need to capitalize 'palustrine' in mid-sentence.
31.	Biological Resources Vegetation Appendix D-15	*Eriodictyon crassifolia* should be corrected to *Eriodictyon crassifolium*. (Under 4.1.1.2 Chaparral)
32.	Biological Resources Vegetation Appendix D-17	*Artemesia* is spelled *Artemisia* (1st paragraph under 4.1.1.3)
33.	Biological Resources Vegetation Appendix D-17	The document doesn't state which source is followed in plant names (TJM1 or TJM2)--possibly TJM1, so *Sambucus mexicana* probably okay although besides TJM1 it is commonly recognized now that *S. mexicana* was a mis-id for California. The species we have is *S. nigra* subsp. *caerulea*. Later on pg. D-19, under Venturan CSS, *Acmispon glaber* is based on TJM2 while *Yucca whipplei* is based on TJM1. On previous page *Eremocarpus setigerus* is based on TJM1. Under sensitive species, *Deinandra minthornii* is based on TJM2. It would probably be good to follow TJM2 in all plant names since that is the new standard.

34.	Biological Resources Vegetation Appendix D-18	Under 4.1.1.6 Mulefat Scrub, **2nd sentence** "consists ~~of~~ mostly of…"; **3rd sentence**: *Baccharis salicifolia* shrubland alliance (not *salicifolias*)
35.	Biological Resources Vegetation Appendix D-57	Under disturbed chaparral: We shouldn't have *Eriodictyon californicum*. Likely *E. crassifolium* (also under Disturbed Sage Scrub on page D-59). Likewise, we shouldn't have *Yucca schidigera*—our species is *Y. whipplei*.
36.	Biological Resources Vegetation Appendix D-65	Under dominant vegetation for ruderal: *Dieteria* (segregated from *Machaeranthera*) has not been reported from our area. (*Symphyotrichum lanceolatum* var. *hesperium* does occur in our floristic region. Images are posted at www.smmflowers.org/bloom/species/Symphyotrichum)
37.	Biological Resources Vegetation Appendix D-71	Plant species list is generally better organized alphabetically first by family and then by genus/species, listing the scientific name first. Common names are ambiguous and a genus with several species will be distributed in different places on the list, making it difficult to understand the nature of the species complex/community.
38.	Biological Resources Vegetation Appendix D-74 and onward	Plant list typos and suspicious entries: *Yucca whipplei* (not *whippleri*); *Salvia columbariae* (not *columberiae*); *Ceanothus arboreus* is a mis-id, we don't have that—see www.smmflowers.org/bloom/species/Ceanothus for SMMNRA species (*C. crassifolius*, *C. oliganthus*, and *C. spinosus* are known from the site); *Ceanothus crassifolius* (not *crassifolia*); *Lonicera hispidula* is suspect…we have not been able to confirm an old record from Malibu Canyon. You begin to run into *L. hispidula* along the coast at about Santa Barbara (*Lonicera subspicata* var. *denudata* would be more likely); *Artemisia douglasiana* (not *Artemesia*); *Chlorogalum pomeridianum* (not *Chloragalum*); *Eriodictyon crassifolium* (not *crassifolia*);
39.	Biological Resources Vegetation Appendix D-82	Caption for Photo 6: Likely the exposed outcrop habitat has not resulted from non-native 'grassland' eroding away. The non-native annual grasses are likely a later introduction from ranching era, encroaching on the crust/moss/*Selaginella* /native forb patches. This comment applies also to Photo 22.
40.	Biological Resources Vegetation Appendix D-84	Caption for Photo 14: The dry plant in foreground looks more like *Carduus pycnocephalus* (based on habit/stature; heads are not clear enough to determine from picture either way…) The difference would be native vs. non-native…
41.	Biological Resources Vegetation Appendix D-86	Photo 21: the non-chalky *Dudleya* sp. is *D. lanceolata*. (Also in Photo 23.) During survey in June 2011, only *D. lanceolata* and *D. pulverulenta* was found. No suitable habitat for sensitive *Dudleya* known from this floristic region was found at the site. June 2011 survey was attended by a botanist with extensive knowledge of local common and sensitive *Dudleya*.
42.	Biological Resources Vegetation Appendix D-86	Photo 22: *Dudleya pulverulenta*

43.	Soils Environmental Consequences Section 4.2	The soils impact analysis does not take into account remedial grading that typically ensues when any large amount of soil is excavated. The 500,000 cubic yard estimated maximum soil removal could be significantly increased based on the need to resolve unforeseen unstable soils.
44.	Soils Environmental Consequences Soils Section 4.2 Executive Summary, Look-up Table dated June 11, 2013	There is also the risk of over-excavation owing to difficulty in confirming the field point at which the soils meet the Look-Up Table's background levels and limits on detectability. It is apparent in the Look-Up Table document that the potential for false positives, i.e. remaining contamination, could lead to excessive excavation. The statistical method for reducing false positive readings was an important consideration in setting the testing standard for cleanup to background levels. The Draft EIS did not provide a layman's description of the testing parameters described very technically in the Look-Up Table document. The document is difficult to interpret. Such technical presentation, accessed by reference only in the Draft EIS, makes the ramifications of the proposed cleanup to background difficult to grasp.
45.	Air Quality, Fugitive Dust Environmental Consequences Section 4.7.1.2	The Draft EIS needs to consider the potential for Santa Ana wind events to create fugitive dust. The wind roses provided in Figures 4.7-1, 2, and 3 may indicate overall mild wind patterns, but they do not illustrate the potentially severe Santa Ana wind conditions. NPS studies of Santa Ana wind speeds collected from the Cheeseboro Canyon RAWS site between 1997 and 2010 found maximum wind speeds between 34 and 45 miles per hour (mph) during Santa Ana wind events, with 0 to 6.8 events per month. Raphael ("The Santa Ana Winds of California", *Earth* Interactions, Vol. 7, Paper No. 8, 2003) found a mean number of 20 Santa Ana weather events occur per year, lasting typically 1.5 days per event. The Draft EIS should evaluate the ability to control fugitive dust during high wind/low humidity conditions lasting both day and night.
46.	Hazardous Materials and Waste Executive Summary Section ES-5.0 and 5.3.3 Table ES-4 Environmental Consequences Hazardous Materials and Wastes Section 4.12	The Draft EIS states conflicting impact levels for the Hazardous Materials and Waste topic. The Executive Summary states an overall finding of a "*significant*, beneficial, local, and long term" impact for the removal of hazardous wastes. Environmental Consequences Table 4.12-2 summarizes eight individual impacts, with only one finding of a *moderate*, beneficial impact—for reduction or removal of hazardous material from soils and groundwater. No significant impacts were identified in the Environmental Consequences. Furthermore, the Executive Summary (Section ES-5.3.3) proceeds to justify the significant beneficial impact based only on the large volume of soil removed, without regard for any other quantitative or qualitative factors. NPS finds this inconsistency important, because in return for only a moderate long-term positive impact for hazardous waste removal (and water quality) from the cleanup-to-background action alternative, there are several significant or moderate long-term negative impacts on all other resource areas, including natural and cultural resources of concern to NPS.
47.	Reduced Maintenance Cost Purpose & Need Section 1.2	While NEPA does not require preparation of a cost-benefit analysis, if one has been prepared that would substantiate that the proposed project would reduce site maintenance costs, the cost-benefit analysis needs to be included in the Draft EIS (40 CFR 1502.23).
48.	Topics Dismissed Land Use Project Description Section 2 Table 2.5-1	Dismissal of Land Use: The Draft EIS does not include the basic information of existing land use and zoning classifications assigned by Ventura County to SSFL and the NASA component. The Draft EIS also does not present any surrounding land use classification typically found in a "Setting" description within an EIS.

49.	Topics Dismissed Land Use Project Description Section 2 Table 2.5-1	The dismissal of land use as a topic does not correlate with the Draft EIS's Need statement to prepare the property to support future disposition. The Draft EIS does not follow the advice provided in CEQ's list of 40 questions on implementing NEPA. Question 18 addresses uncertainty about indirect impacts and discusses uncertainty related to land use in the event of disposition. The advice notes that an EIS preparer should discuss indirect impacts on an issue like land use when trends are ascertainable or potential purchasers have made themselves known. At least one potential purchaser (recipient) of the property has been officially identified: Santa Ynez Band of Chumash Indians (notification to GSA as an interested party). Boeing has also expressed commitment to native open space as a future land use. While the Boeing property is jurisdictionally separate from the NASA land within the overall SSFL site, there is no ecological distinction between the two ownership areas, and Boeing has offered in the past to convey their property to the state for public parkland. The potential to hold the land as a native habitat and cultural resource protection open space park has been widely discussed among parkland agencies, including at meetings of the interagency Linkage Implementation Alliance (LIA). LIA participants include NPS and several other parkland and resource management agencies with jurisdiction in the Santa Monica Mountains and Simi Hills, as well as CalTrans. The LIA seeks solutions to protect and preserve habitat linkages between Los Padres National Forest and the Santa Monica Mountains. NPS and the other participants have been anticipating disclosure in the Draft EIS of cleanup impacts, particularly impacts on future land use as well as on natural and cultural resources. The disclosure of the project's indirect impacts on future land use is critical to NPS's or other agencies' decision-making tree to pursue acquisition of the NASA property.



NPS Figure 1. Regional Map of SSFL Park Land and Open Space Setting. Santa Monica Mountains to Sierra Madre Habitat Linkage Design and Important Habitat Areas (Penrod et al. 2006) shown in context of existing park land. Santa Susana Field Lab parcels are shown in red, with NASA properties highlighted. Data sources: South Coast Missing Linkages, California Protected Areas Database (CPAD 1.9), NPS, Santa Monica Mountains Conservancy.

From:	gcompass@earthlink.net
To:	MSFC-SSFL-EIS
Subject:	Final Comments
Date:	Monday, September 30, 2013 3:32:55 PM
Attachments:	CA-VEN-1072 final comments for 8-29-13 NASA meeting.doc

Dear Mr. Elliott,

Please find the Final Comments for the DEIS and NASA Consultant Meetings by Compass Rose Archaeological, Inc., attached.

Sincerely,
Gwen

Gwen Romani
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Final comments for the DEIS and NASA Consultant Meetings

Prior to signing the ROD:

The boundaries of the Traditional Cultural Property (TCP), CA-VEN-1072 and CA-VEN-1803, must be determined prior to any soil test excavation or proposal of any mitigation measures. Environmentally Sensitive Areas (ESAs) should be established, including a buffer zone (15m-30m?), around CA-VEN-1072, as well as CA-VEN-1803. According to archaeologist Al Knight, the dividing line between Area II (NASA), Area III (Boeing), and the Southern Undeveloped Area (Boeing) is more-or-less down the middle of the cultural deposit (midden) at CA-VEN-1072. If ownership of CA-VEN-1072 is indeed shared, this further complicates matters in terms of responsibility and will require a functioning cooperation between NASA and Boeing.

Establishing ESAs for CA-VEN-1072 and CA-VEN-1803

In consultation with Native Americans, archaeologists should complete an intensive re-survey of the area, using transects spaced in 5-15 meter intervals. Whichever cultural resource firm is hired, it would be highly advantageous if a few of the archaeologists had rock climbing experience (with credentials?), so that at least some of the normally inaccessible rock shelters, rock crevices, and rock ledges where artifact caches and/or rock art may have been hidden, could be inspected for their presence - particularly in the area of the Coca Test Stands. A sampling strategy of hand controlled excavations (e.g., Surface Scrapes, Excavation Units, and Shovel Test Pits) should be implemented to systematically define the boundaries of CA-VEN-1072 and CA-VEN-1803, and establish the ESAs. Each controlled excavation should be monitored by a local Native American with artifact identification experience. The results of the findings should be catalogued, analyzed, and presented as a written document to be included as part of the 36 CFR 800 compliance process.

Cultural Mitigation Measure #4 and 36 CFR 800

If Cultural Mitigation Measure #4 depends solely on the current knowledge of local archaeologists and anthropologists, then it must be considered inadequate. As part of 36

CFR 800, CA-VEN-1072 must be properly evaluated. Minimally, a complete evaluation needs to include all the information available about the site. Currently, NASA has chosen to ignore the potential information contained in the prior excavations completed in 1953, 1954, 1959, and 1960 at the site midden component. Although incomplete to date, Compass Rose Archaeological, Inc., Dr. Chester King, and Dr. Louis Tartalia have been conducting volunteer analyses of the collections. However, both NASA and Boeing should contribute monies to complete the analyses of the past collections of CA-VEN-1072 in order to comply with 36 CFR 800. It is the responsibility of the lead agency to know as much as possible about a cultural resource prior to establishing mitigation measures, particularly since CA-VEN-1072 has been listed on the National Register of Historic Places under criterion D - *that have yielded, or may be likely to yield, information important in prehistory or history.*

At this point, and based on the limited available data, it is simply assumed that the activities reflected at the CA-VEN-1072 midden constitute a sacred site. However, the types and/or diversity of activities that occurred in the midden portion of CA-VEN-1072, remain unknown. Greater data sets from CA-VEN-1072 would also allow the relationship to the archaeological sites located in Area IV (Boeing) to be analyzed and comprehended. To complete the analyses, monies would be needed to conduct special studies, including C14 dating, obsidian hydration and sourcing, botanical studies, as well as report write-up. This, however, would not constitute a complete mitigation. The Burro Flats collections of the 1950s and 1960 were excavated under different circumstances. Both the excavation and artifact identifications were conducted by relatively inexperienced students and volunteers. Screening of the excavated soils, when it occurred, was done in the field using relatively large-meshed screens (i.e. ¼ inch mesh) Units were not necessarily completed to sterile soil or bedrock; some were probably stopped at the end of the field class. Units were excavated in different sized levels, some were 12" thick and others were 6" thick.

In addition to completing the analyses of the prior collections, control samples should be taken from previously excavated areas to determine the types and diversity of small artifacts missed during the earlier collections. Further, samples should be obtained from the oven features at CA-VEN-1072 to determine what was processed and during what time periods. The establishment of the ESA and the completion of the additional work in the previously excavated areas of CA-VEN-1072, should also be part of the 36 CFR 800 compliance process.

The fact that the land containing CA-VEN-1072 is owned by NASA (Area II) and Boeing (Area III and the Southern Undeveloped Area), makes them both equally responsible for 36 CFR 800 compliance. Therefore, both NASA and Boeing should be jointly responsible for the costs incurred for completing the part of 36 CFR 800 compliance described above. This work should be completed prior to any further soil test excavations or proposal of any mitigation measures.

Implementation of the ROD

Following the methods instituted by the cultural resource management company, JMA (2012:15-22) in Area IV for Boeing, all vegetation removal around each individual or group of soil test sample(s) within the ESAs should be monitored by a qualified archaeologist and a local Native American, who has artifact identification experience. Each soil test hole in the ESAs should then be monitored by a qualified archaeologist and local Native American. It should be noted that the JMA method of monitoring of vegetation removal led to the recordation of numerous new archaeological sites during the soil testing that were missed during the previous surveys of Area IV.

Minimally, in areas outside the ESAs, all soil test holes should be monitored by a local Native American with artifact identification experience, after the vegetation removal is monitored by a qualified archaeologist and a local Native American. A predetermined area around demolition of any rocket test stands (minimally, the Coca Test Stands) and any associated soil test holes, should first be surveyed and then monitored during vegetation removal by a qualified archaeologist and a local Native American. Finally, each test hole should be monitored by a local Native with artifact identification experience, since the test stands exist on the same landform as the Summer Solstice sunrise notch, which was undoubtedly sacred to the local Native Americans.

The use of such terms as "minor" impacts in the Draft EIS is considered to be highly inappropriate to both the Native Americans and archaeologists. If a 4.5 to 8 inch hole was drilled through a sacred artifact or human bone, these impacts would not be considered "minor" to a Native American or an archaeologist, especially within a sacred site. The areas within and outside the ESAs where all "minor" earth disturbing activities, will be conducted, such as drilling holes, creating fences, etc., should be surveyed first, then monitored as described above.

Further, to describe archaeological negative effects as "local," may not be correct. It was hypothesized by John Romani in his MA thesis (1981) that CA-VEN-1072 was the "private" viewing area for religious practitioners during the Winter and Summer Solstices. The site may also have been used to prepare the cerebral and physical necessities for at least the "public" Winter Solstice (and possibly the fall *Hutash* Festival) ceremonies held at the village of *Huwam/Jucjauybit* (CA-LAN-413), located several miles downstream in lower Bell Canyon. Therefore, if this hypothesis is correct, any archaeological negative effect has the potential to be more "regional," and not merely "local."

The 1967 revised Calabasas USGS topographic map depicts Bell Creek as a "blueline" stream that flows next to (within 100 feet) or through CA-VEN-1072, depending on the outcome of the boundary investigations, thereby requiring a Section 404 Permit as issued by the Army Corps of Engineers. From the consultants meetings to date, it does not appear that the Army Corps of Engineers has even been considered as a consulting party, a point brought up by the SHPO in their comments on the Draft EIS on September 25. This may be considered quite egregious, since in fact the Army Corp should be a

cooperating, or even a responsible federal agency. Under any circumstance, their participation would assure an additional voice in the protection of the cultural resources on the SSFL. This is a grievous error and omission in the NEPA and Section 106 process so far, as well as in the Draft EIS.

Rocket Test Stands at the SSFL

Ideally, Compass Rose would like to see all nine of the test stands preserved, since, as understood, they are the least contaminated of the structures since they are located on or within bedrock. Most of the other contaminated structures (control buildings, pill boxes, etc.) can be demolished, with the preservation of at least single examples of the least contaminated of each). The Coca Stands may be the most important to our history of space flight, since they are associated with engine testing of both the Apollo and the Space Shuttle rockets. Unfortunately, they are the most contaminated and were also subjected to many structural changes. Nonetheless, Compass Rose would like to see the Coca Test Stands preserved for their association with the advancement of space travel. The Chumash Native Americans from the Santa Ynez Reservation would like to see them demolished, since they claim there is an effect on the sense of place within the Sacred Site (CA-VEN-1072) below. However, based on our experience while monitoring the Winter and Summer solstice events, the only structure visible from CA-VEN-1072 is a single tank (possibly Vessel V 100, LH2 tank or Vessel V 99, GH2 tank). If this structure is demolished, then no structures associated any with any of the nine test stands will be visible from CA-VEN-1072.

General comments on the environmental process for the SSFL clean-up

It is the opinion of Compass Rose that from the very beginning, the environmental process for the SSFL clean-up has proceeded incorrectly. There never should have been two entirely separate processes, CEQA for Boeing and NEPA for NASA, along with the completely different scheduling. The SSFL consists of a continuous landform with a continuous prehistory and a continuous history.

Furthermore, the presence of two "blueline" streams (one being Bell Creek) that extends through the entire SSFL – thereby crossing both the NASA and the Boeing properties - means that a Section 404 permit is required by the Army Corps of Engineers, a federal agency. Since Bell Creek extends next to or though CA-VEN-1072, means that the Army Crops should have been involved in the process from the beginning as a responsible or at least, a cooperating agency. Since Bell Creek crosses both NASA and Boeing land and a Section 404 permit is required by the Army Corps, this would seem to tie both agencies/entities together at the federal level! Also, a series of easements called "outgrants," allow NASA and Boeing to cross each other's land. There are also outgrants for water, utilities, etc., without which Boeing would not be able to operate. The easements (outgrants) were granted to Boeing (originally Rockwell International) by the U.S. government. Even though the outgrants were granted prior to any of the present environmental laws, this would still seem to tie the two entities together at the federal level. Furthermore, the fact, according to archaeologist Al Knight, that both NASA and

Boeing have land within the archaeological site, CA-VEN-1072, should have made them share responsibility for the cultural resources within the entire SSFL, or minimally, for all of Area II. Again, the Army Corps of Engineers should be a cooperating or responsible agency (minimally a consultant) under NEPA and the Section 106 process.

Based on the arguments above, NASA should have been the lead agency, Boeing a cooperating agency, and the Army Corps of Engineers a responsible or cooperating agency under NEPA, with all subject to Section 106, since NEPA tends to supersede State law (CEQA). In the worst case, this entire undertaking of the entire SSFL clean-up should have been subjected to a single, combined, EIR/EIS, subject to one schedule and one set of mitigation measures and procedures. As a result, the entire SSFL should be nominated as a single archaeological district. I believe that a complete analysis of the prior collections at CA-VEN-1072 will greatly help in defining the relationship with the sites in Area IV, which are owned by Boeing. This proposal is supported by the fact that there is a newly recorded rock art site in Area IV, and rock art is virtually always sacred to the local Native Americans. Furthermore, the archaeological district should also encompass the site complex in lower Bell Canyon that includes the village of *Huwam/Jucjauybit*, Bats Cave (the cave of Munits), Castle Peak (a shrine mountain), and several other sites. Compass Rose and the late John Romani, believe that the area of the entire SSFL was a "private" viewing site for the solstices and preparation area for the "public" ceremonies held downstream at the village of *Huwam/Jucjauybit* and Castle Peak, for the Winter Solstice and possibly for the fall Hutash Festival).

The tie between upper (SSFL) and lower Bell Canyon is also supported on a more practical level. Groundwater chemical contamination has been found in test wells in lower Bell Canyon as a result of NASA rocket engine testing activities, as stated by NASA in a previous consultation meeting. Thus, the entire SSFL and lower Bell Canyon site complex should be considered as a single discontiguous archaeological district.

Finally, although the environmental process completed thus far for the SSFL clean-up is totally inadequate and inappropriate by combining Federal and State and with different completion schedules, the overly strict requirements of the 2010 A.O.C. is probably the main underlying problem. The 2017 deadline for the total completion of the SSFL clean-up is unrealistic given the inadequacies in the Draft EIS and the NEPA and Section 106 process so far. The deadline must be extended so that at least most of these major problems can be resolved.

Furthermore, as supporters of cultural resource protection, both Native American and historic, the strict clean-up guidelines to "background" levels in the 2010 A.O.C. are inappropriate for proper protection of the historic properties within Area II. The clean-up should have been to the "residential" level, thereby taking into account the possible contamination in the surrounding communities, since the involved parties, NASA and Boeing, seem to want the entire SSFL to become some form of parkland.

Sincerely,
Dan Larson, Gwen Romani, and George Toren

From: Sam Cohen
To: MSFC-SSFL-EIS
Cc: Sam Cohen; Fellows, Merrilee (HQ-LD000)
Subject: Final DEIS comments from Santa Ynez Band of Chumash Indians
Date: Tuesday, October 01, 2013 11:22:31 AM
Attachments: NASA.DEIS.SYCHUMASH.COMMENTS.FINAL.pdf

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Gary Pace, *Committee Member*

September 30, 2013

Allen Elliott
SSFL Project Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

RE: Draft Environmental Impact Statement (DEIS) for Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California

Dear Mr. Elliott:

The Santa Ynez Band of Chumash Indians ("Chumash" or "Tribe") thanks you and NASA for the opportunity to comment on the DEIS. NASA procedure requirements state that NASA is "committed to environmental stewardship, sustainable design, and green engineering." In addition, NASA is covered by Executive Order 13175 as reaffirmed by that Presidential Memorandum on Tribal Coordination dated November 5, 2009 that reaffirmed Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments," and emphasized the importance of strengthening government-to-government relationships with Native American tribes. See also, http://nodis3.gsfc.nasa.gov/npg_img/N_PR_8580_001A_/N_PR_8580_001A_.pdf.

The Tribe, therefore, makes the following comments as to the DEIS:

(1) The EIS Must Address Cultural Resources (copied from http://www.npi.org/NEPA/impact)

Cultural resources are referred to in different ways at different points in the CEQ regulations. The regulatory definition of the term "human environment" at 40 CFR 1508.14 –impacts on the quality of the human environment being the subjects of any EIS – includes "the natural and physical environment and the relationship of people with that environment." The definition of "effects" at 40 CFR 1508.8 – as in "effects on the quality of the human environment" – includes changes in the human environment that are "aesthetic, historic, cultural, economic, (or) social."

The regulatory definition of the word "significantly" at 40 CFR 1508.27 – as in "major federal action significantly affecting the quality of the human environment" – includes as measures of impact intensity:

- Impacts on an area's unique characteristics, such as "historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, and ecologically critical areas" (40 CFR 1508.27(b)(3)).

- Impacts on "districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places" and on "significant scientific, cultural, or historical resources" (40 CFR 1508.27(b)(8)).

Clearly, impacts on cultural resources are to be addressed in an EIS. Note that it is not just impacts on historic properties that should be addressed. The regulations use "historic" and "cultural" in parallel, not as synonyms.

(2) Record of Decision Must Mitigate any Impacts to Cultural Resources (copied from **http://www.npi.org/NEPA/impact**)

Once the EIS analysis has resulted in a draft environmental impact statement (DEIS), it is subjected to public and agency review, and comments are addressed – this may require further analysis. Then, assuming the project has not been abandoned, or so changed that a supplemental DEIS is needed, a final EIS (FEIS) is prepared and published. The FEIS is considered in making the agency's decision about whether and how to proceed with the action that was the subject of the EIS. This decision is recorded in a Record of Decision (ROD). According to 40 CFR 1505.2, the ROD must:

- State what the decision was.

- Identify all alternatives considered.

- Specify the alternative or alternatives considered to be "environmentally preferable." (Note that the agency does not have to select the environmentally preferable alternative, but it does have to discuss what it is.)

- Identify and discuss the factors balanced in making the decision (whether for or against the environmentally preferable alternative).

- State whether "all practicable means to avoid or minimize environmental harm . . . have been adopted, and if not, why they were not."

Having notified the world of its decision, the agency implements it. In doing so, it must carry out any mitigation, i.e., "means to avoid or minimize environmental harm," it has said in the ROD or EIS that it will carry out (40 CFR 1505.3).

(3) Deferral of Mitigation does not Comply with NEPA (copied from **http://www.npi.org/NEPA/impact**)

Deferral. With respect to historic properties, a very common problem is "deferral," in which the agency:

- Acknowledges that it does not know much about what effects there may be on historic properties (often because such properties have not yet been identified); but
- Says that whatever effects there may be, NHPA Section 106 review (of the National Historic Preservation Act), to be performed later, will take care of them; and
- Concludes that therefore, whatever alternative is decided on, impacts on historic properties will not be a problem.

Considering environmental impacts *after* a decision has been made defeats NEPA's purpose of considering impacts in *preparing* to make decisions. It also almost guarantees last-minute conflicts between project implementation and historic preservation.

Failure to consider things that are not historic properties. With respect to other kinds of cultural resources, a common problem is that they are not considered at all. Historic properties, or even more narrowly, archeological sites, are sometimes the only things discussed in the "cultural resource" part of an EIS. If social impacts are considered, they are often considered only terms of easily quantifiable socioeconomic variables like population, employment, and use of public services. The result is that impacts on many classes of cultural resource simply are not identified or considered in deciding whether significant impacts may occur.

(4) Significant Negative Unmitigated Impacts to Sacred Sites and Cultural Resources

4.3.1.2 Soil Cleanup to Background--the total area of the remediation footprint is approximately 105 acres and includes approximately 500,000 yd3 of contaminated soil

Indian Sacred Site and Traditional Cultural Property: The tribe has already designated all of the NASA administered property as a sacred site under E.O. 13007. The impact would be **significant**, **negative**, regional, and **long term** and would constitute an **adverse effect** under Section 106. (DEIS, 4-18)

Archeological Resources: The proposed cleanup of the Burro Flats site (CA-VEN-1072); could result in ***significant, negative, local,*** and ***long-term*** impacts to the site and would constitute an ***adverse effect*** under Section 106. The proposed cleanup of CA-VEN-1803 could result in ***moderate, negative, local,*** and ***long-term impacts*** under NEPA. Excavation on previously undiscovered archeological sites found to be NRHP-eligible could be a ***significant, negative, local,*** and ***long-term*** impact on archeological resources, thus resulting in a finding of ***adverse effect*** under Section 106. (DEIS, 4-19)

Deferral of eligibility determination: A determination of eligibility of CA-VEN-1803, in consultation with the SHPO and the federally recognized tribes, needs to be completed before cleanup began if this site were to be affected by soil cleanup activities. CA-VEN-

1800 would not be affected by excavation and removal of soil because it is not located within the identified cleanup areas.

Deferral of boundary research as to VEN-1072 and VEN-1803: Additional boundary research is required to conclude that any avoidance of excavation within the boundaries of Burro Flats (CA-VEN-1072) and CA-VEN-1803 would diminish or eliminate adverse impacts to known archeological sites and reduce the impacts to ***negligible, negative, local,*** and ***long term*** and could result in a finding of ***no adverse effect*** under Section 106.

Deferral of additional testing as to unknown archaeological deposits: Additional subsurface testing is required to conclude that reducing the amount of excavation on newly discovered archeological deposits (commonly referred to as "inadvertent or accidental discoveries") could minimize the impact if the newly identified sites were avoided, thus reducing the impacts to ***minor, negative, local,*** and ***long-term*** impacts from excavation.

(5) **Failure to Address Executive Order 13007**

On December 10, 2012, the Santa Ynez Band of Chumash Indians, a federally recognized tribe ("Tribe"), designated the NASA portion of the SSFL as an Indian sacred site pursuant to Executive Order 13007. This Indian sacred site also includes the former Rocketdyne and now Boeing portion of SSFL and the Tribe is open to discussing the exact boundaries at a later date.

E.O. 13007 requires Federal land managing agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. It also requires agencies to develop procedures for reasonable notification of proposed actions or land management policies that may restrict access to or ceremonial use of, or adversely affect, sacred sites.

Sacred sites are defined in the executive order as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." There is no review of such determinations by a Federal agency.

It is important to note that a sacred site may not meet the National Register criteria for a historic property and that, conversely, a historic property may not meet the criteria for a sacred site. However, in those instances where an undertaking may affect a historic property that is also considered by an Indian tribe to be a sacred site, the Federal agency should, in the course of the Section 106 review process, consider accommodation of access to and ceremonial use of the property and avoidance of adverse physical effects in accordance with E.O. 13007.

The Advisory Council on Historic Preservation (ACHP) has explained **"The Relationship Between Executive Order 13007 Regarding Indian Sacred Sites and Section 106," http://www.achp.gov/eo13007-106.html**

> To the extent that the requirements of the executive order and ACHP's regulations are similar, Federal agencies can use the Section 106 review process to ensure that the requirements of E.O. 13007 are fulfilled. For example, E.O. 13007 requires that agencies contact Indian tribes regarding effects and the Section 106 regulations require consultation with Indian tribes to identify and resolve adverse effects to historic properties.
>
> Consultation regarding the identification and evaluation of historic properties of religious and cultural significance to an Indian tribe could include identification of those properties that are also sacred sites. Similarly, consultation to address adverse effects to such historic properties/sacred sites could include discussions regarding access and ceremonial use.

(6) **Failure to address the NASA Site is a Traditional Cultural Property (TCP) eligible for protection on the National Register:**

National Register Bulletin No. 38 (hereinafter referred to as "NPS Bull. No. 38"), Guidelines for evaluating and Documenting Traditional Cultural Properties (1990; revised 1992; 1998) under NHPA **http://www.nps.gov/nr/publications/bulletins/pdfs/nrb38.pdf**

A. Locations for traditional ceremonies are defined as a TCP: NPS Bull No. 38, p. 1, provides:

The traditional cultural significance of a historic property, then, is significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices. Examples of properties possessing such significance include: ***

• a location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice;

B. Mountain tops and rock outcroppings like at SSFL are TCP's: NPS Bull. No. 38, p. 2, provides:

> Traditional cultural properties are often hard to recognize. A traditional ceremonial location may look like merely a mountaintop, a lake, or a stretch of river; a culturally important neighborhood may look like any other aggregation of houses, and an area where culturally important economic or artistic activities have been carried out may look like any other building, field of grass, or piece of forest in the area. As a result, such places may not necessarily come to light through the conduct of archeological, historical, or architectural surveys. The existence and significance of such locations often can be ascertained only through interviews with knowledgeable users of the area, or through other forms of ethnographic research.

C. NASA must engage specialists as part of its TCP study: NPS Bull. No. 38, p. 10, provides:

> In general, the only reasonably reliable way to resolve conflict among sources is to review a wide enough range of documentary data, and to interview a wide enough range of authorities to minimize the likelihood either of inadvertent bias or of being deliberately misled. Authorities consulted in most cases should include both knowledgeable parties within the group that may attribute cultural value to a property and appropriate specialists in ethnography, sociology, history, and other relevant disciplines.7

D. Specific events like the Solstice ceremony at SSFL qualify as TCP: NPS Bull. No. 38, p. 11, provides:

For example, the National Register
defines a "site" as "the location
of a significant event, a prehistoric or
historic occupation or activity, or a
building or structure, whether standing,
ruined, or vanished, where the location
itself possesses historic, cultural,
or archeological value regardless
of the value of any existing structure."
9 Thus a property may be defined
as a "site" as long as it was the
location of a significant event or activity,
regardless of whether the event or
activity left any evidence of its occurrence.
A culturally significant natural
landscape may be classified as a site,
as may the specific location where significant
traditional events, activities,
or cultural observances have taken
place. A natural object such as a tree
or a rock outcrop may be an eligible
object if it is associated with a significant
tradition or use. A concentration,
linkage, or continuity of such sites or
objects, or of structures comprising a
culturally significant entity, may be
classified as a district.

E. Native American ceremonies qualify as TCP: NPS Bull. No. 38, p.15, provides:

National Register guidelines
stress the fact that properties can
be listed in or determined eligible for
the Register for their association with
religious history, or with persons significant
in religion, if such significance
has "scholarly, secular recognition."
13 The integral relationship
among traditional Native American
culture, history, and religion is widely
recognized in secular scholarship.14
Studies leading to the nomination of
traditional cultural properties to the
Register should have among their
purposes the application of secular
scholarship to the association of particular

properties with broad patterns
of traditional history and culture. The
fact that traditional history and culture
may be discussed in religious
terms does not make it less historical
or less significant to culture, nor does
it make properties associated with traditional
history and culture ineligible
for inclusion in the National Register.

F. Lack of use does not make a property TCP ineligible: NPS Bull. No. 38, p. 18, provides:

The fact that a property may have
gone unused for a lengthy period of
time, with use beginning again only
recently, does not make the property
ineligible for the Register. For example,
assume that the Indian tribe
referred to above used the mountain
peak in prehistory for communication
with the supernatural, but was forced
to abandon such use when it was confined
to a distant reservation, or when
its members were converted to Christianity.
Assume further that a revitalization
of traditional religion has begun
in the last decade, and as a result
the peak is again being used for vision
quests similar to those carried out
there in prehistory. The fact that the
contemporary use of the peak has
little continuous time depth does not
make the peak ineligible; the peak's
association with the traditional activity
reflected in its contemporary use is
what must be considered in determining
eligibility.

(7) **Traditional Cultural Landscapes must also be included in Section 106 consultations and the EIS**

Traditional cultural landscapes, because they are often a property type such as a district or site, are identified in the same manner in the Section 106 process as other types of historic properties of religious and cultural significance to Indian tribes or Native Hawaiian organizations. The regulations at 36 CFR Section 800.4 outline several steps a federal agency must take to identify historic properties. In summary,

to determine the scope of identification efforts, a federal agency, in consultation with the State Historic Preservation Officers (SHPO)/Tribal Historic Preservation Officer (THPO), must:

1. Determine and document the area of potential effect for its undertaking;
2. Review existing information; and,
3. Seek information from consulting parties including Indian tribes or Native Hawaiian organizations.

Based on the information gathered through these efforts, the federal agency, in consultation with the SHPO and any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to historic properties that may be affected by the undertaking, develops and implements a strategy to identify historic properties within the area of potential effects. Identification efforts may include background research, oral history interviews, scientific analysis, and field investigations. **http://www.achp.gov/natl-qa.pdf**

There is no single defining feature or set of features that comprise a traditional cultural landscape. Such places could be comprised of natural features such as mountains, caves, plateaus, and outcroppings; water courses and bodies such as rivers, streams, lakes, bays, and inlets; views and view sheds from them, including the overlook or similar locations ; vegetation that contributes to its significance; and, manmade features including archaeological sites; buildings and structures; circulation features such as trails; land use patterns; evidence of cultural traditions, such as petroglyphs and evidence of burial practices; and markers or monuments, such as cairns, sleeping circles, and geoglyphs. **http://www.achp.gov/natl-qa.pdf**

Based on such research, the ACHP TRADITIONAL CULTURAL LANDSCAPES ACTION PLAN advises as follows:

The ACHP, as the agency with responsibility for overseeing the Section 106 review process, and DOI, through the National Park Service (NPS), as the agency with responsibility for overseeing the National Register of Historic places, should provide leadership in addressing Native American cultural landscapes in the national historic preservation program. Together, the ACHP and NPS should:
--Promote the recognition and protection of Native American traditional cultural landscapes both within the federal government and the historic preservation community as well as at the state and local levels, and,

--Address the challenges of the consideration of these historic properties in the Section 106 review process as well as in NEPA reviews. **http://www.achp.gov/pdfs/native-american-traditional-cultural-landscapes-action-plan-11-23-2011.pdf**

(8) U.N. Declaration on the Rights of Indigenous Peoples must now be followed after December 2010

In December 2010, the United States announced support for the **United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)**. In announcing this support, President Obama stated: "The aspirations it affirms—including the respect for the institutions and rich cultures of Native peoples—are one we must always seek to fulfill...[W]hat matters far more than any resolution or declaration – are actions to match those words." The UNDRIP addresses indigenous peoples' rights to maintain culture and traditions (Article 11); and religious traditions, customs, and ceremonies (Article 12); to

participate in decision making in matters which would affect their rights (Article 18); and to maintain spiritual connections to traditionally owned lands (Article 25).

The ACHP will now incorporate UNDRIP in the Section 106 review process:

While the Advisory Council on Historic Preservation's (ACHP) work already largely supports the United Nations Declaration on the Rights of Indigenous Peoples, additional and deliberate actions will be taken to more overtly support the Declaration. The Section 106 review process provides Indian tribes and Native Hawaiian organizations (NHOs) with a very important opportunity to influence federal decision making when properties of religious and cultural significance may be threatened by proposed federal actions. While federal agencies are required to consult with Indian tribes and NHOs and to take their comments into account in making decisions in the Section 106 review process, adding the principles of the Declaration to that consideration may assist federal agencies in making decisions that result in the protection of historic properties of religious and cultural significance to Indian tribes and NHOs. http://www.achp.gov/docs/UN%20Declaration%20Plan%203-21-13.pdf

9. Official recognition in the DEIS need to be made of the areas surrounding Burro Flats

A. The entire Southern half of Area II District needs to be protected. Sec. 3.3.3.4, p. 3-17

Sec. 3.3.3.3 Archeological Resources, p. 3-16
The earliest documented archeological work at Burro Flats Painted Cave began in 1953 with excavations carried out by the Archaeological Survey Association of Southern California, which made five trips to the site during 1953 and 1954. The site has been recorded several times since then and under numerous separate listings; misidentifications of elements and inconsistencies in function, assemblage, and design interpretations warranted a revisit and a complete recordation of the site's elements. **In June 2007, NASA re-recorded the site and updated the site record; this effort resulted in combining 16 separately recorded sites into one site, CA-VEN-1072, with associated loci and features**.

We therefore request that the entire Southern half of Area II District needs to be protected. Sec. 3.3.3.4, p. 3-17.

B. All structures should be removed in the Coca Historic District. These structures impinge on the ceremonial areas. If a decision is reached to save a test stand, Alfa or Bravo should be retained instead of Coca.

10. Additional Investigation of the Northern Half of the SSFL site

While the Southern half of Area II contains the pictographs and additional 16 sites, the Northern half of SSFL needs additional investigation, including, without limitation:

a. Geography—this areas contains numerous flat areas that would be suitable camp sites;
b. Areas of food—this areas contains forests and riparian areas that could be utilized in the gathering of food;
c. Support for ceremonial area in the Southern half of Area II—It is not inconceivable that the Northern half of the SSFL site provided support for the ceremonies in the Southern half of SSFL;

d. Separate areas for different tribes—if SSFL was an inter-tribal gathering place, then each tribe would have congregated separately in different parts of the site.

11. Subsurface testing is required.

Pedestrian surveys are of limited utility and never alone are sufficient when there are known areas of habitation or ceremony. We are informed that NASA has recently completed a Phase I Pedestrian Survey of the site. While such Phase I is an excellent first step, we request additional subsurface archaeological testing for all areas scheduled for any excavation.

If the project is in a region where there are many sites, there may be reason to suspect that buried sites may be present that went undetected during the survey. If the soils profile of the project location shows that heavy erosion has washed away soils then it may explain the absence of cultural resources. However, if the soils profile is depositional then there may be a need to conduct additional subsurface testing, particularly in areas where ground disturbance is planned. In archaeological terminology, this is referred to as "Extended Phase I" testing because it is an intermediate step between Phase 1 (survey), and Phase 2 (controlled excavation to assess the significance of a site). Extended Phase I testing often done by excavating a small pit with a shovel and screening the excavated soil through steel mesh ("shovel test pit" or "STP"). If it is considered to be necessary that a large amount of soil should be examined at deeper levels, then backhoes are sometimes used and informal sampling procedures are often employed while screening the backdirt.

Sometimes the lead agency will argue that archaeological survey is not warranted for a particular project or there may be factors that justify additional investigation even though a Phase I study has been completed with negative results. Following is a list of environmental and cultural factors that should be considered when assessing the overall cultural sensitivity of the SSFL. (Please note that this list is not exhaustive and each factor must be weighted both individually and collectively on a case-by-case basis.)

a. Areas with high viewshed or visibility such as or ridgelines, peaks, ledges, outcrops, benches, or prominent hills; and

b. Areas with a relatively high density of sites in the vicinity; and

c. Areas where past ethnographic studies have revealed associated placenames. Keep in mind that placenames do not always refer to places where evidence of past cultural activity exists; and

d. Areas near known sites. Mapped boundaries of sites most frequently reflect only cultural residue that was visible on the surface when the site was recorded and do not necessarily reflect the actual extent of the site. In addition, loci such as cemeteries or other areas may be adjacent to or nearby but separate from the main habitation; and

e. Areas near known rock art sites or rocky outcroppings of the type where rock shelters and art have traditionally been located; and

f. Areas in or near known gathering areas; and

g. Though all sites are potentially worthy of protection, named, ethnohistorically documented village sites are of the highest priority and therefore warrant the greatest amount of protection possible.

12. **Exhaustion of Non-Excavation Methods of remediation**.

Figure 2.2-3, p. 2-21, illustrates the Preliminary Remediation Area Types Under the Proposed Action. To the extent feasible, NASA should exhaust all non-excavation methods of remediation before performing any excavation that could potentially impact cultural and historic sites.

13. **Soil Prior disturbance is NOT Dispositive**:

The mantra that cultural sites have been disturbed and therefore automatically are not significant is oftentimes incorrect:

a. Disturbed sites still may contain valuable information. The newer approach is to treat disturbed sites as having the potential to provide information even if they have been disturbed;
b. Disturbed sites still have spiritual significance;
c. Disturbance may only be on the surface, while much excavation may continue to depths of up to 20 feet.

14. **Need to Analyze Cumulative Impacts to Cultural Resources**:

The DEIS fails to account for other remediation projects in other areas of SSFL:

a. Need to add Department of Energy (DOE) cultural sites;
b. Need to add Boeing cultural sites;
c. Other areas within SSFL.

15. **NEW MITIGATION: Cultural Interpretive Center**:

a. Can use existing building;
b. Preferably near saved historic structure and/or test stand;
c. Preferably away from CA-VEN-1072;
d. Need to Reserve maintenance funds.

16. **NEW MITIGATION: Native American monitoring during any ground disturbing activities**.

17. **Need to protect CA-VEN-1072 from trespassers and vandals.**

18. Deferral of Mitigation until Record of Decision (ROD):

a. It is problematic to defer any mitigation until ROD as it prevents meaningful comment;
b. Commenter reserve the right to ask for recirculation of the DEIS and EIS for any such deferred mitigation.

19. **Use of NEPA EIS instead of NHPA 106**—Recent ACHP guidance:

http://www.achp.gov/docs/NEPA_NHPA_Section_106_Handbook_Mar2013.pdf

Substitution under 36 C.F.R. § 800.8(c) permits agencies to use the NEPA review to comply with Section 106 as an alternative to the process set out in 36 C.F.R. §§ 800.3-800.6. The use of a substitution approach allows agencies to use the procedures and documentation required for the preparation of an EA/FONSI or EIS/ROD to comply with the Section 106 procedures. To do so, the agency must notify the ACHP and SHPO/THPO in advance that it intends to do so and meet certain specified standards and documentation requirements as set forth in 36 C.F.R. § 800.8(c)(1).

If, as the result of an objection under 36 C.F.R. § 800.8(c) (2)(ii) or during consultation to resolve adverse effects, disagreement reaches a point where the substitution process is no longer prudent, then agencies may return to the appropriate step in the standard Section 106 process with notification to consulting parties.

20. Need NEPA Mitigation Plan

http://www.whitehouse.gov/sites/default/files/microsites/ceq/20100218-nepa-mitigation-monitoring-draft-guidance.pdf

February 18, 2010

MEMORANDUM FOR HEADS OF FEDERAL DEPARTMENTS AND AGENCIES
FROM: NANCY H. SUTLEY, Chair, Council on Environmental Quality
SUBJECT: DRAFT GUIDANCE FOR NEPA MITIGATION AND MONITORING
I. INTRODUCTION

To provide for the performance of mitigation, agencies should create internal processes to ensure that mitigation actions adopted in any NEPA process are documented and that monitoring and appropriate implementation plans are created to ensure that mitigation is carried out. See *Aligning NEPA Processes with Environmental Management Systems* (CEQ 2007) at 4 (discussing the use of environmental management systems to track implementation and monitoring of mitigation). http://ceq.hss.doe.gov/nepa/nepapubs/Aligning_NEPA_Processes_with_Environmental_Management_Systems_2007.pdf (http://www.slideshare.net/whitehouse/aligning-nepa-processes). Agency NEPA

implementing procedures should require clearly documenting the commitment to mitigate the measures necessary in the environmental documents prepared during the NEPA process (40 C.F.R. § 1508.10) and in the decision documents such as the Record of Decision. When an agency identifies mitigation in an EIS and commits to implement that mitigation to achieve an environmentally preferable outcome, or commits in an EA to mitigation to support a FONSI and proceeds without preparing an EIS, then the agency should ensure that the mitigation is adopted and implemented.

Methods to ensure implementation should include, as appropriate to the agency's underlying authority for decision-making, appropriate conditions in financial agreements, grants, permits or other approvals, and conditioning funding on implementing the mitigation. To inform performance expectations, mitigation goals should be stated clearly. These should be carefully specified in terms of measurable performance standards to the greatest extent possible. The agency should also identify the duration of the agency action and the mitigation measures in its decision document to ensure that the terms of the mitigation and how it will be implemented are clear.

If funding for implementation of mitigation is not available at the time the decision on the proposed action and mitigation measures is made, then the impact of a lack of funding and resultant environmental effects if the mitigation is not implemented warrant disclosure in the EA or EIS. In cases where, after analyzing the proposed actions with or without the mitigation, the agency determines that mitigation is necessary to support the FONSI or committed to in the ROD, and the necessary funding is not available, the agency may still be able to move forward with the proposed action once the funding does become available. The agencies should ensure that the expertise and professional judgment applied in determining the appropriate mitigation measure is reflected in the administrative record, and when and how those measures will be implemented are analyzed in the EA or EIS.

Under NEPA, a federal agency has a continuing duty to gather and evaluate new information relevant to the environmental impact of its actions. See 42 U.S.C. § 4332(2)(A). For agency decisions based on an EIS, the regulations require that, "a monitoring and enforcement program shall be adopted…where applicable for mitigation." 40 C.F.R. §1505.2(c). In addition, the regulations state that agencies may "provide for monitoring to assure that their decisions are carried out and should do so in important cases." 40 C.F.R. §1505.3. Monitoring plans and programs should be described or incorporated by reference in the agency decision documents.

21. Incorporation by reference of Memo dated Nov. 29, 2012, "NEPA alternatives analysis for selection of cleanup standards for the Santa Susana Field Laboratory Site."

Sincerely,

Vincent P. Armenta,
Tribal Chairman

From:	Moglen, Damon
To:	MSFC-SSFL-EIS
Subject:	Friends of the Earth Comments on NASA DEIS re SSFL
Date:	Monday, September 30, 2013 12:50:21 PM
Attachments:	2355_001.pdf
Importance:	High

To Whom it May Concern, please accept the attached comments from Friends of the Earth to NASA draft EIS regarding the Santa Susana Field Laboratory. Thank you, Damon Moglen

Damon Moglen
Senior Strategic Advisor
Climate and Energy Program
Friends of the Earth
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Friends of the Earth

Mr. Allen Elliott
SSFL Program Director
NASA
MSFC AS01
Building 4494
Huntsville, AL 35812

by email to: msfc-ssfl-eis@mail.nasa.gov

September 30, 2013

Re: Comment on Santa Susana Field Laboratory Cleanup Draft EIS

Dear Mr. Elliott:

Friends of the Earth (FOE) appreciates the opportunity to comment on the Draft Environmental Impact Statement for proposed demolition and environmental cleanup activities of the Santa Susana Field Laboratory (SSFL). FOE is a national, non-profit environmental organization with office's in Washington, DC and Berkeley, California and some 1,900 members across the state. We have worked on nuclear issues in California since the organization's founding in 1969. We are members of Friends of the Earth International, a global network representing more than two million activists in 74 different countries.

SSFL is one of the most contaminated sites in California. Decades of inadequate environmental practices by NASA resulted in widespread contamination of soil, groundwater and surface water, as well as significant airborne releases. Scores of toxic materials have been identified as released and needing remediation. These include such hazardous materials as TCE, PCBs, dioxins, perchlorate, and various heavy metals.

In 2010, NASA entered into a legally binding agreement –an Administrative Order on Consent (AOC) -- with the State of California to clean up all the contamination in the NASA part of SSFL to background levels. This EIS is supposed to examine ways of accomplishing the AOC's requirements and mitigating environmental impacts.

The Draft EIS, however, has us concerned that some within NASA may be working at cross purposes to the commitments made by NASA in the AOC—in particular, the EIS's significant focus on transports issues and relative silence on issues relating to existing environmental contamination and the environmental harm posed by failure to remediate the widespread pollution caused by NASA's activities facilities is puzzling and appears to provide a somewhat skewed analysis.

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Nonetheless, we were pleased to see NASA's commitment to carrying out fully the requirements of the AOC explicitly reiterated to the House Science and Technology Committee on September 20. Associate Administrator Richard Keegan testified there, "The Draft EIS is open for public comment until October 1 and we expect the final EIS in November and NASA is committed to fulfilling our obligations under the AOC. There is sufficient funding in our FY14 request to accomplish all the activities that are planned for FY14 leading to fulfilling our commitments under the AOC." Congresswoman Brownley, who represents the area and serves on the Committee, followed up, saying, "So, regardless then of what the IG may be recommending, your commitment is still to the agreement with the AOC?" And Associate Administrator Keegan responded, "We are committed to the agreement under the AOC."

FOE strongly urges NASA to live up to the requirements in the AOC in its entirety and to the commitments NASA has made to Congress and to the people who live near this badly polluted site. Full cleanup to background, as required in the AOC, should now proceed expeditiously.

Sincerely,

Damon Moglen
Senior Strategic Advisor
Climate and Energy Program
Friends of the Earth
1100 15th Street, NW
11th Floor
Washington, DC 20005

From:	GROMAN, JENNIFER A. (HQ-LD020)
To:	MSFC-SSFL-EIS
Subject:	FW: DEIS for Demolition & Environmental Cleanup for the NASA-Administered portion of the SSFL, Ventura County, CA
Date:	Tuesday, October 01, 2013 8:27:51 AM
Attachments:	NASA Santa Susana DEIS cts cdh.docx.pdf

Official comment

Jennifer Groman
Federal Preservation Officer
(202) 358-0455

From: OFAP [mailto:OFAP2@achp.gov]
Sent: Monday, September 30, 2013 12:47 PM
To: Elliott, Allen (MSFC-AS01)
Cc: Mark.Beason@parks.ca.gov; GROMAN, JENNIFER A. (HQ-LD020)
Subject: DEIS for Demolition & Environmental Cleanup for the NASA-Administered portion of the SSFL, Ventura County, CA

From: Office of Federal Agency Programs

Advisory Council on Historic Preservation

Attached is our letter on the subject undertaking (in Adobe Acrobat PDF format)

If you have any questions concerning our letter, please contact:

Tom McCulloch (202) 606-8554
tmcculloch@achp.gov

Note: Please do not reply to this email.

A free copy of Adobe Acrobat Reader can be downloaded from: www.adobe.com

Preserving America's Heritage

September 30, 2013

Mr. Allen Elliott
SSFL Project Director
Marshall Space Flight Center
MSFC AS01
Building 4494
Huntsville, AL 35812

Ref: Draft Environmental Impact Statement (DEIS) for Demolition and Environmental Cleanup for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California

Dear Mr. Elliott:

We have reviewed the DEIS for the referenced undertaking and have the following comments. Our comments are provided to assist the National Aeronautics and Space Administration (NASA) in fulfilling its responsibilities under Section 106 of the National Historic Preservation Act (NHPA) and the Advisory Council on Historic Preservation's regulations (36 CFR Part 800).

Our comments primarily focus on the anticipated effects to historic properties associated with the cleanup of the facility, and with the potential preservation of significant historic properties once the property leaves NASA's jurisdiction. Our overall concern with the DEIS is that critical information to inform NASA's decisions is either not clearly presented, or is missing. Specifically, the document lacks sufficient information on measures to minimize adverse effects and ensure the long-term preservation of historic properties on the parcels to be conveyed to another party (or parties), and the parameters limiting the range of possible preservation outcomes.

First, the DEIS presents little substantive information on the existing cleanup agreements between NASA and the environmental regulatory agencies (e.g. with the California Department of Toxic Substances Control, on pages 4-15 and 4-18). Further information is needed, as these agreements largely direct the efforts and levels needed to remediate the site, which in turn can circumscribe NASA's ability to fully consider alternatives to avoid or lessen adverse effects to historic properties.

For example, the DEIS notes that several cleanup levels were initially considered, but only the preferred alternative meets the letter of the 2010 cleanup agreement. While we understand that the extent and nature of contaminants cannot be fully known until additional testing is undertaken, the final EIS should more fully explain the process by which NASA will make final decisions on the type and extent, of

remediation(s) to be implemented, the criteria it will use to make decisions, and how the cleanup will take place in light of the agreements prior to conveyance to the General Services Administration (GSA). As you are aware, lack of this information has caused some confusion and redundant discussions in the consulting party meetings that have been held recently.

GSA will handle the disposal of the property once NASA has completed the remediation. The DEIS does not discuss GSA's role in this process, or whether GSA may be amenable to preserving anything on the property. At a recent consultation meeting there appears to have been some confusion about GSA's conditions for accepting the property from NASA. The FEIS should consider reasonably foreseeable effects associated with this undertaking, which we believe include the expected sale of the property or potential neglect of the property (36 CFR § 800.5(a)(1-2)). The FEIS should present information about the role of GSA in disposing of the property—how it identifies potential recipients, how it evaluates offers, and how it considers historic values in the excessing process. GSA's qualified personnel could likely provide helpful input in this area.

An illustrative example of this problem is presented on page 4-25 of the DEIS, where it is stated that protective measures to prevent vandalism at the Burro Flats Painted Cave may need to be removed at the request of GSA. This appears to be the kind of historic preservation issue that needs to be addressed in NASA's FEIS, and will require coordination between NASA and GSA to answer. The document should address the circumstances under which this kind of action could occur, and why. Again, while many of these questions cannot be answered at this time, the parameters of what can be preserved, what GSA will accept and what is conveyed to GSA for ultimate disposal, need to be explored in the FEIS in more detail so that the consulting parties clearly understand the preservation possibilities or opportunities.

Second, the list of mitigation measures proposed in the DEIS (page 4-25) are general and formulaic. The FEIS should contain more detail that reflects the results of the ongoing consultation process. NASA has said it may be possible to preserve (at least) one test stand (Cultural Mitigation Measure 1), depending, among other things, on the character of the contaminants that surround it and may lie beneath it. As noted above, NASA hasn't been clear about whether GSA truly considers retention of a test stand (or other facility) a viable option or not.

In a September 10, 2013 email to the consulting parties, NASA included some rough estimates for the cost to remove asbestos, hydraulic fluids, and other regulated materials from each test stand, and encapsulate their lead paint. The email also included an annual maintenance cost for each stand of perhaps $25,000. This information should be included in the FEIS discussion regarding mitigation measures, and should include any other available information about the possibility of retaining a test stand. For example, the FEIS should consider whether NASA would be responsible for initially preserving and preparing the structure for interpretation. In addition, the FEIS should address how organizations with an interest in preserving and interpreting such a facility will be identified by GSA and under what criteria (e.g., the need to have sufficient financial resources, etc.) GSA would select a recipient or partner. The document should also include information on the role GSA would play if NASA decides to preserve a test stand; for example, whether NASA would provide an allowance for the annual maintenance of that stand. In the event a test stand cannot be saved, it will be important to explore creative ideas that provide for telling the story of the SSFL and its historic significance. Since there is a link between the SSFL and the development of the Space Shuttles (and the Shuttle *Endeavour* is on display at the nearby California Science Center), perhaps some of the mitigation measures set forth in the 2011 Memorandum of Agreement for retirement of the Space Transportation System could be applied or linked to the SSFL.

Third, the FEIS should provide additional information on the cleanup options (e.g., excavation and offsite disposal, ex- and in-situ onsite treatment, and to what level) and how each will affect the integrity of the significant Burro Flats Site. Again, while the extent and nature of contaminants is incomplete at this time, the manner in which NASA will consider this National Register-listed site's significance and value to living communities needs to be more fully explored in the FEIS, including the process for further consultation by NASA if additional alternatives are identified.

In summary, the FEIS is intended to evidence NASA's compliance with Section 106. In order to fulfill its statutory and regulatory role, the document needs to present more detailed information on how the significant characteristics of the historic properties on NASA land may be affected by the cleanup, what the cleanup criteria and parameters currently are, and the role played by GSA in decisions about what it may be feasible to preserve for future generations and the Native American community. Further, because of the nature of the historic properties on the SSFL (ranging from prehistoric archaeological sites and properties of traditional religious and cultural significance to Indian tribes through mid-20th Century rocket test facilities), the range of consulting parties and interests in the future of the property, and the fact that another federal agency is tasked with disposing of NASA's property (and whose mission and interests are not necessarily in concord with NASA's), we believe NASA should strongly consider embodying the measures agreed upon to avoid, minimize, or mitigate adverse effects to historic properties in a Memorandum of Agreement.

We appreciate the opportunity to review the DEIS. If you have any questions, or would like to discuss these issues, do not hesitate to contact Tom McCulloch at tmcculloch@achp.gov or 202-606-8554.

Sincerely,

Caroline D. Hall
Assistant Director
Federal Property Management Section
Office of Federal Agency Programs

From:	Brian Lindquist
To:	MSFC-SSFL-EIS
Subject:	Fw: email to NASA
Date:	Monday, September 16, 2013 3:38:30 PM
Attachments:	SCFS_SSFL_DEIS_comments.pdf

----- Forwarded Message -----
From: Daniel O Hirsch <dhirsch1@cruzio.com>
To: Brian Lindquist <b490403@yahoo.com>
Sent: Monday, September 16, 2013 11:49 AM
Subject: email to NASA

To: msfc-ssfl-eis@mail.nasa.gov
From: Brian Lindquist, Southern California Federation of Scientists

Re: Comments on SSFL Draft EIS

Please find attached the written statement of the Southern California Federation of Scientists regarding the NASA Draft Environmental Impact Statement for the cleanup of NASA's portion of the Santa Susana Field Laboratory.

Brian Lindquist
Southern California Federation of Scientists

Statement of
The Southern California Federation of Scientists
at NASA Hearing on the
Draft Environmental Impact Statement
for the Cleanup of the NASA Portion
of the Santa Susana Field Laboratory
August 28, 2013

My name is Brian Lindquist and I am appearing here today on behalf of the Southern California Federation of Scientists (SCFS). SCFS was organized in the early 1950s as the Los Angeles Chapter of the Federation of American Scientists. SCFS is an interdisciplinary organization of scientists, engineers, technicians, and scholars dedicated to providing independent scientific and technical analyses and expertise on issues affecting science, society, and public policy. SCFS has been involved in matters related to SSFL since 1979, when it provided technical assistance related to disclosures of the partial nuclear meltdown that occurred in 1959 at SSFL. For over thirty years, SCFS has been involved in providing technical assistance to the communities near the site on matters related to cleanup of the SSFL chemical and radioactive contamination from decades of rocket and reactor testing. A member of our Executive Board, Dr. Sheldon Plotkin, who unfortunately cannot be here tonight, has served for approximately two decades as a community representative on the SSFL Inter-Agency Work Group overseeing the cleanup of the site and on the SSFL Advisory Panel that oversees health studies of the affected workers and neighboring communities.

SSFL is heavily contaminated from decades of rocket and reactor testing, sloppy practices, improper waste disposal, spills and releases. We are here focused on NASA's portion of the property—Area II and NASA section of Area I. Decades of gross violation of fundamental environmental rules led to contamination of soil, structures, groundwater, and surface water. Indeed, the draft EIS discloses NASA's estimate that its poor practices led to contamination of half a million cubic yards of soil alone. Contaminants include various extremely toxic dioxins, PCBs, numerous heavy metals, TCE and other Volatile Organic Compounds, perchlorate, and other hazardous materials.

Perchlorate, a component of solid rocket fuels that disrupts human development, has been found to have migrated offsite and contaminates a third of wells in Simi Valley monitored for it. Half a million gallons of TCE, a carcinogen, were dumped directly onto the ground and now contaminate groundwater; TCE has also migrated offsite. Annual monitoring reports for surface water contamination show rain carrying off toxic materials offsite, at levels exceeding health-based benchmarks, hundreds of times in recent years. A study by the UCLA School of Public Health found elevated cancer death rates among both the nuclear workers and the rocket workers from exposures to these toxic materials. Another study by UCLA found that the rocket testing had led to offsite exposures to hazardous chemicals by the neighboring population at levels exceeding EPA standards. A study performed for the Agency for Toxic Substances and Disease Registry found elevated cancer rates in the offsite population associated with proximity to SSFL.

The remarkable fact about NASA's Draft Environmental Impact Statement on the cleanup of the toxic contamination at its portion of SSFL is that there is almost nothing in the EIS about the toxic contamination. Just a few sentences. Hundreds of pages are spent trying to scare people about a few trucks per hour that will be needed to transport the waste to an appropriate waste disposal facility—far fewer trucks than were going in and out of the facility for decades. But virtually not a word about the toxic contamination that necessitates the cleanup. This is a fundamental flaw that must be corrected.

The draft EIS identifies the impacts of cleaning up the contamination but is essentially silent on the impacts of not cleaning it up—the "No Action Alternative." You focus on matters which in the scheme of things are small and leave unaddressed the tremendous amount of contamination your sloppy environmental practices created. The draft EIS creates an impression of an agency that signed a legally binding agreement to clean up the toxic mess it made but is now trying to get out of the solemn commitments entered into.

SCFS's recommendations, thus, are:

1. Provide extensive, detailed description of the contamination NASA's poor practices created over decades. Identify in detail what the site characterization has found as to what contaminants are found, in what concentrations, in what areas, in each environmental medium. Give us solid details about the groundwater contamination. Tell us about each violation or exceedance of surface water discharges leaving the site with contaminants about benchmarks. Detail which dioxins have been found, in what concentrations, in what soil, and to what depth; and the same for all the other toxic materials found.

An EIS about toxic cleanup that is silent about the toxic materials is misleading and unscientific at best. Not cleaning up the toxic contamination would result in perpetual releases of contaminants from the site, whenever the wind blows, carrying resuspended toxic material to the communities nearby; whenever the rain falls, surface runoff will continue to carry hazardous material offsite at levels that are deemed unsafe.

2. As to the impacts of cleaning up—very much manageable in the scheme of things—require:

a. the use of natural gas- or electric-powered trucks so as to reduce particulate and greenhouse gas emissions.

b. Disperse the trucks up among the several available routes, which should result in only two or three trucks per hour per road, and only in primary working hours. This is trivial, given the large number of trucks that have gone in and out during all the years of operations and still do for the existing cleanup.

c. Use on-site soil wherever possible for re-grading the cleaned up areas. There should be no need for offsite soil. But if there is some such need, use for bringing in soil the otherwise empty trucks that are going to the site to pick up waste, reducing further the number of trips needed.

d. Use in-situ treatment wherever possible. The draft EIS makes clear that this could reduce the soil removed and the truck trips by a huge amount, on the order of a third. Use on-site treatment to the maximum extent possible.

3. But, at the end of the day, the toxic contamination is so much of a health problem, including to neighboring communities irrespective of eventual end-use of SSFL itself because the contamination otherwise would keep migrating offsite, that full cleanup is scientifically and environmentally mandatory. A few trucks an hour, not dissimilar to what has long gone in and out of the facility anyway, is just a red herring to divert attention from the massive contamination of the site and the need to clean it up.

NASA signed a legally binding Administrative Order on Consent (AOC), committing to cleanup its contamination to background. NASA should fully live up to its commitments. It contaminated this site in the middle of these communities; it promised to fully clean it up; it must meet its promises, fully, and without equivocation.

Thank you.

From:	GROMAN, JENNIFER A. (HQ-LD020)
To:	MSFC-SSFL-EIS
Subject:	FW: Final SY Chumash DEIS Comments
Date:	Tuesday, October 01, 2013 8:28:53 AM
Attachments:	NASA.DEIS.SYCHUMASH.COMMENTS.FINAL.pdf

Official comments

Jennifer Groman
Federal Preservation Officer
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From: Sam Cohen [mailto:scohen@santaynezchumash.org]
Sent: Wednesday, September 25, 2013 1:34 PM
To: Elliott, Allen (MSFC-AS01)
Cc: GROMAN, JENNIFER A. (HQ-LD020); Fellows, Merrilee (HQ-LD000); Sam Cohen
Subject: Final SY Chumash DEIS Comments

Many thanks,

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September 30, 2013

Allen Elliott
SSFL Project Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

RE: Draft Environmental Impact Statement (DEIS) for Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California

Dear Mr. Elliott:

The Santa Ynez Band of Chumash Indians ("Chumash" or "Tribe") thanks you and NASA for the opportunity to comment on the DEIS. NASA procedure requirements state that NASA is "committed to environmental stewardship, sustainable design, and green engineering." In addition, NASA is covered by Executive Order 13175 as reaffirmed by that Presidential Memorandum on Tribal Coordination dated November 5, 2009 that reaffirmed Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments," and emphasized the importance of strengthening government-to-government relationships with Native American tribes. See also, http://nodis3.gsfc.nasa.gov/npg_img/N_PR_8580_001A_/N_PR_8580_001A_.pdf.

The Tribe, therefore, makes the following comments as to the DEIS:

(1) The EIS Must Address Cultural Resources (copied from http://www.npi.org/NEPA/impact)

Cultural resources are referred to in different ways at different points in the CEQ regulations. The regulatory definition of the term "human environment" at 40 CFR 1508.14 –impacts on the quality of the human environment being the subjects of any EIS – includes "the natural and physical environment and the relationship of people with that environment." The definition of "effects" at 40 CFR 1508.8 – as in "effects on the quality of the human environment" – includes changes in the human environment that are "aesthetic, historic, cultural, economic, (or) social."

The regulatory definition of the word "significantly" at 40 CFR 1508.27 – as in "major federal action significantly affecting the quality of the human environment" – includes as measures of impact intensity:

- Impacts on an area's unique characteristics, such as "historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, and ecologically critical areas" (40 CFR 1508.27(b)(3)).

- Impacts on "districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places" and on "significant scientific, cultural, or historical resources" (40 CFR 1508.27(b)(8)).

Clearly, impacts on cultural resources are to be addressed in an EIS. Note that it is not just impacts on historic properties that should be addressed. The regulations use "historic" and "cultural" in parallel, not as synonyms.

(2) Record of Decision Must Mitigate any Impacts to Cultural Resources (copied from **http://www.npi.org/NEPA/impact**)

Once the EIS analysis has resulted in a draft environmental impact statement (DEIS), it is subjected to public and agency review, and comments are addressed – this may require further analysis. Then, assuming the project has not been abandoned, or so changed that a supplemental DEIS is needed, a final EIS (FEIS) is prepared and published. The FEIS is considered in making the agency's decision about whether and how to proceed with the action that was the subject of the EIS. This decision is recorded in a Record of Decision (ROD). According to 40 CFR 1505.2, the ROD must:

- State what the decision was.

- Identify all alternatives considered.

- Specify the alternative or alternatives considered to be "environmentally preferable." (Note that the agency does not have to select the environmentally preferable alternative, but it does have to discuss what it is.)

- Identify and discuss the factors balanced in making the decision (whether for or against the environmentally preferable alternative).

- State whether "all practicable means to avoid or minimize environmental harm . . . have been adopted, and if not, why they were not."

Having notified the world of its decision, the agency implements it. In doing so, it must carry out any mitigation, i.e., "means to avoid or minimize environmental harm," it has said in the ROD or EIS that it will carry out (40 CFR 1505.3).

(3) Deferral of Mitigation does not Comply with NEPA (copied from **http://www.npi.org/NEPA/impact**)

Deferral. With respect to historic properties, a very common problem is "deferral," in which the agency:

- Acknowledges that it does not know much about what effects there may be on historic properties (often because such properties have not yet been identified); but
- Says that whatever effects there may be, NHPA Section 106 review (of the National Historic Preservation Act), to be performed later, will take care of them; and
- Concludes that therefore, whatever alternative is decided on, impacts on historic properties will not be a problem.

Considering environmental impacts *after* a decision has been made defeats NEPA's purpose of considering impacts in *preparing* to make decisions. It also almost guarantees last-minute conflicts between project implementation and historic preservation.

Failure to consider things that are not historic properties. With respect to other kinds of cultural resources, a common problem is that they are not considered at all. Historic properties, or even more narrowly, archeological sites, are sometimes the only things discussed in the "cultural resource" part of an EIS. If social impacts are considered, they are often considered only terms of easily quantifiable socioeconomic variables like population, employment, and use of public services. The result is that impacts on many classes of cultural resource simply are not identified or considered in deciding whether significant impacts may occur.

(4) Significant Negative Unmitigated Impacts to Sacred Sites and Cultural Resources

4.3.1.2 Soil Cleanup to Background--the total area of the remediation footprint is approximately 105 acres and includes approximately 500,000 yd3 of contaminated soil

Indian Sacred Site and Traditional Cultural Property: The tribe has already designated all of the NASA administered property as a sacred site under E.O. 13007. The impact would be **significant**, **negative**, regional, and **long term** and would constitute an **adverse effect** under Section 106. (DEIS, 4-18)

Archeological Resources: The proposed cleanup of the Burro Flats site (CA-VEN-1072); could result in ***significant, negative, local,*** and ***long-term*** impacts to the site and would constitute an ***adverse effect*** under Section 106. The proposed cleanup of CA-VEN-1803 could result in ***moderate, negative, local,*** and ***long-term impacts*** under NEPA. Excavation on previously undiscovered archeological sites found to be NRHP-eligible could be a ***significant, negative, local,*** and ***long-term*** impact on archeological resources, thus resulting in a finding of ***adverse effect*** under Section 106. (DEIS, 4-19)

Deferral of eligibility determination: A determination of eligibility of CA-VEN-1803, in consultation with the SHPO and the federally recognized tribes, needs to be completed before cleanup began if this site were to be affected by soil cleanup activities. CA-VEN-

1800 would not be affected by excavation and removal of soil because it is not located within the identified cleanup areas.

Deferral of boundary research as to VEN-1072 and VEN-1803: Additional boundary research is required to conclude that any avoidance of excavation within the boundaries of Burro Flats (CA-VEN-1072) and CA-VEN-1803 would diminish or eliminate adverse impacts to known archeological sites and reduce the impacts to ***negligible, negative, local,*** and ***long term*** and could result in a finding of ***no adverse effect*** under Section 106.

Deferral of additional testing as to unknown archaeological deposits: Additional subsurface testing is required to conclude that reducing the amount of excavation on newly discovered archeological deposits (commonly referred to as "inadvertent or accidental discoveries") could minimize the impact if the newly identified sites were avoided, thus reducing the impacts to ***minor, negative, local,*** and ***long-term*** impacts from excavation.

(5) **Failure to Address Executive Order 13007**

On December 10, 2012, the Santa Ynez Band of Chumash Indians, a federally recognized tribe ("Tribe"), designated the NASA portion of the SSFL as an Indian sacred site pursuant to Executive Order 13007. This Indian sacred site also includes the former Rocketdyne and now Boeing portion of SSFL and the Tribe is open to discussing the exact boundaries at a later date.

E.O. 13007 requires Federal land managing agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. It also requires agencies to develop procedures for reasonable notification of proposed actions or land management policies that may restrict access to or ceremonial use of, or adversely affect, sacred sites.

Sacred sites are defined in the executive order as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." There is no review of such determinations by a Federal agency.

It is important to note that a sacred site may not meet the National Register criteria for a historic property and that, conversely, a historic property may not meet the criteria for a sacred site. However, in those instances where an undertaking may affect a historic property that is also considered by an Indian tribe to be a sacred site, the Federal agency should, in the course of the Section 106 review process, consider accommodation of access to and ceremonial use of the property and avoidance of adverse physical effects in accordance with E.O. 13007.

The Advisory Council on Historic Preservation (ACHP) has explained **"The Relationship Between Executive Order 13007 Regarding Indian Sacred Sites and Section 106," http://www.achp.gov/eo13007-106.html**

> To the extent that the requirements of the executive order and ACHP's regulations are similar, Federal agencies can use the Section 106 review process to ensure that the requirements of E.O. 13007 are fulfilled. For example, E.O. 13007 requires that agencies contact Indian tribes regarding effects and the Section 106 regulations require consultation with Indian tribes to identify and resolve adverse effects to historic properties.
>
> Consultation regarding the identification and evaluation of historic properties of religious and cultural significance to an Indian tribe could include identification of those properties that are also sacred sites. Similarly, consultation to address adverse effects to such historic properties/sacred sites could include discussions regarding access and ceremonial use.

(6) **Failure to address the NASA Site is a Traditional Cultural Property (TCP) eligible for protection on the National Register:**

National Register Bulletin No. 38 (hereinafter referred to as "NPS Bull. No. 38"), Guidelines for evaluating and Documenting Traditional Cultural Properties (1990; revised 1992; 1998) under NHPA **http://www.nps.gov/nr/publications/bulletins/pdfs/nrb38.pdf**

A. Locations for traditional ceremonies are defined as a TCP: NPS Bull No. 38, p. 1, provides:

The traditional cultural significance of a historic property, then, is significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices. Examples of properties possessing such significance include: ***

• a location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice;

B. Mountain tops and rock outcroppings like at SSFL are TCP's: NPS Bull. No. 38, p. 2, provides:

> Traditional cultural properties are often hard to recognize. A traditional ceremonial location may look like merely a mountaintop, a lake, or a stretch of river; a culturally important neighborhood may look like any other aggregation of houses, and an area where culturally important economic or artistic activities have been carried out may look like any other building, field of grass, or piece of forest in the area. As a result, such places may not necessarily come to light through the conduct of archeological, historical, or architectural surveys. The existence and significance of such locations often can be ascertained only through interviews with knowledgeable users of the area, or through other forms of ethnographic research.

C. NASA must engage specialists as part of its TCP study: NPS Bull. No. 38, p. 10, provides:

> In general, the only reasonably reliable way to resolve conflict among sources is to review a wide enough range of documentary data, and to interview a wide enough range of authorities to minimize the likelihood either of inadvertent bias or of being deliberately misled. Authorities consulted in most cases should include both knowledgeable parties within the group that may attribute cultural value to a property and appropriate specialists in ethnography, sociology, history, and other relevant disciplines.7

D. Specific events like the Solstice ceremony at SSFL qualify as TCP: NPS Bull. No. 38, p. 11, provides:

For example, the National Register
defines a "site" as "the location
of a significant event, a prehistoric or
historic occupation or activity, or a
building or structure, whether standing,
ruined, or vanished, where the location
itself possesses historic, cultural,
or archeological value regardless
of the value of any existing structure."
9 Thus a property may be defined
as a "site" as long as it was the
location of a significant event or activity,
regardless of whether the event or
activity left any evidence of its occurrence.
A culturally significant natural
landscape may be classified as a site,
as may the specific location where significant
traditional events, activities,
or cultural observances have taken
place. A natural object such as a tree
or a rock outcrop may be an eligible
object if it is associated with a significant
tradition or use. A concentration,
linkage, or continuity of such sites or
objects, or of structures comprising a
culturally significant entity, may be
classified as a district.

E. Native American ceremonies qualify as TCP: NPS Bull. No. 38, p.15, provides:

National Register guidelines
stress the fact that properties can
be listed in or determined eligible for
the Register for their association with
religious history, or with persons significant
in religion, if such significance
has "scholarly, secular recognition."
13 The integral relationship
among traditional Native American
culture, history, and religion is widely
recognized in secular scholarship.14
Studies leading to the nomination of
traditional cultural properties to the
Register should have among their
purposes the application of secular
scholarship to the association of particular

properties with broad patterns
of traditional history and culture. The
fact that traditional history and culture
may be discussed in religious
terms does not make it less historical
or less significant to culture, nor does
it make properties associated with traditional
history and culture ineligible
for inclusion in the National Register.

F. Lack of use does not make a property TCP ineligible: NPS Bull. No. 38, p. 18, provides:

The fact that a property may have
gone unused for a lengthy period of
time, with use beginning again only
recently, does not make the property
ineligible for the Register. For example,
assume that the Indian tribe
referred to above used the mountain
peak in prehistory for communication
with the supernatural, but was forced
to abandon such use when it was confined
to a distant reservation, or when
its members were converted to Christianity.
Assume further that a revitalization
of traditional religion has begun
in the last decade, and as a result
the peak is again being used for vision
quests similar to those carried out
there in prehistory. The fact that the
contemporary use of the peak has
little continuous time depth does not
make the peak ineligible; the peak's
association with the traditional activity
reflected in its contemporary use is
what must be considered in determining
eligibility.

(7) **Traditional Cultural Landscapes must also be included in Section 106 consultations and the EIS**

Traditional cultural landscapes, because they are often a property type such as a district or site, are identified in the same manner in the Section 106 process as other types of historic properties of religious and cultural significance to Indian tribes or Native Hawaiian organizations. The regulations at 36 CFR Section 800.4 outline several steps a federal agency must take to identify historic properties. In summary,

to determine the scope of identification efforts, a federal agency, in consultation with the State Historic Preservation Officers (SHPO)/Tribal Historic Preservation Officer (THPO), must:

1. Determine and document the area of potential effect for its undertaking;
2. Review existing information; and,
3. Seek information from consulting parties including Indian tribes or Native Hawaiian organizations.

Based on the information gathered through these efforts, the federal agency, in consultation with the SHPO and any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to historic properties that may be affected by the undertaking, develops and implements a strategy to identify historic properties within the area of potential effects. Identification efforts may include background research, oral history interviews, scientific analysis, and field investigations. **http://www.achp.gov/natl-qa.pdf**

There is no single defining feature or set of features that comprise a traditional cultural landscape. Such places could be comprised of natural features such as mountains, caves, plateaus, and outcroppings; water courses and bodies such as rivers, streams, lakes, bays, and inlets; views and view sheds from them, including the overlook or similar locations ; vegetation that contributes to its significance; and, manmade features including archaeological sites; buildings and structures; circulation features such as trails; land use patterns; evidence of cultural traditions, such as petroglyphs and evidence of burial practices; and markers or monuments, such as cairns, sleeping circles, and geoglyphs. **http://www.achp.gov/natl-qa.pdf**

Based on such research, the ACHP TRADITIONAL CULTURAL LANDSCAPES ACTION PLAN advises as follows:

The ACHP, as the agency with responsibility for overseeing the Section 106 review process, and DOI, through the National Park Service (NPS), as the agency with responsibility for overseeing the National Register of Historic places, should provide leadership in addressing Native American cultural landscapes in the national historic preservation program. Together, the ACHP and NPS should:
--Promote the recognition and protection of Native American traditional cultural landscapes both within the federal government and the historic preservation community as well as at the state and local levels, and,

--Address the challenges of the consideration of these historic properties in the Section 106 review process as well as in NEPA reviews. **http://www.achp.gov/pdfs/native-american-traditional-cultural-landscapes-action-plan-11-23-2011.pdf**

(8) U.N. Declaration on the Rights of Indigenous Peoples must now be followed after December 2010

In December 2010, the United States announced support for the **United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)**. In announcing this support, President Obama stated: "The aspirations it affirms—including the respect for the institutions and rich cultures of Native peoples—are one we must always seek to fulfill...[W]hat matters far more than any resolution or declaration – are actions to match those words." The UNDRIP addresses indigenous peoples' rights to maintain culture and traditions (Article 11); and religious traditions, customs, and ceremonies (Article 12); to

participate in decision making in matters which would affect their rights (Article 18); and to maintain spiritual connections to traditionally owned lands (Article 25).

The ACHP will now incorporate UNDRIP in the Section 106 review process:

While the Advisory Council on Historic Preservation's (ACHP) work already largely supports the United Nations Declaration on the Rights of Indigenous Peoples, additional and deliberate actions will be taken to more overtly support the Declaration. The Section 106 review process provides Indian tribes and Native Hawaiian organizations (NHOs) with a very important opportunity to influence federal decision making when properties of religious and cultural significance may be threatened by proposed federal actions. While federal agencies are required to consult with Indian tribes and NHOs and to take their comments into account in making decisions in the Section 106 review process, adding the principles of the Declaration to that consideration may assist federal agencies in making decisions that result in the protection of historic properties of religious and cultural significance to Indian tribes and NHOs. http://www.achp.gov/docs/UN%20Declaration%20Plan%203-21-13.pdf

9. Official recognition in the DEIS need to be made of the areas surrounding Burro Flats

A. The entire Southern half of Area II District needs to be protected. Sec. 3.3.3.4, p. 3-17

Sec. 3.3.3.3 Archeological Resources, p. 3-16
The earliest documented archeological work at Burro Flats Painted Cave began in 1953 with excavations carried out by the Archaeological Survey Association of Southern California, which made five trips to the site during 1953 and 1954. The site has been recorded several times since then and under numerous separate listings; misidentifications of elements and inconsistencies in function, assemblage, and design interpretations warranted a revisit and a complete recordation of the site's elements. **In June 2007, NASA re-recorded the site and updated the site record; this effort resulted in combining 16 separately recorded sites into one site, CA-VEN-1072, with associated loci and features**.

We therefore request that the entire Southern half of Area II District needs to be protected. Sec. 3.3.3.4, p. 3-17.

B. All structures should be removed in the Coca Historic District. These structures impinge on the ceremonial areas. If a decision is reached to save a test stand, Alfa or Bravo should be retained instead of Coca.

10. Additional Investigation of the Northern Half of the SSFL site

While the Southern half of Area II contains the pictographs and additional 16 sites, the Northern half of SSFL needs additional investigation, including, without limitation:

a. Geography—this areas contains numerous flat areas that would be suitable camp sites;
b. Areas of food—this areas contains forests and riparian areas that could be utilized in the gathering of food;
c. Support for ceremonial area in the Southern half of Area II—It is not inconceivable that the Northern half of the SSFL site provided support for the ceremonies in the Southern half of SSFL;

d. Separate areas for different tribes—if SSFL was an inter-tribal gathering place, then each tribe would have congregated separately in different parts of the site.

11. Subsurface testing is required.

Pedestrian surveys are of limited utility and never alone are sufficient when there are known areas of habitation or ceremony. We are informed that NASA has recently completed a Phase I Pedestrian Survey of the site. While such Phase I is an excellent first step, we request additional subsurface archaeological testing for all areas scheduled for any excavation.

If the project is in a region where there are many sites, there may be reason to suspect that buried sites may be present that went undetected during the survey. If the soils profile of the project location shows that heavy erosion has washed away soils then it may explain the absence of cultural resources. However, if the soils profile is depositional then there may be a need to conduct additional subsurface testing, particularly in areas where ground disturbance is planned. In archaeological terminology, this is referred to as "Extended Phase I" testing because it is an intermediate step between Phase 1 (survey), and Phase 2 (controlled excavation to assess the significance of a site). Extended Phase I testing often done by excavating a small pit with a shovel and screening the excavated soil through steel mesh ("shovel test pit" or "STP"). If it is considered to be necessary that a large amount of soil should be examined at deeper levels, then backhoes are sometimes used and informal sampling procedures are often employed while screening the backdirt.

Sometimes the lead agency will argue that archaeological survey is not warranted for a particular project or there may be factors that justify additional investigation even though a Phase I study has been completed with negative results. Following is a list of environmental and cultural factors that should be considered when assessing the overall cultural sensitivity of the SSFL. (Please note that this list is not exhaustive and each factor must be weighted both individually and collectively on a case-by-case basis.)

a. Areas with high viewshed or visibility such as or ridgelines, peaks, ledges, outcrops, benches, or prominent hills; and

b. Areas with a relatively high density of sites in the vicinity; and

c. Areas where past ethnographic studies have revealed associated placenames. Keep in mind that placenames do not always refer to places where evidence of past cultural activity exists; and

d. Areas near known sites. Mapped boundaries of sites most frequently reflect only cultural residue that was visible on the surface when the site was recorded and do not necessarily reflect the actual extent of the site. In addition, loci such as cemeteries or other areas may be adjacent to or nearby but separate from the main habitation; and

e. Areas near known rock art sites or rocky outcroppings of the type where rock shelters and art have traditionally been located; and

f. Areas in or near known gathering areas; and

g. Though all sites are potentially worthy of protection, named, ethnohistorically documented village sites are of the highest priority and therefore warrant the greatest amount of protection possible.

12. **Exhaustion of Non-Excavation Methods of remediation**.

Figure 2.2-3, p. 2-21, illustrates the Preliminary Remediation Area Types Under the Proposed Action. To the extent feasible, NASA should exhaust all non-excavation methods of remediation before performing any excavation that could potentially impact cultural and historic sites.

13. **Soil Prior disturbance is NOT Dispositive**:

The mantra that cultural sites have been disturbed and therefore automatically are not significant is oftentimes incorrect:

a. Disturbed sites still may contain valuable information. The newer approach is to treat disturbed sites as having the potential to provide information even if they have been disturbed;
b. Disturbed sites still have spiritual significance;
c. Disturbance may only be on the surface, while much excavation may continue to depths of up to 20 feet.

14. **Need to Analyze Cumulative Impacts to Cultural Resources**:

The DEIS fails to account for other remediation projects in other areas of SSFL:

a. Need to add Department of Energy (DOE) cultural sites;
b. Need to add Boeing cultural sites;
c. Other areas within SSFL.

15. **NEW MITIGATION: Cultural Interpretive Center**:

a. Can use existing building;
b. Preferably near saved historic structure and/or test stand;
c. Preferably away from CA-VEN-1072;
d. Need to Reserve maintenance funds.

16. **NEW MITIGATION: Native American monitoring during any ground disturbing activities**.

17. **Need to protect CA-VEN-1072 from trespassers and vandals.**

18. Deferral of Mitigation until Record of Decision (ROD):

a. It is problematic to defer any mitigation until ROD as it prevents meaningful comment;
b. Commenter reserve the right to ask for recirculation of the DEIS and EIS for any such deferred mitigation.

19. **Use of NEPA EIS instead of NHPA 106**—Recent ACHP guidance:

http://www.achp.gov/docs/NEPA_NHPA_Section_106_Handbook_Mar2013.pdf

Substitution under 36 C.F.R. § 800.8(c) permits agencies to use the NEPA review to comply with Section 106 as an alternative to the process set out in 36 C.F.R. §§ 800.3-800.6. The use of a substitution approach allows agencies to use the procedures and documentation required for the preparation of an EA/FONSI or EIS/ROD to comply with the Section 106 procedures. To do so, the agency must notify the ACHP and SHPO/THPO in advance that it intends to do so and meet certain specified standards and documentation requirements as set forth in 36 C.F.R. § 800.8(c)(1).

If, as the result of an objection under 36 C.F.R. § 800.8(c) (2)(ii) or during consultation to resolve adverse effects, disagreement reaches a point where the substitution process is no longer prudent, then agencies may return to the appropriate step in the standard Section 106 process with notification to consulting parties.

20. Need NEPA Mitigation Plan

http://www.whitehouse.gov/sites/default/files/microsites/ceq/20100218-nepa-mitigation-monitoring-draft-guidance.pdf

February 18, 2010

MEMORANDUM FOR HEADS OF FEDERAL DEPARTMENTS AND AGENCIES
FROM: NANCY H. SUTLEY, Chair, Council on Environmental Quality
SUBJECT: DRAFT GUIDANCE FOR NEPA MITIGATION AND MONITORING
I. INTRODUCTION

To provide for the performance of mitigation, agencies should create internal processes to ensure that mitigation actions adopted in any NEPA process are documented and that monitoring and appropriate implementation plans are created to ensure that mitigation is carried out. See *Aligning NEPA Processes with Environmental Management Systems* (CEQ 2007) at 4 (discussing the use of environmental management systems to track implementation and monitoring of mitigation). http://ceq.hss.doe.gov/nepa/nepapubs/Aligning_NEPA_Processes_with_Environmental_Management_Systems_2007.pdf (http://www.slideshare.net/whitehouse/aligning-nepa-processes). Agency NEPA

implementing procedures should require clearly documenting the commitment to mitigate the measures necessary in the environmental documents prepared during the NEPA process (40 C.F.R. § 1508.10) and in the decision documents such as the Record of Decision. When an agency identifies mitigation in an EIS and commits to implement that mitigation to achieve an environmentally preferable outcome, or commits in an EA to mitigation to support a FONSI and proceeds without preparing an EIS, then the agency should ensure that the mitigation is adopted and implemented.

Methods to ensure implementation should include, as appropriate to the agency's underlying authority for decision-making, appropriate conditions in financial agreements, grants, permits or other approvals, and conditioning funding on implementing the mitigation. To inform performance expectations, mitigation goals should be stated clearly. These should be carefully specified in terms of measurable performance standards to the greatest extent possible. The agency should also identify the duration of the agency action and the mitigation measures in its decision document to ensure that the terms of the mitigation and how it will be implemented are clear.

If funding for implementation of mitigation is not available at the time the decision on the proposed action and mitigation measures is made, then the impact of a lack of funding and resultant environmental effects if the mitigation is not implemented warrant disclosure in the EA or EIS. In cases where, after analyzing the proposed actions with or without the mitigation, the agency determines that mitigation is necessary to support the FONSI or committed to in the ROD, and the necessary funding is not available, the agency may still be able to move forward with the proposed action once the funding does become available. The agencies should ensure that the expertise and professional judgment applied in determining the appropriate mitigation measure is reflected in the administrative record, and when and how those measures will be implemented are analyzed in the EA or EIS.

Under NEPA, a federal agency has a continuing duty to gather and evaluate new information relevant to the environmental impact of its actions. See 42 U.S.C. § 4332(2)(A). For agency decisions based on an EIS, the regulations require that, "a monitoring and enforcement program shall be adopted…where applicable for mitigation." 40 C.F.R. §1505.2(c). In addition, the regulations state that agencies may "provide for monitoring to assure that their decisions are carried out and should do so in important cases." 40 C.F.R. §1505.3. Monitoring plans and programs should be described or incorporated by reference in the agency decision documents.

21. Incorporation by reference of Memo dated Nov. 29, 2012, "NEPA alternatives analysis for selection of cleanup standards for the Santa Susana Field Laboratory Site."

Sincerely,

Vincent P. Armenta,
Tribal Chairman

From:	Barbara Tejada
To:	MSFC-SSFL-EIS
Subject:	Fw: LanVen Comments on the Draft NASA SSFL EIS
Date:	Tuesday, October 01, 2013 7:38:04 PM
Attachments:	LanVen NASA EIS Comments_final_100113.pdf

----- Forwarded Message -----
From: Barbara Tejada <btejada75@yahoo.com>
To: "msfc-ssfl-eis@mail.nasa.gov" <msfc-ssfl-eis@mail.nasa.gov>
Cc: Al Knight <ahunknight@msn.com>; Gary Brown <gbrown@gobrainstorm.net>; John Luker <jcluker2@yahoo.com>; Merrilee Fellows <mfellows@nasa.gov>
Sent: Tuesday, October 1, 2013 5:35 PM
Subject: LanVen Comments on the Draft NASA SSFL EIS

Mr. Elliott,

On behalf of the Los Angeles-Ventura Cultural Research Alliance, please find attached our comments regarding NASA's Draft EIS for the Santa Susana Field Lab cleanup project.

Sincerely,

Barbara Tejada
LanVen Co-Chair

September 30, 2013

Allen Elliott
SSFL Project Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

RE: Draft Environmental Impact Statement (DEIS) for Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California

Dear Mr. Elliott:

Thank you for the opportunity to provide comments on the DEIS for NASA's proposed cleanup activities at SSFL. The Los Angeles-Ventura Cultural Research Alliance (LanVen) is a consortium of nearly two dozen professional archaeologists, historians, curators and community leaders who have come together out of mutual concern for the region's cultural heritage resources, in particular, the area encompassing the interface between Los Angeles and Ventura counties. Although our interests are principally directed toward the potential impacts to cultural resources from the proposed project, we also have more general concerns in regards to the cleanup.

Our comments on the DEIS are as follows:

General

1. We recognize that NASA was politically pressured to only consider two alternatives in the DEIS – the No Project and Clean to Background [as prescribed in the2010 Administrative Order on Consent (AOC)]. This is very unfortunate, and we agree with the Santa Ynez Band of Chumash Indians (as noted in the DEIS Executive Summary) that NASA's signing of the AOC constituted a federal action subject to review under the National Environmental Policy Act (NEPA), and that by signing on to the AOC without such review, NASA is in violation of the spirit and intent of NEPA to provide an open and public decision-making process.

2. By defining the Purpose and Need solely according to the restrictions set forth in the 2010 AOC, and thus by limiting the range of reasonable and feasible soil cleanup alternatives that would meet standard industry accepted risk-based protocols for the protection of human health and the environment, the usefulness of the DEIS as a decision-making tool is severely curtailed, again violating the spirit and intent of NEPA. Further, if a standard risk-based protocol is sufficient for treatment of groundwater contamination at the entire SSFL site and for soils on Boeing-owned parcels, why is the same risk-based protocol not applicable to treatment of soil contamination on lands under federal jurisdiction?

3. It would seem that at the very least, separate project alternatives that propose different technologies of cleanup in accordance with the 2010 AOC should have been proposed (i.e. complete excavation; excavation plus in situ treatment; excavation plus ex situ treatment, etc.). Unfortunately, soil sampling and soil treatment pilot testing for the "clean to background" threshold are ongoing, thus comprehensive project alternatives cannot yet be fully developed (refer to Section 2.2.2.1 of the DEIS). As such, we believe that the release of the DEIS without the completion of those studies is premature and greatly hampers the ability of the responsible parties and oversight agencies to make an informed decision based on the DEIS document as it currently stands.

4. Alternatively, NASA has already completed remedial investigation (RI) reports that outline cleanup alternatives using a risk-based approach, which resulted in the 2007 Consent Order. It is unclear then, in Section 1.1.4 of the DEIS, why the 2010 AOC was subsequently executed. As a public disclosure document, the DEIS should make this decision more transparent.

5. As described in Section 1.3 of the DEIS, separate environmental reviews will be conducted for each portion of the responsible parties' jurisdictions. This would seem to make the decision-making process overly cumbersome and confusing such that cumulative effects stemming from multiple cleanup strategies would not be apparent. Why was there not one combined EIS/EIR document prepared concurrently by all responsible parties (Boeing, NASA and DOE) and the oversight agency (DTSC) to allow for full public disclosure?

   At the same time, the DEIS Purpose & Need includes the action "to prepare the property for disposition," yet does not consider end land use of the property in the determination of appropriate cleanup standards. Our understanding is that the General Services Administration (GSA) will conduct separate NEPA review for property disposal/transfer actions, with the potential for additional confusion. We believe that it is important not to divorce end use from cleanup, and that both should be considered together in one joint-agency EIS/EIR document.

<u>Cultural Resources - General</u>

6. NASA is proposing to remove and treat 105 acres of soil to a depth of at least two feet as a "worst case scenario" approach based on incomplete soil testing and treatability studies. As acknowledged in the DEIS, this will have a significant impact on cultural resources. Despite this, alternatives that would allow some degree of archaeological and historic preservation and still incorporate cleanup to levels protective of human health and the environment for suburban, industrial or recreational uses have been eliminated from analysis and treated as nonviable alternatives. We believe that this approach is greatly flawed, and should be reconsidered in order to move forward with the site cleanup in a manner that makes it possible to avoid demolishing significant historic structures and severely impacting the archaeological resources associated with Burro Flats Painted Cave site, CA-VEN-1072.

7. The DEIS mixes the terms "ROI" and "APE" within the discussion of cultural resources (Sections 3.3 and 4.3). In order to avoid confusion, only terminology (i.e. Area of Potential Effect, or

"APE") consistent with Section 106 of the National Historic Preservation Act (NHPA) should be used.

8. Section 3.3.1, second paragraph, notes that the SCCIC provided studies which have been submitted to the State Historic Preservation Officer (SHPO). This is incorrect – not all reports submitted to the SCCIC repository have been submitted to SHPO for review and comment. This is important to note since previous studies may not be sufficient to meet Section 106 obligations, and should not be treated as such.

Cultural Resources Affected Environment – Archaeological

9. In Section 3.3.3.3, the DEIS states that an "archaeological survey of 100 percent of NASA-administered lands at SSFL" has been performed, however based upon the subsequent description of the survey methodologies employed, we feel that this is an inaccurate statement. Typical archaeological survey transects in the region range between 10-15 meters (32-49 feet), depending on the terrain and ground visibility. The DEIS notes transect spacing of twice this range, so smaller sites such as lithic scatters could easily be missed. The DEIS also acknowledges that areas of slope greater than 25% were not surveyed. These statements clearly indicate that less than a 100 percent survey was achieved and we recommend that the DEIS text be corrected to reflect a more accurate survey coverage area.

   The DEIS goes on to state that all rock outcrops were investigated for the presence of rock shelters. In addition to these features, rock outcrops in the area may also include petroglyphs (including cupules), bedrock milling stations and water basins (tinajas). It is not clear in the DEIS, based on the background research noted, if the field archaeologists were surveying for these types of resources as well. Rather than listing only one specific archaeological feature type, survey methodology should include a consideration for all possible features, and we recommend correcting the DEIS accordingly.

10. The DEIS notes that an updated records search was conducted in February 2013 to cover "an additional 9 acres on Boeing property just north of the NASA-administered area," however the APE map (Figure 3.3-1) shows several areas that extend beyond the NASA- administered portions of SSFL on all sides and seem to add up to more than 9 acres. Did the records search encompass all of these areas as well? We are concerned that some of the resources identified during the EPA Radiological Characterization of Area IV and the Northern Buffer Zone may fall within the DEIS APE as shown and are not being accounted for in the cultural resources inventory.

11. The DEIS repeatedly refers to the "Burro Flats Painted Cave" site which is actually only Locus 10 of the much larger archaeological site complex, CA-VEN-1072. The continued focus on the rockshelters (note that these features are not true "caves") containing pictographs and cupules, while almost ignoring the extensive midden and other bedrock features that also are present in site holds huge implications for discussing project effects on historic properties. Basic documentation done 20 years ago by Al Knight for research purposes and excavations done over

50 years ago by a partly avocational group are provided in lieu of modern site recordation. Current inventory work should have used standard practices of detailed site mapping with GPS/GIS technology and controlled test excavation to determine vertical and horizontal site parameters; further, no recommendations were made for additional site evaluation testing to identify or evaluate archaeological characteristics such as artifact assemblage composition, constituents, or chronometry.

In fact, the entire paragraph describing the context of the site on page 3-16 shows a general lack of understanding and poor research breadth of the site complex. For example, only three references are given that all are related to very limited work done in the past two years, however, several reports and records have been written on the site in the past forty years. A period of significance is stated with no accompanying reference to support it. And rather than obtaining a copy of the complete NRHP nomination packet, the DEIS merely references the highly limited data available on the NRHP website. This not only suggests poor scholarship, but gives us additional concern about the level of sufficiency of NASA's cultural resource inventory under the requirements of Section 106 of the National Historic Preservation Act (NHPA).

12. The DEIS states that CA-VEN-1072 has been recorded numerous times and that NASA re-recorded the site in June 2007. Again, this statement is incorrect. Based on the records available at the SCCIC, the Burro Flats site complex was originally recorded by Charles Rozaire in 1959 and 1960 as eleven individual sites (CA-VEN-151 through CA-VEN-161). In 1991, Al Knight recorded four additional sites (CA-VEN-1065 through CA-VEN-1068), then later that same year, based on guidance from the SCCIC, which at that time was located at UCLA, incorporated all fifteen individual sites under one site complex, designated CA-VEN-1072. Not only do the consultants for the NASA DEIS not give credit to Knight for this work, but they openly plagiarize complete sections from his site record and subsequent 1995 report that described the recordation process without proper reference.

    Further, the DEIS refers to the ".... full recordation of Burro Flats Painted Cave," by CH2M Hill in 2007. We have reviewed this site record update and find it to be poorly executed and in no way complete for a resource of this significance. For comparison, a recent update for a complex prehistoric and historic-period archaeological site in nearby Santa Susana Pass State Historic Park is 68 pages long, including feature descriptions, sketch maps and photos. The 2007 "update" for CA-VEN-1072 does not even include a photo or sketch of the famous rock art!

Cultural Resources Affected Environment – Traditional Cultural Properties

13. Sections 3.2.2 and 3.4 describe biological species with traditional importance to native people. This list was constructed solely from a response by the Santa Ynez Band of Chumash Indians on an account of currently-identified onsite species. We believe that this is an inadequate level of inventory, and that consideration be made to species that may have been present at the site historically, as well as expanding consultation to include state-recognized descendant communities.

14. The DEIS notes in several places that a Traditional Cultural Property (TCP) study is underway. Since this type of study is used to inventory historic properties that may be present within the project APE, we believe that this study should have been completed **prior** to the issuance of the DEIS. Without a complete inventory of historic properties, the DEIS cannot properly assess project impacts, again violating the intent of NEPA and the Section 106 process. Simply delaying the determination until the final EIS does not allow for public comment and input.

Cultural Resources Affected Environment – Historical

15. We agree with the NRHP determinations of eligibility for the three test stand historic districts (Alpha, Bravo and Coca). The DEIS description of each resource is concise and highlights the NRHP eligibility characteristics that are relevant to assessing project effects.

Cultural Resources Environmental Consequences – Archaeological

16. Demolition – The DEIS notes that proposed building demolitions and removal of ancillary structures would result in a no adverse effect finding for archaeological resources because these areas have already been disturbed. Similarly, NASA maintains that by locating stockpile and staging areas in previously disturbed areas, such as roads or parking lots, no impacts on archaeological resources would occur.

    We find that the wholesale assumption that areas associated with existing structures, infrastructure, and other disturbance have rendered the integrity of any archaeological resources destroyed is dubious. In fact, roadways, parking lots and sometimes even buildings can act as a cap to protect subsurface archaeological deposits. And even if there was localized disturbance during installation of such structures, the footprint for removal has the potential to exceed the area of the original installation if techniques such as over-excavation are required. The conclusion that undisturbed soils of appropriate age and association to contain significant prehistoric archaeological resources are present is unwarranted. The only way to make a determination of effects on archaeological resources under and around existing infrastructure is through an archaeological testing program to determine presence/absence and integrity of deposits; this is where a phased approach may be appropriate.

17. Soil Cleanup to Background – The DEIS notes that “there would be a low to moderate potential of encountering buried archaeological deposits outside the boundaries of the significant archeological sites.” Terms such as “moderate potential” imply that more resource inventory

work needs to be done before project effects can be fully assessed. Additionally, the DEIS notes that "the proposed cleanup areas include roughly 0.65 acre of the Burro Flats site." There is no indication of how this number was calculated – was soils testing completed within the site, and if so, was the testing monitored by an archaeologist and Native American consultant?

We recommend that an Extended Phase I testing program be conducted to verify the boundaries of the known archaeological resources, especially CA-VEN-1072, and to assess the presence of subsurface resources in those areas the DEIS has described as having a "moderate potential" for encountering buried archaeological deposits. Given the significance of the archaeological resources as stake, relying solely on construction monitoring and a stipulation for unanticipated discoveries do not constitute a good faith effort in the identification of historic properties under Section 106.

Once boundaries are established through subsurface testing, we ask that NASA fully explore the exception option provided in the 2010 AOC for "Native American artifacts formally recognized as Cultural Resources" and request that DTSC fulfill its promise to exclude all mapped archaeological resources from soil cleanup requirements. Even though the in situ treatment options would not require as much excavation, the installation of wells, boreholes, pumps and piping would create nearly identical adverse effects to CA-VEN-1072 and CA-VEN-1803 as the excavation and ex situ treatment options, thus the only way to reduce impacts to archaeological resources would be through avoidance.

Further, we request that DTSC provide a full definition for the 2010 AOC exception and explain how the exception percentage calculation was determined. Comments submitted in 2010 by some current LanVen participants expressed concern about the vague language that was used when clear definitions for what constitutes a historic property or historical resource are available in federal and state statutes. And no where do the existing cultural resource laws provide for the preservation of a set percentage of a site without first fully understanding the site parameters and level of effects.

18. Groundwater Cleanup – As in Comment #17 above, we propose that Extended Phase I testing be conducted to confirm archaeological site boundaries in order to plan for avoidance when installing the infrastructure required for groundwater treatment.

Cultural Resources Environmental Consequences – Traditional Cultural Properties

19. Demolition – The same comments as in #16 above would apply for an Indian Sacred Site or TCP. NASA cannot assume that removal of all existing infrastructure would necessarily be a beneficial impact if there is the potential to adversely affect prehistoric archaeological deposits that may contribute to the significance of the Indian Sacred Site or TCP.

20. Soil Cleanup to Background – We agree that the proposed removal of at least 320,000 yd^3 of soil would constitute a significant, adverse and unmitigable effect to the Indian Sacred Site and TCP. We advocate for re-visiting the project Purpose and Need to consider additional, less damaging alternatives that would still clean up to levels that protect human health and the environment.

Strangely, the DEIS states that, taken alone, in situ soil treatment options would have a minor impact on the Indian Sacred Site and TCP and result in no adverse effect to the resource. We disagree, as the need for wells, boreholes, pumps and piping has the potential to introduce visual impacts and adversely affect prehistoric archaeological deposits that may contribute to the significance of the Indian Sacred Site or TCP.

21. Groundwater Cleanup – Similar to soil in situ treatment options, the DEIS states that groundwater treatment would be minor and result in a finding of no adverse effect on the Indian Sacred Site and TCP, despite introducing wells, boreholes, piping, manifolds, tanks and power sources. We disagree with this determination and find that the required infrastructure has the potential to introduce visual impacts and adversely affect prehistoric archaeological deposits that may contribute to the significance of the Indian Sacred Site or TCP.

Cultural Resources Environmental Consequences – Historical

22. Demolition – We agree that demolition of individually eligible structures or contributors to an eligible historic district would constitute an adverse effect. However, we argue that these effects would be regional since these historic resources have been determined to be eligible at the national level of significance.

    Further, we request that the DEIS make a clear statement on the requirement for 100% structure demolition, given that the 2010 AOC only requires that soil be cleaned up to background levels. Our understanding is that a significant portion of the test stand infrastructure is built upon bedrock, and therefore, would not be subject to the terms of the 2010 AOC cleanup, and that DTSC will not be considering structure demolition in their CEQA review. If demolition is proposed as part of the "preparation for transfer," then the DEIS should be jointly prepared with GSA and consider the end use of the property, as noted in Comment #5 above.

23. Soil Cleanup to Background – NRHP-eligible historic structures will be affected by soil cleanup inasmuch as they are proposed to be removed in order to treat the soils beneath them. We recommend then, that all options be explored to address soil treatment under and around the historic structures using in situ technologies to the extent possible. Further, structures built directly onto bedrock should not be affected by soil cleanup and we advocate retention of these until an end use for the property is determined. These structures may serve as important interpretive elements should the land be transferred as parkland or any other preservation purpose (which we support). In particular, we support the retention of the Alpha and Coca Historic Districts.

24. Groundwater Cleanup – We advocate for installation of groundwater treatment infrastructure such that physical and visual impacts on NRHP-eligible historic structures are avoided or minimized.

Mitigation Measures

25. Cultural Mitigation Measure 1 – We do not believe that the retention of one test stand should be considered mitigation for an unsupported 100% structure demolition proposal. Instead, we recommend that preservation of all or some of the NRHP-eligible historic districts, including test stands and associated contributing structures, be considered in a more robust alternatives analysis for the proposed cleanup action, as discussed in Comment #23 above. The scope and scale of these facilities are a truly awe-inspiring piece of our American history and can really only be appreciated in person, and would provide a tremendous future interpretive opportunity. We recognize that structural stabilization, safety and long-term preservation issues should be considered, and a preservation plan should be developed as a mitigation measure. Additionally, consideration for an endowment fund for long-term preservation should be explored.

26. Cultural Mitigation Measure 2 – We agree that HABS/HAER documentation is appropriate as partial mitigation prior to demolition of structures, but we also recommend that the same documentation be completed for any NRHP-eligible structures that will not be demolished in order to complete the record. We also recommend that documentation take advantage of modern technology, including LiDAR scanning and high resolution photography, which could be used to develop web and mobile applications for interpretive purposes.

27. Cultural Mitigation Measure 3 – NASA proposes to develop an ethnographic study to build upon the results of the TCP study. We assert that this should be included as part of the inventory process to identify historic properties within the APE, not as mitigation.

28. Cultural Mitigation Measure 4 – NASA proposes to delineate the boundaries of CA-VEN-1072 as mitigation for significant impacts to the site if it cannot be avoided by cleanup activities. As noted in Comment #17 above, this boundary testing should be completed as part of the historic property inventory process, not as mitigation, in order to assess the potential for complete avoidance or minimization of impacts. Recommended mitigation measures include a thorough update of the National Register nomination for the Burro Flats Painted Cave site, completion of analysis of previous collections from the site, and preparation of a comprehensive synthesis of past and current work, including the results of any archaeological testing, and/or data recovery which may need to be implemented for portions of the site which cannot be avoided or excluded by the 2010 AOC exception rule. Archaeologists who are familiar with the site as well as the regional research in the Simi Hills and western San Fernando Valley/eastern Simi Valley should be contracted to perform this work to ensure a thorough treatment.

29. Cultural Mitigation Measure 5 – NASA proposes a temporary protection measure for CA-VEN-1072, but does not describe what such measure(s) might include. Would this include fencing, security systems, a program of site monitoring?

Summary Comments

In summary, LanVen maintains that by defining the project Purpose and Need to the guidelines of the 2010 AOC, and not by accepted standards of cleanup protecting human health and the environment, the resulting limited range of alternatives included in the DEIS holds little utility for agency decision-makers and violates the spirit and intent of NEPA and Section 106. We support a reasonable cleanup effort, taking into account standard science-based risk assessment methodology, as well as considerations for end land use. We further support an end use as parkland or open space for the entire SSFL property.

Additionally, we hold that NASA's level of effort on identification of cultural resources within the project APE is incomplete and not sufficient for the purposes of Section 106. If NASA intends to use a phased approach on identification and evaluation, then the DEIS should state as much. Further research, documentation and subsurface testing are required before project effects can be completely assessed, and avoidance and mitigation measures are able to be determined. Simply delaying this work to the final EIS or calling it mitigation is not sufficient.

Finally, NASA has made it clear in Section 106 consultation that it intends to use substitution under 36 CFR 800.8(c) of NEPA review procedures in lieu of the Section 106 process defined in 36 CFR 800.3-800.6. As noted in the recently published *NEPA and NHPA: A Handbook for Integrating NEPA and Section 106* (CEQ and ACHP, March 2013), "there are instances where the substitution approach might not work as well….where a high level of public controversy or complex procedural issues have emerged over the potential impacts to historic properties, an agency might recognize the benefit of keeping the review processes separate so that attention can be focused on managing and resolving discrete controversies."

We are concerned that since the level of effort for identification of historic properties is incomplete, the current NASA schedule for completing the EIS and issuing the Record of Decision (ROD), which will document the agency's commitments to resolving adverse effects on historic properties, will not allow for enough time to develop adequate mitigation measures with opportunity for public comment. We are uncomfortable with setting up commitments within the ROD in a tiered approach as this leaves too many unknowns to chance. Therefore, as we represent several Section 106 consulting parties, we find that the DEIS has not met the identification and assessment of effects standards set forth in 36 CFR 800.8(c)(2)(ii), and request that NASA terminate the substitution process and follow the standard Section 106 process. We fully support the recent NASA decision, at the urging of SHPO, to enter into a Programmatic Agreement and believe that this is a more appropriate procedure.

Again, we thank you for the opportunity to comment on the DEIS and hope that you seriously consider and incorporate our comments and recommendations into the development of the final EIS.

Sincerely,

Albert Knight
Co-Chair, LanVen

Gary M. Brown
Co-Chair, LanVen

Barbara S. Tejada
Co-Chair, LanVen

From:	GROMAN, JENNIFER A. (HQ-LD020)
To:	MSFC-SSFL-EIS
Subject:	FW: SHPO comments on Draft EIS for SSFL
Date:	Tuesday, October 01, 2013 8:28:24 AM
Attachments:	NASA110705A - Santa Susana Field Lab - SHPO Comments on Draft EIS.pdf

Official comments

Jennifer Groman
Federal Preservation Officer
(202) 358-0455

From: Beason, Mark@Parks [mailto:Mark.Beason@parks.ca.gov]
Sent: Tuesday, September 24, 2013 3:08 PM
To: Elliott, Allen (MSFC-AS01)
Cc: GROMAN, JENNIFER A. (HQ-LD020); Tom McCulloch; cvaughn@achp.gov; Roland-Nawi, Carol@Parks; Stratton, Susan@Parks; Beason, Mark@Parks
Subject: SHPO comments on Draft EIS for SSFL

Allen,
A hard copy of the attached comment letter will be mailed today. Please let me know if you have any questions.
Mark

Mark A. Beason
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September 24, 2013 Reply In Reference To: NASA110705A

Allen Elliott
Santa Susana Project Director
National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

RE: Draft Environmental Impact Statement for Proposed Demolition and Environmental Cleanup Activities at Santa Susana Field Laboratory, Ventura County, California

Dear Mr. Elliott:

This letter provides comments from the State Historic Preservation Officer (SHPO) on the Draft Environmental Impact Statement (EIS) and continues Section 106 consultation regarding the undertaking at Santa Susana Field Laboratory (SSFL). In a letter dated June 30, 2011, NASA notified the SHPO of its intention to substitute the National Environmental Policy Act (NEPA) process and documentation required for the preparation of the EIS to meet its Section 106 responsibilities in accordance with 36 CFR 800.8(c). NASA notified the SHPO that the Draft EIS was issued on August 2, 2013, and requested comments before the end of the public comment period on October 1, 2013. SHPO comments regarding the DEIS are included in this letter. On August 29, September 11, and September 20, 2013, further consultation meetings were held among the consulting parties, including the SHPO, regarding cultural resources. The SHPO also met with representatives from NASA, the California Department of Toxic Substances Control (DTSC), and the Santa Ynez Band of Chumash Indians on September 18, 2013.

Please note that the SHPO has no interest in delaying implementation of necessary environmental cleanup. However, several aspects of the compliance effort are problematic with regard to the treatment of historic properties. These include NASA's decision to limit alternatives under consideration, statement of purpose and need for the project, as well as NASA's level of efforts in identification and evaluation of historic properties, and proposed process to resolve adverse effects to historic properties.

Through this letter, the SHPO is notifying NASA of its concerns with these aspects of the Draft EIS and with the successful fulfillment of the 36 CFR 800.8(c) substitution process by which NASA has attempted to satisfy its Section 106 responsibilities.

Foreclosure of Ability of the Advisory Council on Historic Preservation to Comment

In 2007, NASA signed a Consent Order for Corrective Action with Boeing, the US Department of Energy, and the California DTSC. This order "identified the required activities for cleanup of soil, groundwater, and surface water at SSFL" (Draft EIS, ES-1).

In 2010, NASA and DTSC executed an Administrative Order of Consent (AOC), which "stipulates specific remedial requirements, including characterization and cleanup of soil contamination on the NASA-administered areas of SSFL to Look-Up Table values" (Draft EIS, ES-1).

NASA references these two agreements throughout the Draft EIS to justify the restriction of alternatives considered through the NEPA process and as evidence that NASA has committed to soil cleanup at SSFL to Background levels and the remediation work that entails.

According to its Federal Preservation Officer, NASA conducted no NEPA review or Section 106 consultation with the Advisory Council on Historic Preservation (ACHP) or the SHPO (or any other parties) regarding either of these documents (Consulting parties' conference call, August 29, 2013). By signing these two agreements, NASA committed to a course of cleanup activities that has the potential to cause adverse effects to historic properties at SSFL. Additionally, by signing these two agreements without conducting Section 106 consultation, NASA appears to have foreclosed on the opportunity of ACHP to comment on those two undertakings. By continuing to limit alternatives under consideration in the current Draft EIS based upon these two agreements, NASA is approaching a third instance of foreclosure regarding cleanup activities at SSFL.

The SHPO previously raised these concerns in conversations with NASA and in the December 3, 2012, comment letter. No response has been received as of the date of this letter.

Purpose and Need Is Unjustified

In the June 30, 2011, letter initiating Section 106 consultation, NASA defined the undertaking as demolition and cleanup activities on the NASA-administered portion of SSFL. In the December 3, 2012, comment letter, the SHPO stated that the Draft EIS should "contain a clear and complete explanation of any and all actions that are anticipated to follow from the cleanup and remediation activities that may affect cultural resources, including any possible excess property declaration and plans for disposal that may include transfer out of federal ownership. Demolition, cleanup, and disposal all constitute Undertakings as defined in 36 CFR Part 800."

NASA responded that the purpose of the undertaking was remediation of contaminated soils and groundwater, and that General Services Administration (GSA) will be conducting separate environmental compliance for the disposal of the property.

The Draft EIS states the following Purpose and Need for the Action: "The purpose of the Proposed Action is to remediate the environment to a level that meets NASA's environmental cleanup responsibilities and to undertake the demolition actions necessary to support both remediation and **property disposition** of the NASA-administered portion of SSFL (emphasis added)."

Inclusion of "disposition" in the Purpose and Need presents several problems for this consultation. The Draft EIS contains no analysis or specifications for what portion of demolition of architectural resources is related to cleanup, and what portion of demolition is related to disposition.

In the September 11, 2013, consulting parties meeting and conference call, NASA representatives stated that demolition of up to 100% of the buildings and structures is intended to prepare the property for disposal rather than to facilitate soil or groundwater cleanup. On the same occasion, the GSA representative stated that his agency has communicated no requirements for demolition to NASA, and no binding agreements between the two agencies on this subject exist. Instead, GSA told NASA that disposition will be easier if there are no buildings or structures remaining.

In a meeting on September 18, 2013, the state DTSC clarified that neither the 2007 Consent Order nor the 2010 AOC mandates demolition of buildings and structures. Instead, the documents requested that NASA submit a demolition plan, and DTSC would determine if it was sufficient to facilitate soils and groundwater remediation. If buildings not proposed for demolition hindered full cleanup to background levels, DTSC could require further demolition. If NASA has submitted a demolition plan, the SHPO has not received a copy of it.

It appears that total demolition to facilitate disposal is a discretionary decision on NASA's part that is not mandated by the cleanup agreements, and nothing restricts NASA from considering alternatives that include something less than total demolition. Yet, the DEIS does not contain sufficient analysis of such alternatives, because NASA maintains that their "hands are tied" by the AOC which, in their interpretation, precludes all other alternatives except those included in the DEIS.

Furthermore, it is the SHPO's opinion that splitting environmental compliance for cleanup activities from compliance for disposition artificially and improperly segments the undertaking, which appears to be NASA's disposal of its property at SSFL. The Section 106 consultation and EIS should take into account both the cleanup activities and disposition of the property rather than falsely contend that they are separate and unrelated activities.

Insufficient Consideration of Feasible Alternatives

In the Draft EIS, NASA has chosen to limit the number of alternatives considered to two: a No Action alternative; and the Proposed Action, which complies with the 2007 Consent Order and 2010 AOC by including demolition of up to 100% of the architectural features at SSFL, soil cleanup to Background levels through excavation, disposal, and some in situ methods, and groundwater cleanup to risk-based levels. (However, the most recent consulting parties meeting on September 11, 2013, revealed that demolition is not specifically mandated in either of these agreements.)

According to the Draft EIS, NASA eliminated from further consideration three other alternatives. These included cleanup of soils at SSFL to Residential, Commercial / Industrial, or Recreational levels, all of which require less remediation than Background level cleanup. According to the Draft EIS, "These risk-based alternatives were eliminated from further consideration because they would not meet the requirements of the 2010 AOC" (Draft EIS, 2-34).

Other than the No Action alternative, which is mandated by NEPA, NASA has not given full consideration to reasonable alternatives that would avoid the adverse effects to historic properties that will result from the Proposed Action. The Draft EIS contains no evidence that NASA has made an effort to analyze the feasibility of retaining any of the historic buildings and structures or to avoid large-scale soil removal at SSFL.

The magnitude of adverse effects / significant impacts that will result from the Proposed Action warrants serious consideration of alternatives that avoid or minimize effects / impacts. These should be analyzed at the alternatives stage rather than suggested as possible mitigation measures at the end of the process.

Section 106 Consultation Under 36 CFR 800.8(c) – Substitution of NEPA for Section 106

When a federal agency chooses to use the NEPA process for Section 106 purposes, the documentation submitted must meet the standards outlined in 36 CFR Part 800.8(c)(1)(i-v), which are intended to accomplish the goals of the consultation process outlined in 36 CFR Part 800.3 through 6. The SHPO finds that these standards have not been met during this consultation and that the substitution process has not been sufficient for the following reasons.

Defining the Undertaking

As described above, NASA has excluded disposition of its property from the undertaking and consultation, but is using disposition as justification for an unspecified amount of demolition of historic structures at SSFL. The undertaking should properly consider both cleanup activities and disposition if disposition influences the Proposed Action. If it does not, then disposition should not factor into the Purpose and Need for the Proposed Action / Undertaking.

Identifying Consulting Parties

Given NASA's agreements with DTSC and reliance upon the Consent Order and AOC for determining the level of cleanup, the consultation should properly include active participation from DTSC. On several occasions, NASA has told the SHPO that DTSC has not only mandated cleanup to Background levels, but any work NASA proposes will have to be approved by DTSC. As stated above, NASA, SHPO, and Santa Ynez Band of Chumash Indians met on September 18, 2013, (ACHP declined to participate). This meeting provided much needed clarity regarding the two DTSC agreements with NASA. It would have been ideal to hold discussions such as this one early in the process as mandated by 36 CFR 800.8(c), and the SHPO encourages ongoing coordination between these consulting parties in an effort to resolve adverse effects.

It is not clear that all other potential consulting parties have been identified or contacted, such as the U.S. Army Corps of Engineers (for a Section 404 permit).

Identification and Evaluation of Historic Properties

In spite of previous requests and comments from the SHPO and other consulting parties, Historic Property Identification and Evaluation remains incomplete. Most recently, the SHPO's letter dated May 20, 2013, provided comments on archaeological identification efforts that have not been fully addressed by NASA. In order to inform and seek comments from the public, Tribal groups, agencies, and stakeholders regarding impacts to the cultural resources, the following items should be completed and the results of these studies should be included in the draft EIR.

- NASA's archaeologist(s) should write an archaeological context for the area and use it to address the potential presence of an archaeological district. The Traditional Cultural Property (TCP) study and Cultural Landscape Assessment that are currently under

preparation do not substitute for this analysis. The archaeological district identification and evaluation should take into consideration the known properties resulting from the 1-mile literature survey. There are several cultural resources on the Boeing property that may very well be considered part of an archaeological district with Burro Flats as a focal point.

- Restricting the study area to the boundaries of the NASA-administered property is insufficient. NASA contends that it is unable to conduct identification and evaluation efforts on property it does not own. The scale of adverse effects from soil removal and other remediation efforts warrants a broad study of resources in the area, including on Boeing and Department of Energy (DOE) property, because of the potential for effects to resources that span the property boundary.
- The Draft EIS states that NASA is consulting exclusively with the Santa Ynez Band of Chumash Indians with regard to the designated Sacred Site, TCP, and Cultural Landscape Assessment (Draft EIS, 4-19). Nothing in the regulations requires or justifies exclusion of the SHPO and ACHP from this consultation, and both play a regulatory role in the evaluation of historic properties such as TCPs and Cultural Landscapes.
- Along with the archaeological context and district evaluation, the TCP study and Cultural Landscape Assessment should form the cornerstone for historic property identification and evaluation efforts. Failure to complete these studies in time for them to inform alternative selection will result in a failure to adequately comply with 36 CFR 800.8(c)(1)(ii), which compels the federal agency to identify historic properties and assess effects consistent with the standards and criteria of 36 CFR 800.4 through 800.5. *Inclusion of historic preservation issues*. Completion of this identification effort is especially vital given the destructive nature of the remediation efforts and potential effects to the archaeological resources, as well as impacts to traditional cultural values and practices.
- The Burro Flats site (as well as the other two identified archaeological properties) needs to be analyzed under all National Register of Historic Places (NRHP) eligibility criteria, not just Criterion D.
    - NASA should not be relying solely on a 38-year old NRHP nomination.
    - NASA should consider updating the NRHP nomination to reflect current site conditions and also addressing all NRHP criteria.
    - NASA should reconcile all of the available information on the Burro Flat site, including but not limited to a resurvey of the site, locating / spot-checking all of the identified loci from the previous surveys and studies, etc.
    - Boundary delineation should occur at this stage to fully inform the assessment of adverse effects, rather than postponing it and considering it a mitigation measure.
- The SHPO disagrees with NASA's assertion that the boundaries of a potential archaeological district at SSFL are limited to the boundaries of the Burro Flat National Register Archaeological District.

Assessment of Adverse Effects

The SHPO concurs that the Proposed Action will adversely affect historic properties. The scale of adverse effects, while still being determined, is disturbing and disappointing. As mentioned above, the SHPO understands the necessity for environmental safety and has no interest in delaying reasonable cleanup of hazardous materials.

However, the extent of adverse effects remains unknown until the full scope of cleanup activities is known and identification and evaluation efforts are complete. NASA does not intend to complete these steps prior to its Record of Decision (ROD), making it extremely difficult to agree upon appropriate resolution of the adverse effects.

Unanticipated Discoveries

The Draft EIS contains language that, "Appropriate measures, such as preparing a plan for unanticipated discoveries, should be implemented to address the possibility of impacts on buried resources from the undertaking" (Draft EIS, C-52). However, the document does not specify when this plan will be written, how or when consulting parties will be able to review and comment on it, or how NASA will demonstrate its commitment to following the plan.

Resolution of Adverse Effects

As mentioned above, the full extent of adverse effects remains unknown. NASA proposes to continue working on the TCP and Cultural Landscape analysis and will adjust the Area of Potential Effects in accordance with the findings of these studies. However, NASA has offered no plan to allow consulting parties to comment on this analysis, either prior to release of the Final EIS or after it is released.

Furthermore, the mitigation measures included in the Draft EIS are premature and insufficient.

- NASA proposes the retention of a single test stand as a mitigation measure.
    - Retention of a test stand would properly be considered an avoidance or minimization measure, but first should be included in the alternative analysis.
- NASA proposes HABS / HAER recordation of the nine individually-eligible structures at SSFL.
    - The nine individually-eligible structures are not the only historic properties proposed for demolition. Recordation should properly include all contributors to the three historic districts associated with the test stands, too.
    - No level of recordation is specified.
- NASA proposes to produce an in-depth ethnographic study based upon research from the TCP study.
    - An ethnographic study should be produced prior to issuance of the Final EIS so NASA can use it to identify and evaluate historic properties, assess effects, and develop appropriate avoidance, minimization, and mitigation measures.
- NASA proposes to delineate the boundaries of the Burro Flats Painted Cave archaeological site, which was listed in the NRHP in 1976.
    - As with the ethnographic study, the boundaries of this site (and a possibly associated archaeological district) should be delineated prior to issuance of the Final EIS so NASA can use it to identify and evaluate historic properties, assess effects, and develop appropriate avoidance, minimization, and mitigation measures.
- NASA proposes to design and install temporary protection measures for the Burro Flats site during implementation of the proposed action.
    - The SHPO appreciates NASA's willingness to implement protection measures, but these should be part of the scope of work rather than a mitigation measure.
    - Consultation regarding protection measures should also include Tribal groups.

  - NASA also should prepare a permanent protection plan for Burro Flats that extends beyond the duration of cleanup activities, and propose a Section 106 consultation plan for its implementation.
  - NASA has not proposed protection measures for any of the other historic properties at SSFL.
- As discussed in the August 29 consulting parties' conference call, the SHPO agrees that existing historic property recordation and nominations should be updated as a mitigation measure.

Throughout the consultation process and in the Draft EIS, NASA states that resolution of adverse effects and the Section 106 process will be finalized in the Record of Decision for the Final EIS. Given the schedule NASA has for adoption of the ROD and the limits of current cultural resource identification noted above, a resolution of adverse effects that would meet minimum standards consistent with 36 CFR Part 800.8(c)(1)(i-v) cannot be reasonably achieved. Without a substantive and enforceable agreement document, the requirements of 36 CFR 800(c) are not satisfied and the SHPO would have to consider submitting objections to NASA in accordance with 36 CFR 800.8(c)(2)(ii).

The SHPO continues to believe, as stated on several occasions during this consultation, that an agreement document would be a more appropriate vehicle for resolving adverse effects, given the complexity of the undertaking, phased identification contemplated, scale of adverse effect, and multiple years required to implement the undertaking. Whichever document is utilized, it is essential that NASA enter into a legally-binding and enforceable agreement to resolve adverse effects to historic properties.

Finally, outstanding issues remain from the 2010 AOC, including the definition of "Native American artifacts" and the manner by which NASA can apply the 5% exception provision to historic properties. Per the September 18, 2013, meeting with DTSC, NASA, SHPO, and Santa Ynez Band of Chumash Indians, neither NASA nor DTSC could provide an explanation of how the 5% exemption was determined or what scientific or other basis informed this decision. It appears that the exemption of 5% is arbitrary and capricious and artificially limits the consideration of alternatives, options for avoidance and minimization, and mitigation of adverse effects to historic properties. Along with discussions about extending the timeline, the SHPO recommends ongoing discussions with DTSC and signatory parties to resolve these issues.

The SHPO appreciates the opportunity to comment on the NEPA document and looks forward to continuing consultation on this undertaking in order to resolve these issues. If you have any questions regarding these comments, please contact me directly at (916) 445-7043 / carol.roland-nawi@parks.ca.gov, or Dr. Susan Stratton at (916) 445-7023 / susan.stratton@parks.ca.gov, or Mark Beason, at (916) 445-7047 / mark.beason@parks.ca.gov.

Sincerely,

Carol Roland-Nawi, Ph.D.

Carol Roland-Nawi, Ph.D.
State Historic Preservation Officer

From:	Jason Weiner on behalf of Jason
To:	MSFC-SSFL-EIS
Cc:	Mati Waiya; luhui
Subject:	Fw: Wishtoyo DEIS Comments: Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California
Date:	Tuesday, October 01, 2013 2:42:30 PM
Attachments:	9.30.13_Wishtoyo_SSL DEIS Comments.pdf Canine Forensics Attachment.pdf

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Sent from my Verizon Wireless BlackBerry

From: Jason Weiner <jweiner.venturacoastkeeper@wishtoyo.org>
Sender: jweiner.venturacoastkeeper@gmail.com
Date: Mon, 30 Sep 2013 09:55:53 -0700
To: <msfc-ssfl-eis@mail.nasa.gov>
Cc: Mati Waiya<matiwaiya@wishtoyo.org>; Luhuiisha<luhuiisha@wishtoyo.org>
Subject: Wishtoyo DEIS Comments: Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California

To whom it may concern,

Please accept Wishtoyo's attached Draft Environmental Impact Statement ("DEIS") for the Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California ("Project").

Please also confirm receipt of the attached Wishtoyo letter and canine forensic attachment to the letter.

Sincerely,

Jason

--
Jason A. Weiner, M.E.M.
Associate Director & Staff Attorney
Wishtoyo Foundation's Ventura Coastkeeper Program

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Wishtoyo

September 30, 2013

Allen Elliott
SSFL Project Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

VIA EMAIL: msfc-ssfl-eis@mail.nasa.gov

RE: Draft Environmental Impact Statement ("DEIS") for Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California ("Project")

Dear Mr. Elliott:

Wishtoyo thanks you and NASA for the opportunity to comment on the DEIS and the Project.

WISHTOYO FOUNDATION is a California nonprofit public interest organization, founded in 1997, in Ventura County, with over 700 members composed of Chumash Native Americans and Santa Barbara, Ventura, and Los Angeles County residents. Wishtoyo Foundation's mission is to preserve, protect, and restore Chumash culture, the culture of all of three counties' diverse communities, and the environment. The Wishtoyo Foundation shares traditional Chumash beliefs, cultural practices, songs, dances, stories, and values with the public to instill environmental awareness and responsibility for sustaining the health of our land, air, and water for the benefit of future generations.

The Chumash People, including members of Wishtoyo, have a long history of interaction with the SSFL area. The SSFL site is interacted with by the Chumash for a variety of purposes, including religious and ceremonial rites. The Chumash Peoples continue share a sacred and cultural relationship with the many places and the landscape within the SSL site, as the Project site contains the ancestral remains of the Chumash Native Americans with innumerable cultural and natural resources, including burial and sacred sites. This Project has the potential to change the entire cultural landscape this historical, cultural, and religious treasure to the Chumash Peoples.

We are especially concerned about the Project's and the DEIR's identification, mitigation for, and treatment of Chumash cultural resources.

When Chumash cultural resources, including burials are identified, Phase III data recovery, or salvage operation, even if the salvage operation includes re-burial, does not

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www.wishtoyo.org

achieve preservation in place of the Chumash Peoples' cultural resources, including burial sites, sacred sites, village sites, and cultural artifacts and remains. Even capping and filling of the Chumash Peoples' significant cultural, historic site, and burials, often does not adequately achieve preservation in place of our historic and cultural resources, as it can destroy the necessary relationship between the cultural, historic, and often religious resource with its surroundings and cultural landscape that are a component of the site's significance. Therefore, for identified impacts to Chumash cultural, historic, and religious sites, mitigation measures to achieve preservation in place must be thoroughly analyzed in consultation with the Chumash. The Environmental Impact Statement ("EIS") must not only identify adequate mitigation measures that preserve Chumash cultural resources in place, but it must commit to preservation in place mitigation measures (and not defer the mitigation measures to others' discretion at a later time so that Phase III data recovery can be implemented), unless these measure are proven to be infeasible by defined criteria.

The Project site is rich with the Chumash tribes' historic and cultural resources. To the Chumash, any area with historic value, such as their burial sites, village sites, or sacred sites have deep religious, spiritual, and cultural significance today. The Chumash thus retain strong spiritual, cultural and religious attachment to the lands, their buried ancestors, and resources within the Project site. The Chumash, including members of Wishtoyo, still conduct sacred ceremonies on the Project site today. Chumash remains, burials, sacred sites, and ancestral villages lie in the Project site, and these cultural resources will be directly affected by excavation, earthmoving, and disturbance authorized by this Project.

Based on our knowledge passed down only orally and not recorded in westernized records about the locations and extent of the Chumash remains in the Project site, the initial study and DEIS fail to adequately identify significant impacts to significant Chumash cultural historic resources, villages, burial site, sacred cites, and remains. Further, the on the ground surveys were not sufficiently extensive, as a sufficient frequency of test pits were not dug; when they were dug, they were not dug deep enough; and the entirety of the Project area was not covered by on the ground surveying and sufficiently spaced test pits. Furthermore, best available science was not used, such as forensic canines, to best ensure all Chumash burials and remains were identified in the Project Area. Because Phase III Data recovery is in most cases not sufficient mitigation, a dig first and excavate later approach is not sufficient for mitigation impacts to our cultural resources. It is thus critical to setting forth adequate mitigation measures that the presence of our cultural, historic, and religious resources are adequately analyzed and identified using best available practices.

Wishtoyo requests that specially trained forensic canines alone or in combination with ground penetrating radar are utilized (just like they were in Santa Cruz to identify Ohlone Native American burials for the KB Home development [1]), to

[1] Please see Canine Forensics Attachment to this letter for more details about the use of forensic canines and ground penetrating radar to reliably identify the location of Native American Burials for the KB Homes Development in Santa Cruz and for other development projects.

identify the location of all Native American burials within the project envelope. The use of specially trained canine forensics alone, or in combination with ground penetrating radar, represents the best available technology and most reliable means for the identification of Chumash burials, and thus should be used to identify potential impacts to Chumash cultural / historic resources and to mitigate those impacts to a less than significant effect. By utilizing highly trained forensic canines alone or in combination with ground penetrating radar to identify with more reasonable certainty all or almost all of the Native American burials within the Project envelope, mitigation measures can be developed in coordination with the local Native Americans to achieve preservation in place for those impacted burials and cultural historic resources.

Wishtoyo also requests that the DEIS adequately indentify the impacts to Chumash cultural, historic, and religious resources through additional study in consultation with the Chumash and using best available science.

The Project's development envelope also contains Chumash natural cultural and historical resources. These include, but are not limited to hawk and eagle feathers, deer bones used for hair pins, bird bones for flutes, animal skeletal remains used for beads, medicinal plants, oak trees, black walnut trees, soap stone, cheart stone, medicinal plants, rabbit pelts and oarcker; gathering sites for natural cultural resources; and cultural landscapes which include undeveloped mountain tops, hillsides, tributaries and canyons that bring sacredness to sacred sites. These natural cultural resources within the Project site may be contaminated, as may be the areas around the cultural sites within the Project envelope. Thus, not only must these cultural resources be protected and preserved, but the contamination of these cultural resources and sites must be assessed and remediated so that residual toxins do not pose health threats to Chumash Peoples utilizing the area for cultural purposes.

For all the reasons above, meaningful consultation during the NEPA process with Chumash tribal representatives from the Federally recognized Santa Ynez Band of Chumash Indians, and from unrecognized bands of Chumash including Mati Waiya from the Turtle Clan in Saticoy and Luhui Isha Waiya from Barbareño Chumash, is crucial to understanding, identifying, and mitigating irreversible impacts to this national Native American treasure, Chumash cultural landscape, Chumash heritage and culture, and to the scared and religious, cultural resources of the Chumash People within the Project site.

Despite the need, there has been no meaningful consultation with the Chumash. Even the consultation with the Federally recognized band of Santa Ynez Chumash Indians is not in compliance with Section 106 of the National Historic Preservation Act ("NHPA"), which according to the Advisory Council on Historic Preservation states,

> "in carrying out its responsibilities under Section 106, *a Federal agency shall consult with any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to properties described in subparagraph (A). [16 U.S.C. 470a (a)(6)(A) and (B)]."*

We believe this Project would significantly alter future use, and impact the Cultural sites, resources and heritage these lands represent. The outreach that has been done is insufficient. Extensive outreach to Chumash, Tatavium, Tongva and other Native American tribal families/groups that have a longtime and historical connection to the sacred and cultural sites at SSFL/Burro Flats should occur with notice of the issues in this letter, and these Native American stakeholders should be given an opportunity to submit comment and participate in meaningful consultation. Even the February 2013 SSFL Community Advisory Group ("CAG") formed to make recommendations to Department of Toxic Substances Control ("DTSC") found shortfalls in outreach to certain stakeholder groups, including and especially to the Native American Tribal Community, which was identified in the highest category (Category 1) of stakeholders that have not received outreach and that are in need of outreach.

In addition to the comments above, we incorporate the comments from the Santa Ynez Band of Chumash Indians (below) and have the following comments on the DEIR and the Project:

1. The project will impart significant negative unmitigated impacts to sacred sites and cultural resources. Areas that contain artifacts contaminated with toxins may need to be cleaned up as part of the project. How are these artifacts, that are contaminated with toxins to be preserved in place, and if storage or removal occurs - which we are opposed to, how are they to be stored. How are uncovered villages or sacred sites to be preserved in place. How would the legal transfer of land on the Project site affect the protection of historic properties? We request that parcels with Chumash sacred and cultural resources are not transferred without adequate guarantees of protection.

2. The Chumash have held ceremonies on the Project site for the past 30 yrs. or more, and want to continue to do so.

3. Please conduct independent studies to review cultural sites and cultural resources that are present. Ensure that Chumash are considered for retention under contract to conduct cultural resources surveys with archeologists, trusted by the Chumash community, who have worked with Chumash resources.

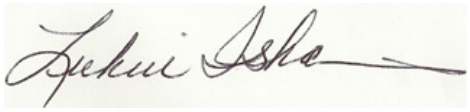
4. Agencies and entities that own the different properties within the Project site, like DOA, Boeing and NASA need to look at, analyze, and mitigate cultural sites as a whole district or historic district, which are not separated by legal property boundaries with the site. The project must avoid all impacts to Chumash cultural resources within the Project site.

5. Traditional cultural landscapes to include natural resources, plants, stones, creeks and habitat that helped us, and continue to help us, sustain our lifeway and traditions. These resources need to be protected.

6. Cultural sites not identified are likely scattered throughout the entire Project site/property. This area hosted different tribal groups that where passing through or were neighboring tribes.

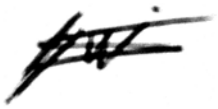
7. Please add a mitigation measure that provides that the Interpretation of Chumash History in relation to the Project site, uncovered cultural resources, preserved in place cultural resources, protected Chumash cultural resources, and recovered cultural resources is to be done by Chumash representatives.

Sincerely Yours,



Luhui Isha
Barbareño Chumash
Cultural Resources & Education Director
Wishtoyo Foundation

Mati Waiya, Chumash Ceremonial Elder
Santa Clara River Turtle Clan
Executive Director
Wishtoyo Foundation



Jason Weiner
Staff Attorney
Wishtoyo Foundation

Attachment to Wishtoyo 9/30/2012 DEIS Letter - Letter from the Santa Ynez Band of Chumash Indians

September 30, 2013

Allen Elliott
SSFL Project Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

RE: Draft Environmental Impact Statement (DEIS) for Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California

Dear Mr. Elliott:

The Santa Ynez Band of Chumash Indians ("Chumash" or "Tribe") thanks you and NASA for the opportunity to comment on the DEIS. NASA procedure requirements state that NASA is "committed to environmental stewardship, sustainable design, and green engineering." In addition, NASA is covered by Executive Order 13175 as reaffirmed by that Presidential Memorandum on Tribal Coordination dated November 5, 2009 that reaffirmed Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments," and emphasized the importance of strengthening government-to-government relationships with Native American tribes. See also, http://nodis3.gsfc.nasa.gov/npg_img/N_PR_8580_001A_/N_PR_8580_001A_.pdf**.**

The Tribe, therefore, makes the following comments as to the DEIS:

(1) <u>The EIS Must Address Cultural Resources</u> (copied from http://www.npi.org/NEPA/impact)

Cultural resources are referred to in different ways at different points in the CEQ regulations. The regulatory definition of the term "human environment" at 40 CFR 1508.14 –impacts on the quality of the human environment being the subjects of any EIS – includes "the natural and physical environment and the relationship of people with that environment." The definition of "effects" at 40 CFR 1508.8 – as in "effects on the quality of the human environment" – includes changes in the human environment that are "aesthetic, historic, cultural, economic, (or) social."

The regulatory definition of the word "significantly" at 40 CFR 1508.27 – as in "major federal action significantly affecting the quality of the human environment" – includes as measures of impact intensity:

- Impacts on an area's unique characteristics, such as "historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, and ecologically critical areas" (40 CFR 1508.27(b)(3)).

- Impacts on "districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places" and on "significant scientific, cultural, or historical resources" (40 CFR 1508.27(b)(8)).

Clearly, impacts on cultural resources are to be addressed in an EIS. Note that it is not just impacts on historic properties that should be addressed. The regulations use "historic" and "cultural" in parallel, not as synonyms.

(2) Record of Decision Must Mitigate any Impacts to Cultural Resources (copied from **http://www.npi.org/NEPA/impact**)

Once the EIS analysis has resulted in a draft environmental impact statement (DEIS), it is subjected to public and agency review, and comments are addressed – this may require further analysis. Then, assuming the project has not been abandoned, or so changed that a supplemental DEIS is needed, a final EIS (FEIS) is prepared and published. The FEIS is considered in making the agency's decision about whether and how to proceed with the action that was the subject of the EIS. This decision is recorded in a Record of Decision (ROD). According to 40 CFR 1505.2, the ROD must:

- State what the decision was.

- Identify all alternatives considered.

- Specify the alternative or alternatives considered to be "environmentally preferable." (Note that the agency does not have to select the environmentally preferable alternative, but it does have to discuss what it is.)

- Identify and discuss the factors balanced in making the decision (whether for or against the environmentally preferable alternative).

- State whether "all practicable means to avoid or minimize environmental harm . . . have been adopted, and if not, why they were not."

Having notified the world of its decision, the agency implements it. In doing so, it must carry out any mitigation, i.e., "means to avoid or minimize environmental harm," it has said in the ROD or EIS that it will carry out (40 CFR 1505.3).

(3) Deferral of Mitigation does not Comply with NEPA (copied from **http://www.npi.org/NEPA/impact**)

Deferral. With respect to historic properties, a very common problem is "deferral," in which the agency:

- Acknowledges that it does not know much about what effects there may be on historic properties (often because such properties have not yet been identified); but
- Says that whatever effects there may be, NHPA Section 106 review (of the National Historic Preservation Act), to be performed later, will take care of them; and
- Concludes that therefore, whatever alternative is decided on, impacts on historic properties will not be a problem.

Considering environmental impacts *after* a decision has been made defeats NEPA's purpose of considering impacts in *preparing* to make decisions. It also almost guarantees last-minute conflicts between project implementation and historic preservation.

Failure to consider things that are not historic properties. With respect to other kinds of cultural resources, a common problem is that they are not considered at all. Historic properties, or even more narrowly, archeological sites, are sometimes the only things discussed in the "cultural resource" part of an EIS. If social impacts are considered, they are often considered only terms of easily quantifiable socioeconomic variables like population, employment, and use of public services. The result is that impacts on many classes of cultural resource simply are not identified or considered in deciding whether significant impacts may occur.

(4) Significant Negative Unmitigated Impacts to Sacred Sites and Cultural Resources

4.3.1.2 Soil Cleanup to Background--the total area of the remediation footprint is approximately 105 acres and includes approximately 500,000 yd3 of contaminated soil

Indian Sacred Site and Traditional Cultural Property: The tribe has already designated all of the NASA administered property as a sacred site under E.O. 13007. The impact would be **significant**, **negative**, regional, and **long term** and would constitute an **adverse effect** under Section 106. (DEIS, 4-18)

Archeological Resources: The proposed cleanup of the Burro Flats site (CA-VEN-1072); could result in ***significant, negative, local,*** and ***long-term*** impacts to the site and would constitute an ***adverse effect*** under Section 106. The proposed cleanup of CA-VEN-1803 could result in ***moderate, negative, local,*** and ***long-term impacts*** under NEPA. Excavation on previously undiscovered archeological sites found to be NRHP-eligible could be a ***significant, negative, local,*** and ***long-term*** impact on archeological resources, thus resulting in a finding of ***adverse effect*** under Section 106. (DEIS, 4-19)

Deferral of eligibility determination: A determination of eligibility of CA-VEN-1803, in consultation with the SHPO and the federally recognized tribes, needs to be completed before cleanup began if this site were to be affected by soil cleanup activities. CA-VEN-

1800 would not be affected by excavation and removal of soil because it is not located within the identified cleanup areas.

Deferral of boundary research as to VEN-1072 and VEN-1803: Additional boundary research is required to conclude that any avoidance of excavation within the boundaries of Burro Flats (CA-VEN-1072) and CA-VEN-1803 would diminish or eliminate adverse impacts to known archeological sites and reduce the impacts to ***negligible, negative, local,*** and ***long term*** and could result in a finding of ***no adverse effect*** under Section 106.

Deferral of additional testing as to unknown archaeological deposits: Additional subsurface testing is required to conclude that reducing the amount of excavation on newly discovered archeological deposits (commonly referred to as "inadvertent or accidental discoveries") could minimize the impact if the newly identified sites were avoided, thus reducing the impacts to ***minor, negative, local,*** and ***long-term*** impacts from excavation.

(5) **Failure to Address Executive Order 13007**

On December 10, 2012, the Santa Ynez Band of Chumash Indians, a federally recognized tribe ("Tribe"), designated the NASA portion of the SSFL as an Indian sacred site pursuant to Executive Order 13007. This Indian sacred site also includes the former Rocketdyne and now Boeing portion of SSFL and the Tribe is open to discussing the exact boundaries at a later date.

E.O. 13007 requires Federal land managing agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. It also requires agencies to develop procedures for reasonable notification of proposed actions or land management policies that may restrict access to or ceremonial use of, or adversely affect, sacred sites.

Sacred sites are defined in the executive order as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." There is no review of such determinations by a Federal agency.

It is important to note that a sacred site may not meet the National Register criteria for a historic property and that, conversely, a historic property may not meet the criteria for a sacred site. However, in those instances where an undertaking may affect a historic property that is also considered by an Indian tribe to be a sacred site, the Federal agency should, in the course of the Section 106 review process, consider accommodation of access to and ceremonial use of the property and avoidance of adverse physical effects in accordance with E.O. 13007.

The Advisory Council on Historic Preservation (ACHP) has explained **"The Relationship Between Executive Order 13007 Regarding Indian Sacred Sites and Section 106," http://www.achp.gov/eo13007-106.html**

> To the extent that the requirements of the executive order and ACHP's regulations are similar, Federal agencies can use the Section 106 review process to ensure that the requirements of E.O. 13007 are fulfilled. For example, E.O. 13007 requires that agencies contact Indian tribes regarding effects and the Section 106 regulations require consultation with Indian tribes to identify and resolve adverse effects to historic properties.
>
> Consultation regarding the identification and evaluation of historic properties of religious and cultural significance to an Indian tribe could include identification of those properties that are also sacred sites. Similarly, consultation to address adverse effects to such historic properties/sacred sites could include discussions regarding access and ceremonial use.

(6) **Failure to address the NASA Site is a Traditional Cultural Property (TCP) eligible for protection on the National Register:**

National Register Bulletin No. 38 (hereinafter referred to as "NPS Bull. No. 38"), Guidelines for evaluating and Documenting Traditional Cultural Properties (1990; revised 1992; 1998) under NHPA
http://www.nps.gov/nr/publications/bulletins/pdfs/nrb38.pdf

A. Locations for traditional ceremonies are defined as a TCP: NPS Bull No. 38, p. 1, provides:

The traditional cultural significance of a historic property, then, is significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices. Examples of properties possessing such significance include: ***

• a location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice;

B. Mountain tops and rock outcroppings like at SSFL are TCP's: NPS Bull. No. 38, p. 2, provides:

> Traditional cultural properties are often hard to recognize. A traditional ceremonial location may look like merely a mountaintop, a lake, or a stretch of river; a culturally important neighborhood may look like any other aggregation of houses, and an area where culturally important economic or artistic activities have been carried out may look like any other building, field of grass, or piece of forest in the area. As a result, such places may not necessarily come to light through the conduct of archeological, historical, or architectural surveys. The existence and significance of such locations often can be ascertained only through interviews with knowledgeable users of the area, or through other forms of ethnographic research.

C. NASA must engage specialists as part of its TCP study: NPS Bull. No. 38, p. 10, provides:

> In general, the only reasonably reliable way to resolve conflict among sources is to review a wide enough range of documentary data, and to interview a wide enough range of authorities to minimize the likelihood either of inadvertent bias or of being deliberately misled.
> Authorities consulted in most cases should include both knowledgeable parties within the group that may attribute cultural value to a property and appropriate specialists in ethnography, sociology, history, and other relevant disciplines.7

D. Specific events like the Solstice ceremony at SSFL qualify as TCP: NPS Bull. No. 38, p. 11, provides:

For example, the National Register
defines a "site" as "the location
of a significant event, a prehistoric or
historic occupation or activity, or a
building or structure, whether standing,
ruined, or vanished, where the location
itself possesses historic, cultural,
or archeological value regardless
of the value of any existing structure."
9 Thus a property may be defined
as a "site" as long as it was the
location of a significant event or activity,
regardless of whether the event or
activity left any evidence of its occurrence.
A culturally significant natural
landscape may be classified as a site,
as may the specific location where significant
traditional events, activities,
or cultural observances have taken
place. A natural object such as a tree
or a rock outcrop may be an eligible
object if it is associated with a significant
tradition or use. A concentration,
linkage, or continuity of such sites or
objects, or of structures comprising a
culturally significant entity, may be
classified as a district.

E. Native American ceremonies qualify as TCP: NPS Bull. No. 38, p.15, provides:

National Register guidelines
stress the fact that properties can
be listed in or determined eligible for
the Register for their association with
religious history, or with persons significant
in religion, if such significance
has "scholarly, secular recognition."
13 The integral relationship
among traditional Native American
culture, history, and religion is widely
recognized in secular scholarship.14
Studies leading to the nomination of
traditional cultural properties to the
Register should have among their
purposes the application of secular
scholarship to the association of particular

properties with broad patterns
of traditional history and culture. The
fact that traditional history and culture
may be discussed in religious
terms does not make it less historical
or less significant to culture, nor does
it make properties associated with traditional
history and culture ineligible
for inclusion in the National Register.

F. Lack of use does not make a property TCP ineligible: NPS Bull. No. 38, p. 18, provides:

The fact that a property may have
gone unused for a lengthy period of
time, with use beginning again only
recently, does not make the property
ineligible for the Register. For example,
assume that the Indian tribe
referred to above used the mountain
peak in prehistory for communication
with the supernatural, but was forced
to abandon such use when it was confined
to a distant reservation, or when
its members were converted to Christianity.
Assume further that a revitalization
of traditional religion has begun
in the last decade, and as a result
the peak is again being used for vision
quests similar to those carried out
there in prehistory. The fact that the
contemporary use of the peak has
little continuous time depth does not
make the peak ineligible; the peak's
association with the traditional activity
reflected in its contemporary use is
what must be considered in determining
eligibility.

(7) **Traditional Cultural Landscapes must also be included in Section 106 consultations and the EIS**

Traditional cultural landscapes, because they are often a property type such as a district or site, are identified in the same manner in the Section 106 process as other types of historic properties of religious and cultural significance to Indian tribes or Native Hawaiian organizations. The regulations at 36 CFR Section 800.4 outline several steps a federal agency must take to identify historic properties. In summary,

to determine the scope of identification efforts, a federal agency, in consultation with the State Historic Preservation Officers (SHPO)/Tribal Historic Preservation Officer (THPO), must:

1. Determine and document the area of potential effect for its undertaking;
2. Review existing information; and,
3. Seek information from consulting parties including Indian tribes or Native Hawaiian organizations.

Based on the information gathered through these efforts, the federal agency, in consultation with the SHPO and any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to historic properties that may be affected by the undertaking, develops and implements a strategy to identify historic properties within the area of potential effects. Identification efforts may include background research, oral history interviews, scientific analysis, and field investigations. **http://www.achp.gov/natl-qa.pdf**

There is no single defining feature or set of features that comprise a traditional cultural landscape. Such places could be comprised of natural features such as mountains, caves, plateaus, and outcroppings; water courses and bodies such as rivers, streams, lakes, bays, and inlets; views and view sheds from them, including the overlook or similar locations ; vegetation that contributes to its significance; and, manmade features including archaeological sites; buildings and structures; circulation features such as trails; land use patterns; evidence of cultural traditions, such as petroglyphs and evidence of burial practices; and markers or monuments, such as cairns, sleeping circles, and geoglyphs. **http://www.achp.gov/natl-qa.pdf**

Based on such research, the ACHP TRADITIONAL CULTURAL LANDSCAPES ACTION PLAN advises as follows:

The ACHP, as the agency with responsibility for overseeing the Section 106 review process, and DOI, through the National Park Service (NPS), as the agency with responsibility for overseeing the National Register of Historic places, should provide leadership in addressing Native American cultural landscapes in the national historic preservation program. Together, the ACHP and NPS should:
--Promote the recognition and protection of Native American traditional cultural landscapes both within the federal government and the historic preservation community as well as at the state and local levels, and,

--Address the challenges of the consideration of these historic properties in the Section 106 review process as well as in NEPA reviews. **http://www.achp.gov/pdfs/native-american-traditional-cultural-landscapes-action-plan-11-23-2011.pdf**

(8) **U.N. Declaration on the Rights of Indigenous Peoples must now be followed after December 2010**

In December 2010, the United States announced support for the **United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)**. In announcing this support, President Obama stated: “The aspirations it affirms—including the respect for the institutions and rich cultures of Native peoples—are one we must always seek to fulfill…[W]hat matters far more than any resolution or declaration – are actions to match those words.” The UNDRIP addresses indigenous peoples’ rights to maintain culture and traditions (Article 11); and religious traditions, customs, and ceremonies (Article 12); to

participate in decision making in matters which would affect their rights (Article 18); and to maintain spiritual connections to traditionally owned lands (Article 25).

The ACHP will now incorporate UNDRIP in the Section 106 review process:

While the Advisory Council on Historic Preservation's (ACHP) work already largely supports the United Nations Declaration on the Rights of Indigenous Peoples, additional and deliberate actions will be taken to more overtly support the Declaration. The Section 106 review process provides Indian tribes and Native Hawaiian organizations (NHOs) with a very important opportunity to influence federal decision making when properties of religious and cultural significance may be threatened by proposed federal actions. While federal agencies are required to consult with Indian tribes and NHOs and to take their comments into account in making decisions in the Section 106 review process, adding the principles of the Declaration to that consideration may assist federal agencies in making decisions that result in the protection of historic properties of religious and cultural significance to Indian tribes and NHOs. **http://www.achp.gov/docs/UN%20Declaration%20Plan%203-21-13.pdf**

9. <u>Official recognition in the DEIS need to be made of the areas surrounding Burro Flats</u>

A. The entire Southern half of Area II District needs to be protected. Sec. 3.3.3.4, p. 3-17

Sec. 3.3.3.3 Archeological Resources, p. 3-16
The earliest documented archeological work at Burro Flats Painted Cave began in 1953 with excavations carried out by the Archaeological Survey Association of Southern California, which made five trips to the site during 1953 and 1954. The site has been recorded several times since then and under numerous separate listings; misidentifications of elements and inconsistencies in function, assemblage, and design interpretations warranted a revisit and a complete recordation of the site's elements**. <u>In June 2007, NASA re-recorded the site and updated the site record; this effort resulted in combining 16 separately recorded sites into one site, CA-VEN-1072, with associated loci and features</u>**.

We therefore request that the entire Southern half of Area II District needs to be protected. Sec. 3.3.3.4, p. 3-17.

B. All structures should be removed in the Coca Historic District. These structures impinge on the ceremonial areas. If a decision is reached to save a test stand, Alfa or Bravo should be retained instead of Coca.

10. <u>Additional Investigation of the Northern Half of the SSFL site</u>

While the Southern half of Area II contains the pictographs and additional 16 sites, the Northern half of SSFL needs additional investigation, including, without limitation:

a. Geography—this areas contains numerous flat areas that would be suitable camp sites;
b. Areas of food—this areas contains forests and riparian areas that could be utilized in the gathering of food;
c. Support for ceremonial area in the Southern half of Area II—It is not inconceivable that the Northern half of the SSFL site provided support for the ceremonies in the Southern half of SSFL;

d. Separate areas for different tribes—if SSFL was an inter-tribal gathering place, then each tribe would have congregated separately in different parts of the site.

11. <u>Subsurface testing is required.</u>

Pedestrian surveys are of limited utility and never alone are sufficient when there are known areas of habitation or ceremony. We are informed that NASA has recently completed a Phase I Pedestrian Survey of the site. While such Phase I is an excellent first step, we request additional subsurface archaeological testing for all areas scheduled for any excavation.

If the project is in a region where there are many sites, there may be reason to suspect that buried sites may be present that went undetected during the survey. If the soils profile of the project location shows that heavy erosion has washed away soils then it may explain the absence of cultural resources. However, if the soils profile is depositional then there may be a need to conduct additional subsurface testing, particularly in areas where ground disturbance is planned. In archaeological terminology, this is referred to as "Extended Phase I" testing because it is an intermediate step between Phase 1 (survey), and Phase 2 (controlled excavation to assess the significance of a site). Extended Phase I testing often done by excavating a small pit with a shovel and screening the excavated soil through steel mesh ("shovel test pit" or "STP"). If it is considered to be necessary that a large amount of soil should be examined at deeper levels, then backhoes are sometimes used and informal sampling procedures are often employed while screening the backdirt.

Sometimes the lead agency will argue that archaeological survey is not warranted for a particular project or there may be factors that justify additional investigation even though a Phase I study has been completed with negative results. Following is a list of environmental and cultural factors that should be considered when assessing the overall cultural sensitivity of the SSFL. (Please note that this list is not exhaustive and each factor must be weighted both individually and collectively on a case-by-case basis.)

a. Areas with high viewshed or visibility such as or ridgelines, peaks, ledges, outcrops, benches, or prominent hills; and

b. Areas with a relatively high density of sites in the vicinity; and

c. Areas where past ethnographic studies have revealed associated placenames. Keep in mind that placenames do not always refer to places where evidence of past cultural activity exists; and

d. Areas near known sites. Mapped boundaries of sites most frequently reflect only cultural residue that was visible on the surface when the site was recorded and do not necessarily reflect the actual extent of the site. In addition, loci such as cemeteries or other areas may be adjacent to or nearby but separate from the main habitation; and

e. Areas near known rock art sites or rocky outcroppings of the type where rock shelters and art have traditionally been located; and

f. Areas in or near known gathering areas; and

g. Though all sites are potentially worthy of protection, named, ethnohistorically documented village sites are of the highest priority and therefore warrant the greatest amount of protection possible.

12. **Exhaustion of Non-Excavation Methods of remediation**.

Figure 2.2-3, p. 2-21, illustrates the Preliminary Remediation Area Types Under the Proposed Action. To the extent feasible, NASA should exhaust all non-excavation methods of remediation before performing any excavation that could potentially impact cultural and historic sites.

13. **Soil Prior disturbance is NOT Dispositive**:

The mantra that cultural sites have been disturbed and therefore automatically are not significant is oftentimes incorrect:

a. Disturbed sites still may contain valuable information. The newer approach is to treat disturbed sites as having the potential to provide information even if they have been disturbed;
b. Disturbed sites still have spiritual significance;
c. Disturbance may only be on the surface, while much excavation may continue to depths of up to 20 feet.

14. **Need to Analyze Cumulative Impacts to Cultural Resources**:

The DEIS fails to account for other remediation projects in other areas of SSFL:

a. Need to add Department of Energy (DOE) cultural sites;
b. Need to add Boeing cultural sites;
c. Other areas within SSFL.

15. **NEW MITIGATION: Cultural Interpretive Center**:

a. Can use existing building;
b. Preferably near saved historic structure and/or test stand;
c. Preferably away from CA-VEN-1072;
d. Need to Reserve maintenance funds.

16. **NEW MITIGATION: Native American monitoring during any ground disturbing activities**.

17. Need to protect CA-VEN-1072 from trespassers and vandals.

18. Deferral of Mitigation until Record of Decision (ROD):

a. It is problematic to defer any mitigation until ROD as it prevents meaningful comment;
b. Commenter reserve the right to ask for recirculation of the DEIS and EIS for any such deferred mitigation.

19. **Use of NEPA EIS instead of NHPA 106**—Recent ACHP guidance:

http://www.achp.gov/docs/NEPA_NHPA_Section_106_Handbook_Mar2013.pdf

Substitution under 36 C.F.R. § 800.8(c) permits agencies to use the NEPA review to comply with Section 106 as an alternative to the process set out in 36 C.F.R. §§ 800.3-800.6. The use of a substitution approach allows agencies to use the procedures and documentation required for the preparation of an EA/FONSI or EIS/ROD to comply with the Section 106 procedures. To do so, the agency must notify the ACHP and SHPO/THPO in advance that it intends to do so and meet certain specified standards and documentation requirements as set forth in 36 C.F.R. § 800.8(c)(1).

If, as the result of an objection under 36 C.F.R. § 800.8(c) (2)(ii) or during consultation to resolve adverse effects, disagreement reaches a point where the substitution process is no longer prudent, then agencies may return to the appropriate step in the standard Section 106 process with notification to consulting parties.

20. Need NEPA Mitigation Plan

http://www.whitehouse.gov/sites/default/files/microsites/ceq/20100218-nepa-mitigation-monitoring-draft-guidance.pdf

February 18, 2010

MEMORANDUM FOR HEADS OF FEDERAL DEPARTMENTS AND AGENCIES
FROM: NANCY H. SUTLEY, Chair, Council on Environmental Quality
SUBJECT: DRAFT GUIDANCE FOR NEPA MITIGATION AND MONITORING
I. INTRODUCTION

To provide for the performance of mitigation, agencies should create internal processes to ensure that mitigation actions adopted in any NEPA process are documented and that monitoring and appropriate implementation plans are created to ensure that mitigation is carried out. See *Aligning NEPA Processes with Environmental Management Systems* (CEQ 2007) at 4 (discussing the use of environmental management systems to track implementation and monitoring of mitigation). http://ceq hss.doe.gov/nepa/nepapubs/Aligning_NEPA_Processes_with_Environmental_Management_Systems_2007.pdf (**http://www.slideshare.net/whitehouse/aligning-nepa-processes**). Agency NEPA

implementing procedures should require clearly documenting the commitment to mitigate the measures necessary in the environmental documents prepared during the NEPA process (40 C.F.R. § 1508.10) and in the decision documents such as the Record of Decision. When an agency identifies mitigation in an EIS and commits to implement that mitigation to achieve an environmentally preferable outcome, or commits in an EA to mitigation to support a FONSI and proceeds without preparing an EIS, then the agency should ensure that the mitigation is adopted and implemented.

Methods to ensure implementation should include, as appropriate to the agency's underlying authority for decision-making, appropriate conditions in financial agreements, grants, permits or other approvals, and conditioning funding on implementing the mitigation. To inform performance expectations, mitigation goals should be stated clearly. These should be carefully specified in terms of measurable performance standards to the greatest extent possible. The agency should also identify the duration of the agency action and the mitigation measures in its decision document to ensure that the terms of the mitigation and how it will be implemented are clear.

If funding for implementation of mitigation is not available at the time the decision on the proposed action and mitigation measures is made, then the impact of a lack of funding and resultant environmental effects if the mitigation is not implemented warrant disclosure in the EA or EIS. In cases where, after analyzing the proposed actions with or without the mitigation, the agency determines that mitigation is necessary to support the FONSI or committed to in the ROD, and the necessary funding is not available, the agency may still be able to move forward with the proposed action once the funding does become available. The agencies should ensure that the expertise and professional judgment applied in determining the appropriate mitigation measure is reflected in the administrative record, and when and how those measures will be implemented are analyzed in the EA or EIS.

Under NEPA, a federal agency has a continuing duty to gather and evaluate new information relevant to the environmental impact of its actions. See 42 U.S.C. § 4332(2)(A). For agency decisions based on an EIS, the regulations require that, "a monitoring and enforcement program shall be adopted…where applicable for mitigation." 40 C.F.R. §1505.2(c). In addition, the regulations state that agencies may "provide for monitoring to assure that their decisions are carried out and should do so in important cases." 40 C.F.R. §1505.3. Monitoring plans and programs should be described or incorporated by reference in the agency decision documents.

21. Incorporation by reference of Memo dated Nov. 29, 2012, "NEPA alternatives analysis for selection of cleanup standards for the Santa Susana Field Laboratory Site."

Sincerely,

Sam Cohen
Government and Legal Specialist
Santa Ynez Band of Chumash Indians

Articles Discussing How Forensic Dogs can be and have been successfully used to identify and locate Native American human remains (last visited October 21, 2011)

1.) http://www.ohlonenation.org/?p=264

By charlene on September 20th, 2011

Forensic Dogs Successful in Identifying Ancient Human Remains for Ohlone

Category: Uncategorized, Tags: burial site, forensic dog, kb homes, ohlone, santa cruz

Native Americans are always concerned when their exists the potential of unearthing human remains during construction projects. During a time when regular protocol would dictate the use of drills and tedious ground penetrating strategies that might harm or destroy findings, two alternatives have been incorporated during a recent project.

This fall the remains of an Ohlone boy were discovered during a KB home building project in Santa Cruz, CA. During negotiation meetings between the home builder, the City of Santa Cruz, CA and the Ohlone all parties agreed to respect and accept the results from two alternative proven methods of ground investigation. The two methods include ground penetrating radar or (GPR) and specially trained forensic dogs.

In this case, Ohlone descendant Chuck Strickland recommended the GPR method. A trained GPR technician came to the building site and scanned surface of the earth to see if additional buried remains could be detected. Unfortunately, due to layers of sediment and rock would not allow proper functioning of this method. While this did meet the Ohlone requirement of a non-invasive method for predicting the likelihood of findings, it would not be a good match for this project.

Next, Gregg Castro, also an Ohlone descendant recommended the use of specially trained dogs from the Institute for Canine Forensics.

The institute has it's headquarters in California, but has provided services nationally and internationally. The institute trains for nine distinct types of area scannings. The match for the Ohlone project would be a team of dogs who could detect historical human remains. Dogs are taught not to disturb a scene by digging or retrieving evidence. Further, the dog can discriminate between human remains and all other non-human items. In this case, the dogs were able to detect the spot of the original finding as well as additional findings that would require great care if the construction project were to continue.

In this project, the Ohlone, the city and the home builder came together to agree upon these alternative scientific methods for land surveying. It is the hope of the Ohlone Elders Circle that these non-invasive methods become part of the regular process to be implemented in order to preserve former village sites.

2.) http://www.santacruzsentinel.com/localnews/ci_18929918

Santa Cruz, developer reach agreement not to build on Ohlone site

By J.M. BROWN
Posted: 09/19/2011 03:37:31 PM PDT

Archeologist and helpers sift through burial site on land where KB Homes is... (DAN COYRO/SENTINEL)

SANTA CRUZ - After weeks of negotiations with the city and Native American elders, the developers of a 32-unit housing complex on the Eastside agreed Monday not to build over an Ohlone burial site.

KB Home will set aside a premier, 13,000-square-foot parcel at the top of a knoll, where several remains were discovered this summer, to preserve in perpetuity for Ohlone elders to access for ceremonies. Elders, who believe the spirits of buried people wander if their resting place is disturbed, will be able to use the site for ceremonies in coordination with the site's homeowners association.

"I am ecstatic," said Ann-Marie Sayers, a state-designated Ohlone descendant who negotiated with the city and company to preserve the knoll. "Just the fact that KB Home honored the request of the original people whose land they are building on, it is so long overdue for developers to honor sacred sites. I truly believe they did the right thing."

Sayers, who lives in a Native American community outside Hollister, will join Ohlone elders from other parts of the state in walking the site with company representatives later this week. The elders, who had recommended KB Home fully set aside the parcel containing the knoll, will finalize details of the accord reached after numerous meetings since early August, when the remains of an Ohlone child were discovered.

During an archeological evaluation triggered by the discovery, researchers later recovered remains believed to be teeth and a skull fragment unrelated to the child or each other, officials said. Forensic dogs identified another area on the knoll believed to contain remains, but all sides agreed not to disturb it.

KB Home will establish a permanent cultural easement on land that would have contained a 2,200-square-foot house and driveway, a unit that would have been among the largest and most expensive planned for the community at Market Street and Isbel Drive. The preserved area, where all remains will be buried again, is attached to three acres already set aside to preserve the endangered spineflower.

"We essentially decided to do this out of respect for the elders and folks from the Native American community," said Ray Panek, senior vice president for forward planning at KB Home, who took part in the talks. "It will be just allowed to go to a more natural state. It seems like a good solution."

Panek said he did not have immediate estimates on lost revenue for setting aside the land or the total cost to the company for archeological research. The company agreed to bring in subsurface sonar equipment and forensic dogs at the request of Native American representatives, and two sets of archeologists worked on the site.

The city ordered the company to stop construction work around the knoll after the remains were recovered. Panek said he expected work would resume soon after the elders walk the preservation area.

"KB was generous in what they were willing to do and elders were flexible in understanding what was possible and meaningful," said Vice Mayor Don Lane, who participated in the talks.

Lane said the outcome was "a really nice conclusion," especially amid all of the demonstrations at the site and at City Hall since the first remains were found. "Everyone was a little pessimistic that goodwill wouldn't manifest."

For the past month, demonstrators have been calling for an end to building plans around the knoll. Protesters resumed their demonstrating Monday until they heard from officials outside City Hall that an agreement had been reached.

3.) http://www.k9forensic.org/historical.html (the site has links to many articles about canine forensics detecting Native American Burials)

Historical Grave Detection Group

Group has been formed by several Forensic Evidence
and Historical Human Remains Detection (HHRD) dog teams
under the umbrella of Institute for Canine Forensics

In archaeology, an HHRD trained canine with impeccable manners, slow and methodical search style, properly trained and certified, may be the Remote Sensing Tool of the future. ICF canine trainers are "writing the book" in this field. Certification standards are high insuring that the ICF certified canines are reliable, non-invasive tools to be used in modern archaeology.
tools to be used in modern archaeology.

4.) http://www.pressdemocrat.com/article/20091121/ARTICLES/911219966?p=1&tc=pg

Reclaiming Santa Rosa's century-old graves

By MARY CALLAHAN
THE PRESS DEMOCRAT

Published: Saturday, November 21, 2009 at 5:33 p.m.

Last Modified: Saturday, November 21, 2009 at 5:33 p.m.

The graves are thought to be well over 100 years old, forgotten over time, unclaimed and uncelebrated.

Photo Galleries

- Dogs Search Cemetery

Tiny yellow and red flags newly planted Saturday in several overgrown areas of the Santa Rosa Rural Cemetery began to acknowledge the loved ones who rest there and the history they represent.

But Rhea, Eros, Alice and Osara, four dogs trained to sniff out old bones, were focused firmly on the present as they criss-crossed designated areas of the 17-acre cemetery in search of human remains.

The canine foursome - as well as several others still in training - were brought to Santa Rosa by the Woodside-based Institute for Canine Forensics, which trains and deploys Human Remain Detection Dog teams.

Though some also work in search-and-rescue contexts and seek out human remains from recent tragedies, the Institute is the only such agency in the world focused on detection of historic remains, whether in law enforcement or archaeological contexts, representatives said.

Dogs associated with the Institute have been used, for example, to search for human remains at the home of a Hayward couple charged with kidnapping of Jaycee Dugard, who was snatched off a Lake Tahoe road at age 11 and kept for 18 years.

They've also identified Native American burial sites around the western United States, and served at New York City's Ground Zero and along the trail of the Space Shuttle Columbia, which exploded over Texas.

They came to Santa Rosa at the invitation of the Rural Cemetery's volunteer Preservation Committee. The organization hoped to determine whether human remains were buried in more than 100 plots recently discovered on maps long tucked away from human eyes and

never marked by gravestones at the cemetery, said Sandy Frary, who, with her husband Jim, is a key organizer for the committe.

Committee members thought it possible the plots had been mapped and never used, and wanted to find out, part of their effort to restore the cemetery fully and document its history in as precise a manner as possible.

The scent of cadavers lingers in the soil and can be sifted and distinguished with a dog's sensitive nose, though it's sometimes hard to pinpoint precisely from where the odor comes, handlers said.

Dogs can even detect remains in ancient sites after centuries f burial.

The gravesites sought Saturday were probably closer to 130 or 140 years old, though there was plenty of doubt they were there in the first place - especially on a rough, sloping area along Franklin Road where 12 flags were left Saturday, indicating multiple bural plots.

Nobody had thought there were burials in those sections of the cemetery, Sandy Frary said, adding, "I'm totally amazed."

Another 10 or so flags were scattered about a meadow and adjacent hillside at the north side of the cemetery, while half a dozen others remained planted along a back road near the top of the acreage.

Volunteers still hope to rake the areas, pull up weed cover and probe around to see what more can be determined, Frary said.

From:	Fellows, Merrilee (HQ-LD000)
To:	MSFC-SSFL-EIS
Cc:	Stephanie Jennings
Subject:	Fwd: DOE comments on NASA Draft EIS
Date:	Friday, September 27, 2013 8:19:31 PM
Attachments:	Final DOE Comments NASA Draft EIS.pdf ATT00001.htm

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Ms. Jennings,

We have asked that comments submitted electronically regarding NASA's DEIS be forwarded to a dedicated email mail box. This procedure primarily is for purposes of the administrative record.

Therefore by this email I am forwarding to the dedicated mailbox the comments submitted by the U.S. Department of Energy.

I also understand that you are submitting a mailed copy of your comments.

Merrilee Fellows
NASA Manager for Environmental Communications

Begin forwarded message:

From: "Jennings, Stephanie" <stephanie.jennings@emcbc.doe.gov>
Date: September 25, 2013, 15:09:40 PDT
To: "allen.elliott@nasa.gov" <allen.elliott@nasa.gov>
Cc: "Craig, Jack" <jack.craig@emcbc.doe.gov>, "Holland, Ralph" <ralph.holland@emcbc.doe.gov>, "Jones, John" <john.jones@emcbc.doe.gov>, "carrie.abravanel@hq.doe.gov" <carrie.abravanel@hq.doe.gov>, "steven.miller@hq.doe.gov" <steven.miller@hq.doe.gov>, "Jeanie Loving (jeanie.loving@em.doe.gov)" <jeanie.loving@em.doe.gov>, "peter.zorba@nasa.gov" <peter.zorba@nasa.gov>, "mfellows@nasa.gov" <mfellows@nasa.gov>, "wondolleckjt@cdmsmith.com" <wondolleckjt@cdmsmith.com>, "Enyeart, Sandra B." <SANDRA.B.ENYEART@saic.com>, "mmalinow@dtsc.ca.gov" <mmalinow@dtsc.ca.gov>, "lrainey@dtsc.ca.gov" <lrainey@dtsc.ca.gov>
Subject: DOE comments on NASA Draft EIS

Mr. Elliot:

Attached are DOE's comments on the NASA Draft EIS. For questions or comments, please call Stephie Jennings, DOE NEPA Compliance Officer, at (805) 416-0990, or stephanie.jennings@emcbc.doe.gov.

Energy Technology Engineering Center
4100 Guardian Street, Suite 160
Simi Valley, CA 93063

September 25, 2013

Mr. Allen Elliott
SSFL Program Director
NASA MSFC AS01
Building 4494
Huntsville, AL 35812

Re: U.S. Department of Energy (DOE) comments on the National Aeronautics and Space Administration's (NASA's) Draft Environmental Impact Statement for Proposed Demolition and Environmental Cleanup Activities at Santa Susana Field Laboratory, July 2013

Dear Mr. Elliott:

DOE appreciates the opportunity to comment on NASA's Draft Environmental Impact Statement for the Proposed Demolition and Environmental Cleanup Activities at the Santa Susana Field Laboratory.

DOE notes that the cumulative impacts analysis in Section 4.13, page 4-156, of NASA's Draft EIS contains outdated information that was provided to NASA by DOE in April 2012 as a preliminary estimate of the potential soil volume that may need remediation. Specifically, the text states that "the remediation project . . . is estimated to require the removal of a minimum of 184,000 [cubic yards] of soil" (page 4-156). DOE's estimate of 184,000 cubic yards of soil was generated before the Radiologic Look-Up tables were published by the California Department of Toxic Substances Control (DTSC) in January 2013 and before DTSC published in June 2013 the Chemical Look-Up Tables. The Look-Up Tables can be found on DTSC's website at: http://www.dtsc.ca.gov/SiteCleanup/Santa_Susana_Field_Lab/ssfl_document_library.cfm. At that time, DOE's estimate was based on 50 areas within Area IV and the Northern Buffer Zone that DOE had previously identified as clearly contaminated and likely to need remediation.

DOE is currently completing the chemical data gap sampling and is re-evaluating sampling results for all of Area IV and the Northern Buffer Zone from all phases of chemical and radiologic sampling. This evaluation is based on the recently published Look-Up tables. DOE is developing information from all phases of chemical and radiologic sampling to further refine our estimates and the scope of the necessary cleanup. DOE's initial review indicates that the revised volume estimates for preliminary remediation areas are significantly larger than we had estimated previously (information in NASA's Draft EIS).

In 2014, after DOE completes sampling, evaluates the sampling results, and continues our EIS process, DOE will be able to share more complete information not only with NASA, but with DTSC, and stakeholders.

We look forward to continued collaboration with NASA as you complete your EIS process. If you have any questions regarding DOE's comments or process, don't hesitate to contact me.

Sincerely,

Stephanie Jennings
DOE NEPA Compliance Officer
DOE-ETEC
Stephanie.jennings@emcbc.doe.gov
805-416-0990

cc: Jack Craig, DOE
Ralph Holland, DOE
John Jones, DOE
Carrie Abravanel, DOE
Steve Miller, DOE
Jeannie Loving, DOE
Pete Zorba, NASA
Merrilee Fellows, NASA
John Wondolleck, CDM-Smith
Sandy Enyeart, SAIC
Mark Malinowski, DTSC
Laura Rainey, DTSC

From:	GROMAN, JENNIFER A. (HQ-LD020)
To:	MSFC-SSFL-EIS
Subject:	Fwd: Final Comments
Date:	Monday, September 30, 2013 7:43:06 PM
Attachments:	CA-VEN-1072 final comments for 8-29-13 NASA meeting.doc ATT00001.htm

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Begin forwarded message:

From: <gcompass@earthlink.net>
Date: September 30, 2013, 4:39:09 PM EDT
To: "JENNIFER A. (HQ-LD020) GROMAN" <jennifer.a.groman@nasa.gov>
Subject: Final Comments
Reply-To: <gcompass@earthlink.net>

Greetings Jennifer,

The final comments for the DEIS and NASA Consultant Meetings by Compass Rose Archaeological, Inc. are attached.

Sincerely,
Gwen

Gwen Romani
Principal Investigator
Compass Rose Archaeological
18960 Nordhoff Street
Northridge, CA 91324
818-998-3116 Office
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Compass Rose

Archaeological, Inc.

18960 Nordhoff St., Northridge, CA. 91324

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gcompass@earthlink net

Final comments for the DEIS and NASA Consultant Meetings

Prior to signing the ROD:

The boundaries of the Traditional Cultural Property (TCP), CA-VEN-1072 and CA-VEN-1803, must be determined prior to any soil test excavation or proposal of any mitigation measures. Environmentally Sensitive Areas (ESAs) should be established, including a buffer zone (15m-30m?), around CA-VEN-1072, as well as CA-VEN-1803. According to archaeologist Al Knight, the dividing line between Area II (NASA), Area III (Boeing), and the Southern Undeveloped Area (Boeing) is more-or-less down the middle of the cultural deposit (midden) at CA-VEN-1072. If ownership of CA-VEN-1072 is indeed shared, this further complicates matters in terms of responsibility and will require a functioning cooperation between NASA and Boeing.

Establishing ESAs for CA-VEN-1072 and CA-VEN-1803

In consultation with Native Americans, archaeologists should complete an intensive re-survey of the area, using transects spaced in 5-15 meter intervals. Whichever cultural resource firm is hired, it would be highly advantageous if a few of the archaeologists had rock climbing experience (with credentials?), so that at least some of the normally inaccessible rock shelters, rock crevices, and rock ledges where artifact caches and/or rock art may have been hidden, could be inspected for their presence - particularly in the area of the Coca Test Stands. A sampling strategy of hand controlled excavations (e.g., Surface Scrapes, Excavation Units, and Shovel Test Pits) should be implemented to systematically define the boundaries of CA-VEN-1072 and CA-VEN-1803, and establish the ESAs. Each controlled excavation should be monitored by a local Native American with artifact identification experience. The results of the findings should be catalogued, analyzed, and presented as a written document to be included as part of the 36 CFR 800 compliance process.

Cultural Mitigation Measure #4 and 36 CFR 800

If Cultural Mitigation Measure #4 depends solely on the current knowledge of local archaeologists and anthropologists, then it must be considered inadequate. As part of 36

CFR 800, CA-VEN-1072 must be properly evaluated. Minimally, a complete evaluation needs to include all the information available about the site. Currently, NASA has chosen to ignore the potential information contained in the prior excavations completed in 1953, 1954, 1959, and 1960 at the site midden component. Although incomplete to date, Compass Rose Archaeological, Inc., Dr. Chester King, and Dr. Louis Tartalia have been conducting volunteer analyses of the collections. However, both NASA and Boeing should contribute monies to complete the analyses of the past collections of CA-VEN-1072 in order to comply with 36 CFR 800. It is the responsibility of the lead agency to know as much as possible about a cultural resource prior to establishing mitigation measures, particularly since CA-VEN-1072 has been listed on the National Register of Historic Places under criterion D - *that have yielded, or may be likely to yield, information important in prehistory or history.*

At this point, and based on the limited available data, it is simply assumed that the activities reflected at the CA-VEN-1072 midden constitute a sacred site. However, the types and/or diversity of activities that occurred in the midden portion of CA-VEN-1072, remain unknown. Greater data sets from CA-VEN-1072 would also allow the relationship to the archaeological sites located in Area IV (Boeing) to be analyzed and comprehended. To complete the analyses, monies would be needed to conduct special studies, including C14 dating, obsidian hydration and sourcing, botanical studies, as well as report write-up. This, however, would not constitute a complete mitigation. The Burro Flats collections of the 1950s and 1960 were excavated under different circumstances. Both the excavation and artifact identifications were conducted by relatively inexperienced students and volunteers. Screening of the excavated soils, when it occurred, was done in the field using relatively large-meshed screens (i.e. ¼ inch mesh) Units were not necessarily completed to sterile soil or bedrock; some were probably stopped at the end of the field class. Units were excavated in different sized levels, some were 12" thick and others were 6" thick.

In addition to completing the analyses of the prior collections, control samples should be taken from previously excavated areas to determine the types and diversity of small artifacts missed during the earlier collections. Further, samples should be obtained from the oven features at CA-VEN-1072 to determine what was processed and during what time periods. The establishment of the ESA and the completion of the additional work in the previously excavated areas of CA-VEN-1072, should also be part of the 36 CFR 800 compliance process.

The fact that the land containing CA-VEN-1072 is owned by NASA (Area II) and Boeing (Area III and the Southern Undeveloped Area), makes them both equally responsible for 36 CFR 800 compliance. Therefore, both NASA and Boeing should be jointly responsible for the costs incurred for completing the part of 36 CFR 800 compliance described above. This work should be completed prior to any further soil test excavations or proposal of any mitigation measures.

Implementation of the ROD

Following the methods instituted by the cultural resource management company, JMA (2012:15-22) in Area IV for Boeing, all vegetation removal around each individual or group of soil test sample(s) within the ESAs should be monitored by a qualified archaeologist and a local Native American, who has artifact identification experience. Each soil test hole in the ESAs should then be monitored by a qualified archaeologist and local Native American. It should be noted that the JMA method of monitoring of vegetation removal led to the recordation of numerous new archaeological sites during the soil testing that were missed during the previous surveys of Area IV.

Minimally, in areas outside the ESAs, all soil test holes should be monitored by a local Native American with artifact identification experience, after the vegetation removal is monitored by a qualified archaeologist and a local Native American. A predetermined area around demolition of any rocket test stands (minimally, the Coca Test Stands) and any associated soil test holes, should first be surveyed and then monitored during vegetation removal by a qualified archaeologist and a local Native American. Finally, each test hole should be monitored by a local Native with artifact identification experience, since the test stands exist on the same landform as the Summer Solstice sunrise notch, which was undoubtedly sacred to the local Native Americans.

The use of such terms as "minor" impacts in the Draft EIS is considered to be highly inappropriate to both the Native Americans and archaeologists. If a 4.5 to 8 inch hole was drilled through a sacred artifact or human bone, these impacts would not be considered "minor" to a Native American or an archaeologist, especially within a sacred site. The areas within and outside the ESAs where all "minor" earth disturbing activities, will be conducted, such as drilling holes, creating fences, etc., should be surveyed first, then monitored as described above.

Further, to describe archaeological negative effects as "local," may not be correct. It was hypothesized by John Romani in his MA thesis (1981) that CA-VEN-1072 was the "private" viewing area for religious practitioners during the Winter and Summer Solstices. The site may also have been used to prepare the cerebral and physical necessities for at least the "public" Winter Solstice (and possibly the fall *Hutash* Festival) ceremonies held at the village of *Huwam/Jucjauybit* (CA-LAN-413), located several miles downstream in lower Bell Canyon. Therefore, if this hypothesis is correct, any archaeological negative effect has the potential to be more "regional," and not merely "local."

The 1967 revised Calabasas USGS topographic map depicts Bell Creek as a "blueline" stream that flows next to (within 100 feet) or through CA-VEN-1072, depending on the outcome of the boundary investigations, thereby requiring a Section 404 Permit as issued by the Army Corps of Engineers. From the consultants meetings to date, it does not appear that the Army Corps of Engineers has even been considered as a consulting party, a point brought up by the SHPO in their comments on the Draft EIS on September 25. This may be considered quite egregious, since in fact the Army Corp should be a

cooperating, or even a responsible federal agency. Under any circumstance, their participation would assure an additional voice in the protection of the cultural resources on the SSFL. This is a grievous error and omission in the NEPA and Section 106 process so far, as well as in the Draft EIS.

Rocket Test Stands at the SSFL

Ideally, Compass Rose would like to see all nine of the test stands preserved, since, as understood, they are the least contaminated of the structures since they are located on or within bedrock. Most of the other contaminated structures (control buildings, pill boxes, etc.) can be demolished, with the preservation of at least single examples of the least contaminated of each). The Coca Stands may be the most important to our history of space flight, since they are associated with engine testing of both the Apollo and the Space Shuttle rockets. Unfortunately, they are the most contaminated and were also subjected to many structural changes. Nonetheless, Compass Rose would like to see the Coca Test Stands preserved for their association with the advancement of space travel. The Chumash Native Americans from the Santa Ynez Reservation would like to see them demolished, since they claim there is an effect on the sense of place within the Sacred Site (CA-VEN-1072) below. However, based on our experience while monitoring the Winter and Summer solstice events, the only structure visible from CA-VEN-1072 is a single tank (possibly Vessel V 100, LH2 tank or Vessel V 99, GH2 tank). If this structure is demolished, then no structures associated any with any of the nine test stands will be visible from CA-VEN-1072.

General comments on the environmental process for the SSFL clean-up

It is the opinion of Compass Rose that from the very beginning, the environmental process for the SSFL clean-up has proceeded incorrectly. There never should have been two entirely separate processes, CEQA for Boeing and NEPA for NASA, along with the completely different scheduling. The SSFL consists of a continuous landform with a continuous prehistory and a continuous history.

Furthermore, the presence of two "blueline" streams (one being Bell Creek) that extends through the entire SSFL – thereby crossing both the NASA and the Boeing properties - means that a Section 404 permit is required by the Army Corps of Engineers, a federal agency. Since Bell Creek extends next to or though CA-VEN-1072, means that the Army Crops should have been involved in the process from the beginning as a responsible or at least, a cooperating agency. Since Bell Creek crosses both NASA and Boeing land and a Section 404 permit is required by the Army Corps, this would seem to tie both agencies/entities together at the federal level! Also, a series of easements called "outgrants," allow NASA and Boeing to cross each other's land. There are also outgrants for water, utilities, etc., without which Boeing would not be able to operate. The easements (outgrants) were granted to Boeing (originally Rockwell International) by the U.S. government. Even though the outgrants were granted prior to any of the present environmental laws, this would still seem to tie the two entities together at the federal level. Furthermore, the fact, according to archaeologist Al Knight, that both NASA and

Boeing have land within the archaeological site, CA-VEN-1072, should have made them share responsibility for the cultural resources within the entire SSFL, or minimally, for all of Area II. Again, the Army Corps of Engineers should be a cooperating or responsible agency (minimally a consultant) under NEPA and the Section 106 process.

Based on the arguments above, NASA should have been the lead agency, Boeing a cooperating agency, and the Army Corps of Engineers a responsible or cooperating agency under NEPA, with all subject to Section 106, since NEPA tends to supersede State law (CEQA). In the worst case, this entire undertaking of the entire SSFL clean-up should have been subjected to a single, combined, EIR/EIS, subject to one schedule and one set of mitigation measures and procedures. As a result, the entire SSFL should be nominated as a single archaeological district. I believe that a complete analysis of the prior collections at CA-VEN-1072 will greatly help in defining the relationship with the sites in Area IV, which are owned by Boeing. This proposal is supported by the fact that there is a newly recorded rock art site in Area IV, and rock art is virtually always sacred to the local Native Americans. Furthermore, the archaeological district should also encompass the site complex in lower Bell Canyon that includes the village of *Huwam/Jucjauybit*, Bats Cave (the cave of Munits), Castle Peak (a shrine mountain), and several other sites. Compass Rose and the late John Romani, believe that the area of the entire SSFL was a "private" viewing site for the solstices and preparation area for the "public" ceremonies held downstream at the village of *Huwam/Jucjauybit* and Castle Peak, for the Winter Solstice and possibly for the fall Hutash Festival).

The tie between upper (SSFL) and lower Bell Canyon is also supported on a more practical level. Groundwater chemical contamination has been found in test wells in lower Bell Canyon as a result of NASA rocket engine testing activities, as stated by NASA in a previous consultation meeting. Thus, the entire SSFL and lower Bell Canyon site complex should be considered as a single discontiguous archaeological district.

Finally, although the environmental process completed thus far for the SSFL clean-up is totally inadequate and inappropriate by combining Federal and State and with different completion schedules, the overly strict requirements of the 2010 A.O.C. is probably the main underlying problem. The 2017 deadline for the total completion of the SSFL clean-up is unrealistic given the inadequacies in the Draft EIS and the NEPA and Section 106 process so far. The deadline must be extended so that at least most of these major problems can be resolved.

Furthermore, as supporters of cultural resource protection, both Native American and historic, the strict clean-up guidelines to "background" levels in the 2010 A.O.C. are inappropriate for proper protection of the historic properties within Area II. The clean-up should have been to the "residential" level, thereby taking into account the possible contamination in the surrounding communities, since the involved parties, NASA and Boeing, seem to want the entire SSFL to become some form of parkland.

Sincerely,
Dan Larson, Gwen Romani, and George Toren

From:	Christine Rowe
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01); ZORBA, PETER D. (HQ-LP040); Fellows, Merrilee (HQ-LD000)
Subject:	Fwd: NASA DEIS Section 3.7.3 Landslide Potential
Date:	Sunday, September 08, 2013 12:11:50 AM
Attachments:	screen shot NASA DEIS Landslides.png The Northridge Earthquake and its Economic and Social Impacts.pdf SCEC001activefaultsLA.pdf

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Dear Mr. Elliott,

This is the most frightening passage that I have read to date in your draft EIS. That is because the source for locations for an earthquake of a magnitude 6.0 or greater was a book from 1978. (please see attached)

Your document stated that there has not been an earthquake greater than 6.0 in the region.

It is my understanding that the consultants for this project should have done a literature search regarding earthquake history in the region. Had they done a competent literature search, and an actual review of those documents, they would have discovered both the original sources (their 1978 source), the more recent documents related to the Northridge quake of 1994, and the location of the fault systems related to that Northridge quake.

I believe that the attached statement was not the appropriate statement to quote from the 1978 source considering the earthquake history of California - and the potential for another major quake in California within our lifetimes.

While I did a search for the key word earthquakes in your document, and while your references do mention the Northridge Earthquake, I do not believe that the author of this section realized the regional impact of that earthquake.

This is a link to potential landslide areas:
http://www.quake.ca.gov/gmaps/WH/regulatorymaps.htm

In researching this earthquake - and I was much more familiar with fault zones at the time of the quake - I believe it was on the Oak Ridge Fault Zone. I recall, from my Environmental Geology class at CSUN, learning around 1989, that they did not believe that any of the faults except the San Andreas had the potential for greater than a 6.0. I therefore was very surprised to learn that there was a quake of this magnitude on this fault at the time of the Northridge quake, and that I believe that ridge was along the Santa Susana range all the way to the Moorpark area?

It is called the Pico Thrust or the Northridge Thrust fault I believe which is a part of the Oak Ridge System:
http://www.data.scec.org/significant/oakridge.html
http://www.data.scec.org/significant/losangeles.html

These links state that these faults are blind and cannot be seen on maps.

Would you please have someone with a more geological background than I have look into my comments for accuracy please?

The bottom line - it is scary to quote a 1978 document on earthquakes in Southern California when we have Cal Tech here as a resource.

The links that I just provided said that this fault may never erupt again. But it also said the map is not predictive of the future. Your document really downplayed the risk from earthquakes and landslide potential at the site.

Please see this link and the relationship between Valley Fever in VENTURA COUNTY and the Northridge earthquake.

http://www.ncbi.nlm.nih.gov/pubmed/9062329

- As someone stated at the DEIS meeting, digging up the ground around here is correlated with Valley Fever.

- There is a health risk which could be correlated to the more that you dig up that top soil.
- Appropriate mitigation methods need to be in place.

Respectfully,

Christine L. Rowe

Active Faults in the Los Angeles Metropolitan Region

Southern California Earthquake Center Group C*

*James F. Dolan, Eldon M. Gath, Lisa B. Grant, Mark Legg, Scott Lindvall, Karl Mueller, Michael Oskin, Daniel F. Ponti, Charles M. Rubin, Thomas K. Rockwell, John H, Shaw, Jerome A. Treiman, Chris Walls, and Robert S. Yeats (compiler)

Introduction

Group C of the Southern California Earthquake Center was charged with an evaluation of earthquake fault sources in the Los Angeles Basin and nearby urbanized areas based on fault geology. The objective was to determine the location of active faults and their slip rates and earthquake recurrence intervals. This includes the location and dip of those faults reaching the surface and blind faults that are expressed at the surface by folding or elevated topography.

Slip rate determinations are based on several timescales. The tectonic regime of the Miocene was generally extensional, and the north-south contractional regime came into being in the early Pliocene with the deposition of the Fernando Formation (Wright, 1991; Yeats and Beall, 1991; Crouch and Suppe, 1993). The longest timescale for slip-rate estimates, then, is the time of imposition of the north-south contractional regime, the past 5×10^6 years. Another timescale is the early and middle Quaternary (~ 2×10^6 years), the time of deposition of the upper Pico member of the Fernando Formation plus the shallow-marine to nonmarine San Pedro Formation. Information for the first two timescales is derived from the subsurface using oil-well and water-well logs, multichannel seismic profiles, and surface geology. A third timescale is the late Quaternary (10^2-10^5 years), information for which is obtained through trench excavations, boreholes, and high-resolution seismic profiles and ground-penetrating radar augmented by the 232-year-long record of historical seismicity in the Los Angeles area. The shortest timescale (10 yrs) is that afforded by repeated GPS observations.

The late Quaternary rate is the most representative long-term rate in forecasting future behavior because it provides a geologically- and statistically-significant averaging time but is unlikely to be contaminated by Pliocene and early Pleistocene geologic processes no longer active today. Two examples illustrate this problem. (1) The post-Miocene slip rate on the Las Cienegas blind fault was estimated as 2.1-2.3 mm/yr by Schneider et al. (1996) based on Fernando and San Pedro growth strata, but only as 0.09-0.13 mm/yr by Ponti et al. (1996) based on thickness changes of late Quaternary strata between the upthrown and downthrown blocks of the Las Cienegas fault. (2) The late Quaternary displacement on the Whittier fault is almost purely by strike slip (Rockwell et al., 1992), yet the total lateral displacement is too small to be

expressed in offset facies changes of members of the Miocene Puente Formation (Bjorklund and Burke, in review).

The late Quaternary rate may be different from the rate based on GPS observations. For example, the GPS rate across the Eastern California Shear Zone (Sauber et al., 1994; Thatcher et al., 1999; Miller et al., 2001; Dixon et al., 2000) is considerably higher than the late Quaternary geologic estimates. In California, similar differences between GPS and geology may occur on the Garlock fault. In this instances, the GPS rate may not be steady state but may represent a short-term strain transient.

This report summarizes the evidence for slip rates across faults of the Los Angeles metropolitan region and calculates the north-south component of shortening to compare with the convergence rates of about 4.4 mm/yr between downtown Los Angeles and the San Gabriel Mountains based on GPS (Bawden et al., 2001). The references are largely those that summarize recent SCEC-supported work, and they should be consulted for earlier references such as Hoots (1931), Yerkes et al. (1965), Ziony (1985), and Wright (1991) that made important contributions to an understanding of active faulting in Los Angeles.

Transverse Ranges Southern Boundary Fault System

Santa Monica fault

The Santa Monica fault is part of the Transverse Ranges Southern Boundary fault system, a west-trending system of reverse, oblique-slip, and strike-slip faults that extends for more than 200 km along the southern edge of the Transverse Ranges (Dolan et al., 1997, 2000a). Other faults in this system, included in this review, are the Hollywood and Raymond faults. The Anacapa-Dume, Malibu Coast, Santa Cruz Island, and Santa Rosa Island faults to the west are also part of this system, but are not included in this report.

The Santa Monica fault extends east from the coastline in Pacific Palisades through Santa Monica and West Los Angeles and merges with the Hollywood fault at the West Beverly Hills Lineament in Beverly Hills, west of the crossing of Santa Monica Boulevard and Wilshire Boulevard, where its strike is northeast. The surface expression of the fault is a series of left-stepping en échelon, south-facing scarps with an overall southward-convex map pattern. Onshore, the fault offsets the surface 2-3.5 km south of the Santa Monica Mountains range front; the range front itself is marked by the inner edge of the Stage 5e marine terrace (Dolan et al., 2000a). Accordingly, the fault traverses alluvium that allows the Quaternary history of the fault to be characterized based on geomorphology, stratigraphy, and seismic reflection characteristics (Dolan and Pratt, 1997; Dolan et al., 2000a).

Uplift of an alluvial-fan surface north of the fault requires a reverse-slip rate of ~0.5 mm/yr (Dolan and Pratt, 1997). The inner-edge altitude of the Stage 5e marine terrace at Potrero

Canyon in Pacific Palisades requires an overall uplift rate of 0.6-0.7 mm/yr and a reverse-slip rate on the fault of about 0.6 mm/yr (McGill, 1989; Dolan et al., 2000a).

A trench excavation on the grounds of the Veteran's Administration hospital at Sawtelle (here called the VA trench), west of I-405, supplemented by a high-resolution seismic profile (Dolan and Pratt, 1997), provided evidence for at least six surface ruptures in the past 50 ky, and at least two and probably three events after the burial of a prominent paleosol dated as 16-17 ka (Dolan et al., 2000a). According to these authors, a well-documented surface rupture occurred between10 and 17 ka, although a more recent earthquake probably occurred in the vicinity of the trench 1-3 ka. This leads to an average earthquake recurrence interval of 7-8 ky, which is much longer than the ~1.9-3.3 ky recurrence interval for earthquakes of M_w 6.9-7.0 that would be expected if the entire Santa Monica fault ruptured at once. The longer recurrence interval may be explained by the Santa Monica fault rupturing along with other faults to the west (Anacapa-Dume fault) or east (Hollywood fault), resulting in greater slip per event.

In the subsurface, the active Santa Monica fault is shown to be the youngest of several faults, the oldest of which sustained major left-lateral strike-slip of basement rocks and Eocene strata prior to the deposition of alluvial strata south of the range front (Yeats, 1968; Tsutsumi, 1996; Tsutsumi et al., 2001). The South strand of the Santa Monica fault underwent normal separation in the late Miocene as documented by a thick sequence of Mohnian strata north of the fault relative to a thinner sequence to the south. The separation changed to south side down in the Delmontian and continued through the deposition of the Fernando Formation. The South strand cuts strata as young as the Middle Pico Member of the Fernando Formation. Thickness differences in the Upper Pico Member indicate that the South strand continued to be active as a blind fault throughout the deposition of the Upper Pico (age 2.5-0.9 Ma, Tsutsumi et al., 2001). The Quaternary San Pedro Formation shows no variation in thickness across the upward projection of the South strand, evidence that it post-dates this strand.

The out-of-sequence North strand of the Santa Monica fault underwent all of its dip separation of 180-200 m during and after deposition of the San Pedro Formation, or in the last ~1 my (D, Ponti in Hummon et al., 1994). If the 0.6 mm/yr dip separation rate characterizes the entire history of the fault, then the North strand of the fault became active at about 300 ka (Dolan et al., 2000a).

The Santa Monica fault has not yielded direct evidence for its strike-slip rate. Evidence for left-lateral strike slip includes the left-stepping pattern of en-échelon faulting, numerous small strike-slip faults in the VA trench (Dolan et al., 2000a), and left-lateral stream offsets on the Malibu Coast fault north of Point Dume (Drumm, 1992; Treiman, 1994). The abrupt changes of dip with depth: steep close to the surface, low-angle at depth (Tsutsumi et al., 2001), suggest a major component of strike slip, possibly a flower structure, with the high-angle strike-slip fault

beneath the range front at depth. Treiman (1994) estimated that the strike-slip rate north of Point Dume is currently < 0.5 mm/yr, diminished from a longer-term Quaternary rate of up to 2 mm/yr.

Santa Monica Mountains blind thrust

Davis and Namson (1994) suggested on the basis of a balanced cross section that the Santa Monica Mountains are uplifted along a north-dipping blind thrust with a slip rate of 3.9-5.9 mm/yr over the past 2-3 my. However, Johnson et al. (1996) indicated that this blind fault has a slip rate < 1 mm/yr based on the uplift of marine terraces along the Malibu coast. The 120-ka terrace at Point Dume and Pacific Palisades is being uplifted at a rate of 0.1-0.2 mm/yr (Dolan et al., 2000a). Uplift of the footwall block of the Santa Monica fault at Potrero Canyon (McGill, 1989) is taking place at a rate of < 0.2 mm/yr along the coast (Dolan et al., 2000a). Meigs et al. (1999) show that the south flank of the Santa Monica Mountains has been uplifted over the past several million years at an average rate of 0.5 +/- 0.4 mm/yr, and the north flank has been uplifted at a rate of 0.24 +/- 0.1 mm/yr.

It is unclear if the Santa Monica fault and the blind thrust are the same fault, or if the two faults represent strain partitioning. If the 0.6 mm/yr dip-slip rate is the same as that on the blind thrust, then north-south shortening on the entire structure is 0.4 mm/yr (Dolan et al., 2000a).

Hollywood fault

The Hollywood fault extends ENE for a distance of 14 km through Beverly Hills, West Hollywood, and Hollywood to the Los Angeles River and Interstate 5. It is truncated on the west by the NNW-striking West Beverly Hills Lineament (WBHL), which marks a left step of 1.2 km between the Santa Monica fault and Hollywood fault (Dolan et al., 2000a). The lineament, located in Beverly Hills immediately east of the Los Angeles Country Club, is on trend with, and may be the northwest continuation of the Newport-Inglewood fault. The WBHL is a topographic scarp separating highly-dissected older alluvium to the west from young alluvium of the Beverly Hills plain to the east (Dolan et al., 2000a). Subsurface well control shows that the WBHL has normal separation, with its east side down (Tsutsumi et al., 2001).

The Hollywood fault is marked by a steep gravity gradient (Chapman and Chase, 1979) that extends to and beyond the Los Angeles River in the direction of the Raymond fault. However, the Hollywood fault has not been documented as a young fault even as far east as the Los Angeles River, although a south-facing slope in alluvium north of Los Feliz Boulevard may have been produced by a strand of that fault (Dolan et al., 1997; J.F. Dolan, in prep.). A bedrock fault between Mesozoic granitic rocks and Miocene strata south of Los Feliz Boulevard and west

of Interstate 5 is probably the Hollywood fault, but evidence for late Quaternary activity has not been found there (Dolan et al., 1997).

Subsurface evidence for late Quaternary faulting is found in Hollywood, including a borehole transect along Cahuenga Boulevard and trenches and borehole transects at La Brea Avenue, Fuller Avenue, Camino Palmero Avenue, and Vista Street, with the clearest evidence for timing at the Camino Palmero borehole transect (Dolan et al., 1997; 2000b). The most recent faulting at Camino Palmero occurred after deposition of ~9 ka sediments and prior to deposition of sediments dated as ~6 ka (Dolan et al., 1997; 2000b). However, a pronounced ground-water barrier at Highland Ave, between La Brea Avenue and Cahuenga Boulevard, suggests that steeply north-dipping faults extend upward into late Holocene deposits there (Lindvall et al., 2001). The fault dips northward 70°-85° at Camino Palmero based on shear fabric in the fault zone and 60°-70° north dips at the Metrorail subway tunnel between Fuller and La Brea avenues. Quartz diorite is consistently on the north side, faulted against Quaternary alluvium, but at Camino Palmero, separation of soil horizons shows north-side-down separation, suggestive of an unknown component of strike slip (Dolan et al., 1997; 2000b).

Based on sediment accumulation rates determined by radiocarbon dating, the dip separation rate is slow, but is at least 0.075 mm/yr. The narrow Hollywood Basin, filled by Quaternary deposits parallel to and south of the Hollywood fault, contains strata as old as 0.8-1.2 Ma (D. Ponti in Hummon et al., 1994). Dolan et al. (1997) estimate that the strike separation rate on the Hollywood fault is greater than 0.25 mm/yr.

The Hollywood Basin was modeled as the backlimb of a blind thrust generating the Wilshire arch, the axis of which generally follows Wilshire Boulevard (Hummon et al., 1994). However, Tsutsumi et al. (2001) suggest that the Hollywood Basin is a pull-apart basin related to the left step between the Santa Monica and Hollywood faults. Not only is the WBHL characterized by normal separation, but the southern boundary of the basin is the North Salt Lake normal-separation fault of Wright (1991) and Schneider et al. (1996), a fault that is parallel to the Hollywood fault. The thickness of shallow-marine Quaternary San Pedro Formation is greater in the Chevron Laurel Core Hole in the western part of the Hollywood Basin than it is in the central Los Angeles trough (Hummon et al., 1994; Schneider et al., 1996). A pull-apart origin of the Hollywood basin strengthens the case for left-lateral strike slip on the Hollywood fault, although the slip rate is as yet unknown.

In Hollywood, where the fault was studied in detail by Dolan et al. (1997; 2000b), the active fault is close to the Santa Monica Mountains range front. Farther west, however, near the intersection of Sunset and La Cienega boulevards in West Hollywood, the active fault lies near the base of a pronounced south-facing alluvial apron along the mountain front (Dolan et al., 1997; Lindvall et al., 2001). Several south-dipping and north-dipping normal faults displace a

marine abrasion platform overlain by marine sands that are estimated as 400-900 ka in age (Lindvall et al., 2001). Unfaulted soil horizons >100 ka in age provide an upper bound to the age of most of these hangingwall faults. The alignment of bedrock outcrops along a topographic scarp at Sunset Boulevard, previously assumed to be the active trace of the fault, is apparently a Pleistocene beach cliff; the active fault trace must lie farther south (Lindvall et al., 2001). These authors compare the altitudes of the 400-900-ka hangingwall terrace in West Hollywood to the Pleistocene marine terrace identified by Quinn et al. (2000) south of the fault in La Brea Plain, and they conclude that the differential uplift rate across the Hollywood fault is less than 0.14 mm/yr.

Raymond fault

The Raymond fault extends 25 km from the Los Angeles River east of Griffith Park east to east-northeast across the San Gabriel Valley through South Pasadena, Pasadena, San Marino, Arcadia, and Monrovia to a junction with the Sierra Madre fault at the foot of the San Gabriel Mountains. A sharp gravity gradient connects the western end of the Raymond fault across the Los Angeles River floodplain with the eastern end of the Hollywood fault, but this connection is not confirmed by geological evidence except for local air-photo lineations. The fault is convex southward, consisting of a western section that strikes east-west and an eastern section that strikes east-northeast. Left-deflected drainages, shutter ridges, sagponds, and pressure ridges in right-stepping restraining bends indicate that the Raymond fault is predominantly a left-slip fault (K. Sieh in Jones et al., 1990), although south-facing scarps along the central reach of the fault indicate a component of dip slip due to motion around a 25° restraining bend (Crook et al., 1987; Weaver and Dolan, 2000). One kilometer west of the change in strike, the Raymond fault has a poorly-defined intersection with the Eagle Rock fault. The Eagle Rock fault is much more poorly defined geomorphically than the Raymond fault, suggesting that it is less active, hence the kinematics of the fault intersection remains obscure. The Raymond fault joins the Sierra Madre fault south of Santa Anita Wash and south of the Clamshell-Sawpit fault in the foothills of the San Gabriel Mountains (Weaver and Dolan, 2000) on which the 1991 Sierra Madre earthquake of M_W 5.8 occurred (Hauksson, 1994). The 1988 Pasadena earthquake of M_L 4.9 probably occurred on the Raymond fault based on the fault-plane solution of the mainshock and the distribution of aftershocks (Jones et al., 1990); this earthquake sequence delineated a fault dipping 80° north.

Trenches excavated by Crook et al. (1987) and Weaver and Dolan (2000) show that the most recent earthquake occurred 1000-2000 years ago (Weaver and Dolan, 2000). Between 5 and 8 earthquakes occurred between 40 and 2 ka, a maximum average recurrence interval of 5.7 to 10 k.y. (Crook et al., 1987; Weaver and Dolan, 2000). Between 3 and 5 of these events

occurred between 41.5 and 31.5 ka, an average recurrence interval equal to or less than 3300 yrs (Weaver and Dolan, 2000). This may indicate a cluster of earthquakes, or it may signify undetected events.

A site in east Pasadena yielded a best-estimate left-lateral strike-slip rate of 4 +1/-0.5 mm/yr based on left offset of a gravel-filled channel of 44 m, with 0.5 m vertical component. This rate is based on sediments within and below the channel dated by radiocarbon and by optically-stimulated luminescence (Marin et al., 2000; Dolan et al., in review). An apparent 3.4-km left-lateral offset of a crystalline basement ridge at the east end of the fault may represent the total slip on the fault (Weaver and Dolan, 2000).

Santa Susana and Sierra Madre Fault Systems

The western Transverse Ranges are crossed obliquely by a set of north-dipping reverse faults extending from the Santa Barbara Channel east to an intersection with the San Jacinto fault near Cajon Pass. These faults include, from west to east, the Red Mountain, San Cayetano, Santa Susana, Sierra Madre, and Cucamonga faults. The San Cayetano and Santa Susana faults have the highest documented long-term reverse slip rates in southern California. The Santa Susana and Sierra Madre faults are within the Los Angeles metropolitan area and are described here. The San Gabriel fault is characterized by Quaternary reverse-oblique slip in the east Ventura basin; it traverses the foothills of the San Gabriel Mountains north of the San Fernando Valley and is also described here, even though its long-term history is predominantly that of a strike-slip fault.

Santa Susana fault

The Santa Susana fault extends 28 km west-northwest from the northwest edge of the San Fernando Valley into Ventura County and is at the surface high on the south flank of the Santa Susana Mountains. The fault ends near the point where it overrides the south-side-up South strand of the Oak Ridge fault. The fault has a low dip near the surface, locally becoming horizontal. This may in part be due to a distortion of the stress field by the steep topographic gradient on the southern slope of the Santa Susana Mountains (Butler, 1977) as well as to uplift from a blind, south-dipping fault, part of the Oak Ridge fault system (described below).

The fault has two left-stepping lateral ramps (Yeats, 1987). The Gillibrand Canyon ramp on the west is the smaller of the two but is the best documented by subsurface geology. The Pliocene Frew fault (Yeats, 1987) ends or changes strike westward to another fault, also named the Frew fault of the Santa Susana and Tapo Canyon oil fields, and the pre-Saugus Torrey fault also changes strike there, indicating that this ramp influenced Pliocene structures in the Santa Susana footwall (Yeats, 1987). The east Ventura Basin fold belt changes its structural character

across a northeast projection of this lateral ramp (Yeats, 1987), leading Yeats et al. (1994) to call it a segment boundary. The ramp had an effect on the distribution of aftershocks of the Northridge earthquake of 1994. The zone of major moment release in the 1994 earthquake was southeast of the Gillibrand Canyon ramp (Wald et al., 1996). Immediately southeast of the ramp, a zone of 1994 aftershocks "lit up" the Santa Susana fault (Pujol, 1996, cross section A-A' of his fig. 4). Northwest of the ramp, aftershocks in the Santa Susana footwall defined rupture planes that are more steeply dipping than they are southeast of the ramp. (See website of Sara Cavena, geoweb.princeton.edu/students/Cavena/ImageGallery/ImgGallery.html)

The larger ramp at the western edge of the San Fernando Valley is called the San Fernando or Chatsworth ramp (Yeats, 1987; Yeats et al., 1994); this ramp may be influenced by the Miocene Chatsworth set of faults marking the western margin of the San Fernando Valley (Tsutsumi and Yeats, 1999; Yeats, 2001a). The mainshock and a large number of the aftershocks of the 1971 Sylmar (San Fernando) earthquake were located on or close to this ramp; focal mechanisms showed a large component of left slip (Whitcomb et al., 1973). However, the rupture plane of the 1994 earthquake as defined by aftershocks went across this ramp.

The Pico Canyon earthquake of 4 April 1893, of M 5.5-5.9 (Toppozada, 1995), which might have occurred on the Santa Susana fault, caused damage in Newhall, Saugus, Castaic, and the now-vanished oil town of Mentryville (Richter, 1973), in addition to Los Angeles, Pasadena, and Fillmore.

The Santa Susana fault cuts the Quaternary Saugus Formation, and clasts in the Saugus contain evidence for the age of uplift of the Santa Susana Mountains. Most of the Saugus at Horse Flats, south of the Aliso Canyon Oil Field in the Santa Susana Mountains, contains conglomerate clasts largely derived from basement rocks of the San Gabriel Mountains and other crystalline ranges, evidence for deposition prior to uplift of the Santa Susana Mountains (Saul, 1975). In contrast, conglomerate in the uppermost Saugus of Saul (1975) at Horse Flats is dominated by locally-derived Modelo and Towsley clasts, evidence of uplift of the Santa Susana Mountains, presumably by upward movement of the hangingwall of the Santa Susana fault. Similar relations are found on the north side of the range near Magic Mountain amusement park (Treiman and Saul, 1986; Levi and Yeats, 1993, their fig. 3), where the deformed, locally-derived Saugus is called Pacoima Formation, following Oakeshott (1958). Paleomagnetic stratigraphy by Levi and Yeats (1993) permits the estimation of the ages of the base of the Saugus Formation, of the appearance of locally-derived clasts in the Saugus, and of the top of the Saugus as 2.3 Ma, 600-700 ka, and 500 ka, respectively. The age of initiation of the Santa Susana fault is thus constrained to have begun between 2.3 Ma and 600 ka (Huftile and Yeats, 1996).

The total dip-slip displacement on the Santa Susana fault is based on the offset of the base of the Fernando Formation in a balanced cross section (Huftile and Yeats, 1996). The displacement is 4.9 to 5.9 km, giving a dip-slip rate of 2.1 to 9.8 mm/yr. The horizontal component of displacement is 4.1 km, giving a horizontal shortening rate of 5.7 +/- 2.5 mm/yr (Huftile and Yeats, 1996).

An additional constraint on the age of initiation of the Santa Susana fault is based on the age of initiation of clockwise rotation of the Saugus Formation in its hangingwall at Magic Mountain. Most of the Saugus in the Magic Mountain section is rotated clockwise approximately 30°, whereas the Van Norman Dam section in the footwall of the Santa Susana fault is not rotated at all (Levi and Yeats, 1993). The uppermost part of the Magic Mountain section is rotated only about 15°, and the age of initiation of rotation of the Saugus Formation can be estimated at about 1 Ma (Levi and Yeats, 1993; S. Levi and R.S. Yeats, in prep.). If the rotation is evidence that the displacement on the Santa Susana hangingwall is not a translation but a rotation about a pivot point at the Santa Susana fault tip, then the age of initiation of the fault can be estimated as 1 Ma. Using 1 Ma to accumulate 4.9 to 5.9 km of displacement, the long-term slip rate is 4.9-5.9 mm/yr, and the horizontal shortening rate is about 4.1 mm/yr (S. Levi and R.S. Yeats, in prep.).

A trench across the fault at Limekiln Canyon at the northern edge of Horse Flats yielded no evidence of Holocene displacement (Lung and Weick, 1987). However, this trench was across the Older strand of the Santa Susana fault, which has been abandoned for the Younger strand within the Santa Susana Mountains (Yeats, 1987). Lung and Weick (1987) also exposed the fault in a sidehill cut near Tapo Canyon, west of the Gillibrand Canyon lateral ramp; this trench also yielded no evidence for Holocene rupture. As mapped by Ricketts and Whaley (1975) and Yeats (1977; cf. fig. 9.2 of Yeats, 1987), the Santa Susana fault is a single strand bringing Miocene Modelo Formation over Saugus Formation and late Quaternary fan deposits containing debris from the hangingwall. Fan deposits unconformably overlying the fault were undated, but are considered to be Pleistocene because they are extensively dissected by erosion. In a nearby flat-bottomed canyon, older alluvium interpreted by Lung and Weick (1987) as younger than these fan deposits includes peat with an age of 10,010 +/- 580 radiocarbon years. These results appear to be inconsistent with the high long-term slip rate on the Santa Susana fault and with the high north-south shortening rate based on GPS (Argus et al., 1999). Possibly the Holocene displacement is distributed among north-dipping bedding planes in bedrock in the hangingwall, but this cannot be confirmed. Because the Santa Susana fault crops out on the steep southern slopes of the Santa Susana Mountains rather than at the base of the range, age-diagnostic trenching sites are difficult to find, as pointed out by Lung and Weick (1987).

Sierra Madre fault (west)

The Santa Susana fault strikes northeast at the Fernando lateral ramp and turns east at the northern margin of the Sylmar Basin to become the Sierra Madre fault. This fault is exposed near the base of the San Gabriel Mountains for 75 km from San Fernando Pass at the Fernando lateral ramp east to its intersection with the San Antonio Canyon fault in the eastern San Gabriel Mountains (Crook et al., 1987), east of which the range front is formed by the Cucamonga fault. Exhumation of the San Gabriel Mountains began about 7 Ma based on fission-track and (U-Th)He geochronology; this may date the time of initiation of the Sierra Madre fault (Blythe et al., 2000). We describe the Sierra Madre fault in two sections, with their boundary the intersection of the Sierra Madre fault with the Raymond and Clamshell-Sawpit faults. A short distance west of this intersection, the Vasquez Creek fault (the Southern strand of the San Gabriel fault of Ehlig, 1975) intersects the Sierra Madre fault at a low angle to strike. East of this intersection, the Sierra Madre fault, like the Cucamonga fault farther east, is a zone of deformation close to the base of the San Gabriel Mountains. To the west, however, the Sierra Madre fault is the northernmost of several north-over-south faults including the Mission Hills, Verdugo, and Northridge Hills faults, all of which appear to be active.

The Sierra Madre fault differs from the Santa Susana fault in that it lies at the base of the range, whereas the Santa Susana fault crops out high on the south slopes of the Santa Susana Mountains. It differs also in its complexity, including a series of boomerang-shaped faults characterized by a west-northwest-striking section of reverse slip and a northeast-striking section of apparent left slip (Oakeshott, 1958). These include the Lopez-Limerock and Sunland faults and possibly the Buck Canyon-Watt faults of Oakeshott (1958). The Saugus Formation in Kagel Canyon and Lopez Canyon is rotated clockwise approximately 34° (Levi and Yeats, 2001), suggesting that these boomerang-shaped blocks are rotating clockwise in a broad system of right-lateral shear related to the San Gabriel fault a short distance to the north (S. Levi and R.S. Yeats, in prep.). It is more difficult to determine the slip and slip rate of a rotating block because these rates would increase from zero at the pivot point to a maximum at the edge of the block. Furthermore, the rotations pertain only to slip rates over the past million years; these faults are not known to have tectonic geomorphic expression or to offset late Quaternary deposits younger than Saugus. Electron-spin resonance plateau dating of fault gouge shows that the most recent movement on the Limerock fault took place at 346 +/- 23 ka (Lee and Schwarcz. 1996).

Crook et al. (1987) concluded that the Sierra Madre fault between the 1971 San Fernando earthquake rupture and the Cucamonga fault is less active than segments to the east and west, based on degree of dissection of fault scarps and the relative age of fan surfaces cut by the fault based on geomorphology and soil development. Following criteria established by Bull (1964), Crook et al. (1987) noted that alluvial fan heads in the vicinity of the 1971 earthquake, such as

the Pacoima and Little Tujunga Canyon fans, are incised to a lesser degree and hence are more active than the Arroyo Seco and Eaton Canyon fans in the Pasadena area farther east. A minimum long-term slip rate on this westernmost part of the fault can be obtained from the intersection of the base of the Saugus, which is 2.3 Ma in age, with the fault at the northern edge of the Sylmar basin. This intersection is at least 5 km below the surface, a minimum slip rate of 2.2 mm/yr. The rate would be larger depending on how much erosion of basement rocks had taken place in the hangingwall after deposition of the Saugus.

In that part of the Sierra Madre fault east of the 1971 earthquake rupture, Crook et al. (1987) were unable to identify any fault scarps or displaced strata involving sediments younger than late Pleistocene, and they concluded that this section of the fault had not produced large earthquakes in several thousand years and possibly not in the Holocene. Rubin et al. (1998) trenched a site in Altadena and found evidence that the most recent earthquake there had occurred in the past 10,000 years. Two earthquakes in the past 18,000 years had resulted in 10.5 m of slip, a minimum slip rate of 0.6 mm/yr. Displacements on these two earthquakes are large enough that Rubin et al. (1998) concluded that they were produced by earthquakes of M 7.2 to 7.6, much larger than the M 6.7 Sylmar earthquake of 1971 involving the western end of the fault.

The north-dipping rupture plane defined by aftershocks of the 1971 earthquake is probably the Sierra Madre fault at depth (Mori et al., 1995; Tsutsumi and Yeats, 1999). But the Sierra Madre range-front fault east of Big Tujunga Canyon did not rupture at the surface (Barrows, 1975; Kahle, 1975; Weber, 1975). The fault plane delineated by 1971 aftershocks passes south of the Sierra Madre fault in the direction of active reverse faults to the south: the Mission Hills and Northridge Hills fault (Mori et al., 1995; Tsutsumi and Yeats, 1999).

Mission Hills fault

The Mission Hills fault strikes east-west for about 9 km along the southern edge of the Mission Hills and Granada Hills, which are apparently uplifted by long-term reverse displacement of the hangingwall of this fault. The fault is mapped eastward to the eastern end of the hills near the Golden State Freeway, where it appears to turn southeastward toward the Verdugo fault (Tsutsumi and Yeats, 1999). The fault branches westward into two strands. The northern strand dips 60°-70° north in the Mission Oil Field and juxtaposes Modelo Formation against Fernando Formation. The southern strand extends along the base of the Santa Susana Mountains to Limekiln Canyon, where it brings upper Saugus on the south against lower, marine Saugus on the north. The fault may be linked with the Devonshire fault. Tsutsumi and Yeats (1999) argue that this fault does not join the Simi fault of the Simi Valley, as some maps have

done. The active, north-side-up Simi fault ends where its geomorphic expression ends at the northeastern corner of the Simi Valley (Hanson, 1983).

Dip separation of the base of the Saugus Formation across the Mission Hills fault yields a dip separation rate of 0.6-0.7 mm/yr. The thickness of the Fernando Formation is about the same on both sides of the fault, indicating that slip began after Fernando deposition (Tsutsumi and Yeats, 1999).

Balboa Boulevard follows Bull Canyon, a drainage antecedent to Mission Hills uplift that is now filled with alluvial-fan deposits, some of which developed a large lateral spread during the 1994 earthquake (Holzer et al., 1999). CPT borings show that unfaulted Holocene sediments overlie a fault, considered by R.S. Yeats to be the Mission Hills fault, near Rinaldi Street at the southern edge of the Mission Hills based on a ground-water cascade and stratigraphic changes across the fault (Holzer et al., 1999). A slip rate on the fault could not be determined because the fault was not directly observed in the field.

Northridge Hills fault

A series of discontinuous low hills that extend from near the town of Chatsworth east-southeast to the San Diego Freeway marks the crest of a south-vergent fault-propagation fold above the blind, north-dipping, 15-km-long Northridge Hills thrust (Tsutsumi and Yeats, 1999). Well data in the western part of the fault show a dip of 70 degrees, but farther east, growth triangles in a seismic profile along Balboa Boulevard show that the fault is thin-skinned, with a moderate dip. Dip separation across the fault of a sandstone within the Miocene Modelo Formation gives a long-term dip separation rate as high as 0.3 mm/yr.

Baldwin et al. (2000) excavated a trench, several test pits, and several boreholes across a 2-m-high scarp on a probable Holocene terrace adjacent to Aliso Canyon Wash. A gravel bed with a soil age estimate of 6 to 30 ka shows 6 +/- 1 m vertical separation, and an unconformity on the top of the Saugus Formation is warped into a monocline with 13 +/- 2 m of relief. These relations provide a reverse-slip rate of 1.0 +/- 0.7 mm/yr on the blind Northridge Hills thrust (Baldwin et al., 2000).

The fault has no topographic expression east of the San Diego Freeway, where its presence is based on subsurface oil-well data (Tsutsumi and Yeats, 1999) and a steep gradient in the groundwater table (Weber et al., 1980). The fault intersects and either merges with or is truncated by the Verdugo fault at the Pacoima Oil Field (Tsutsumi and Yeats, 1999).

Verdugo fault

Both the Mission Hills and Northridge Hills faults appear to merge with the southeast-striking Verdugo fault, which lies on the southwest side of the Pacoima Hills and the Verdugo

Mountains. Vertical separation across this fault is at least 1000 m based on the structural relief between the valley floor and the crest of the Verdugo Mountains and the intersection of the base of the Saugus Formation with the fault in the Pacoima Oil Field (Tsutsumi and Yeats, 1999). The fault at the southwest edge of the Verdugo Mountains is marked by a pronounced gravity gradient (Weber et al., 1980) that is best modeled as a normal-separation fault (Langenheim et al., 2000). Pujol et al. (2001) , using seismic tomography, image the Verdugo fault with a nearly vertical dip. Adjacent to the Pacoima Hills, however, the gravity gradient is more consistent with a thrust-fault geometry (Langenheim et al., 2000), an interpretation supported by subsurface oil-well data around the Pacoima Oil Field (Tsutsumi and Yeats, 1999).

Weber et al. (1980) reported southwest-facing scarps 2-3 m high in alluvial-fan deposits in the Burbank-west Glendale area. In the Sun Valley area, they found minor faults 40 m below the surface in sand and gravel deposits in a gravel pit. Also in Sun Valley, groundwater-bearing alluvial deposits of Big Tujunga Wash are displaced, and in Glendale, there is a groundwater cascade in Verdugo Wash.

The Verdugo fault is on trend to the southeast with the Eagle Rock fault, but Weber et al. (1980) were not able to find evidence of late Quaternary offset. Weaver and Dolan (2000) observed that the Eagle Rock fault, especially its southeastern reach, is much more subdued geomorphically than the Raymond fault farther south.

San Fernando fault

The 1971 Sylmar (San Fernando) earthquake produced about 15 km of surface rupture south of the Sierra Madre fault (Sharp, 1975; Barrows, 1975; Weber, 1975); this rupture became known as the San Fernando fault. Slip vectors showed about equal amounts of reverse slip, north side up, and left-lateral strike slip, with the horizontal component of net slip as large as 2.5 m (Sharp, 1975). The Tujunga segment of the San Fernando fault occurred at the range front, evidence of pre-1971 faulting. Trench excavations also showed that the 1971 rupture followed older, prehistoric ruptures (Heath and Leighton, 1973). Bonilla (1973) reported that the most recent prehistoric rupture occurred less than 200 years prior to 1971, although the sample providing the radiocarbon date might be historic. Fumal et al. (1995) excavated trenches on both side of Bonilla's trench and found evidence for only two surface ruptures in the past 3.5-4 ky, including the 1971 break.

Tsutsumi and Yeats (1999, their figs 4f, 4g, and 7) showed that the San Fernando fault did not follow any major fault zone but occurred on the south flank of the Mission Hills syncline and Merrick syncline. Slip vectors measured by Sharp (1975) were parallel to bedding, and Tsutsumi and Yeats (1999) concluded that the San Fernando fault was a flexural-slip fault, formed during folding of the synclines.

Lindvall et al. (1995) described a set of fault scarps, north side up, near Pacoima Wash in the Sylmar Basin west of the Tujunga segment of the 1971 rupture. These faults, which did not rupture in 1971, offset terraces of Pacoima Wash, with an older terrace covered by soils estimated to be 20-30 ka and a younger terrace with a soil age estimated as 8-15 ka. The height of the fault scarps gives a minimum reverse-separation rate of 1 mm/yr across this zone of faulting If these faults are secondary to a master fault dipping 45° north (a non-flexural-slip origin), the master fault would have a reverse-slip rate of 2 mm/yr.

Sierra Madre fault (east)

The Sierra Madre fault lies at or south of the range front of the San Gabriel Mountains east of its intersection with the Raymond and Sawpit-Clamshell faults (Crook et al., 1987), passing through the cities of Arcadia, Monrovia, Bradbury, Duarte, Azusa, Glendora, San Dimas, and Claremont. This section of the fault terminates eastward at the northeast-striking San Antonio Canyon left-lateral fault, where the Sierra Madre fault steps left to the Cucamonga fault. This left-lateral fault, together with subsurface left-lateral faults that were the source of the 1988 and 1990 Upland earthquakes (Hauksson and Jones, 1991) lead to the assumption that the Cucamonga fault would have a higher dip-slip rate than the Sierra Madre fault, as suggested by their comparative geomorphic expression (Crook et al., 1987). The Cucamonga fault has a dip-slip rate of 2-5 mm/yr (Dolan et al., 1996), which serves as an upper bound to the slip rate on the eastern Sierra Madre fault. The Sierra Madre fault is expressed as a series of southward-convex lobes, and at several localities, the most active strrand is south of the range front, which is itself marked by less-active or inactive older strands (Crook et al., 1987; Tucker and Dolan, 2001).

Crook et al. (1987) located the fault in several trenches, but they were unable to obtain age control because of the lack of availability of AMS radiocarbon dating. Tucker and Dolan (2001) excavated a trench and several large-diameter boreholes in Horsethief Canyon in San Dimas, near the Glendora Tunnel, where extensive geotechnical observations are available. They found evidence for at least 14 m of slip on the Sierra Madre fault between 24 and 8 ka, and no surface rupture since 8 ka. This leads to a minimum slip rate of 0.6 mm/yr since 24 ka and a minimum of 0.9 mm/yr between 24 and 8 ka. Surface rupture at Horsethief Canyon was the result of earthquakes with $M > 7$, consistent with the interpretation by Rubin et al. (1998) of large surface displacements during the two most recent surface ruptures in their trench at Altadena along the western part of the fault. The most likely scenario is that the entire Sierra Madre fault ruptures at the same time (Tucker and Dolan, 2001). The Raymond fault could also rupture during Sierra Madre events, but the Raymond fault has undergone at least one and possibly several ruptures since the most recent rupture at Horsethief Canyon. Similarly, trench data suggest that the Cucamonga fault has ruptured at least twice and possibly several times

since the most recent surface rupture on the eastern Sierra Madre fault (Dolan et al., 1996, and in prep.).

San Gabriel fault

The San Gabriel fault is the westernmost member of the San Andreas strike-slip fault system to cut across the Transverse Ranges (the others to do so are the San Jacinto fault and the San Andreas fault itself). A precursor fault, the Canton fault, underwent displacement in middle Miocene time and may have crossed the San Fernando Valley to an intersection with the Raymond fault (Powell, 1993; Yeats and Stitt, 2001). This strand was abandoned in the late Miocene, and activity shifted to the present trace of the San Gabriel fault, which crosses the southern foothills of the San Gabriel Mountains to an intersection with the left-lateral San Antonio Canyon fault in the eastern San Gabriel Mountains. The Miocene slip rate on this fault system was 6.6-9.2 mm/yr (Yeats et al., 1994) or even faster (Yeats and Stitt, 2001), but this rate slowed drastically in the Pliocene in the Castaic Lowland and eastward. The fault became inactive in the Ridge Basin, where it is overlain unconformably by the upper part of the Hungry Valley Formation (Crowell, 1982), and the fault is overridden by a south-side-up reverse fault, possibly the eastern extension of the Santa Felicia fault, at the mouth of Violin Canyon (Yeats et al., 1994; Yeats and Stitt, 2001). In both the Ridge Basin and Castaic Lowland, the San Gabriel fault dips moderately to steeply east.

The fault is active east of a segment boundary near the Honor Rancho Oil Field in the Castaic Lowland, an area now largely covered by the city of Santa Clarita. At this segment boundary, the fault changes strike southeastward from southeast to east-southeast and changes separation from normal to the northwest (northeast side down) to reverse to the southeast (northeast side up). The segment boundary is northeast of and on trend with the Gillibrand Canyon lateral ramp on the Santa Susana fault (discussed above). A line connecting these features separates contrasting geologic structures in the east Ventura Basin: the Holser-Del Valle fault system and Newhall-Potrero anticline to the northwest and the Pico anticline and Oat Mountain syncline to the southeast.

The fault has geomorphic expression in Santa Clarita, including linear ridges, trenches, hillside benches, and ponded alluvium along the fault trace (Kahle, 1986). Cotton (1986) showed that the fault cuts Holocene alluvium in trenches near Castaic Junction, and Swanson (2001) found that undated stream terrace material in the fault zone in a railroad cut at Bouquet Junction has a vertical separation of 3 to 5 meters, and an overlying soil zone is offset vertically 1 m. The Pacoima Formation, which overlies the Quaternary Saugus Formation unconformably, has a dip separation of more than 10 m across a secondary reverse fault in this railroad cut

(Swanson, 2001). Distinctive clast assemblages in the Saugus Formation are offset right-laterally about 500 m (Weber, 1982).

If the age of the top of the Saugus Formation is about 500 ka, as estimated from paleomagnetic evidence (Levi and Yeats, 1993), the 500 m of offset would have accumulated at a right-lateral strike-slip rate of 1 mm/yr. Kahle (1986), largely on the basis of geomorphic evidence, estimated the slip rate as less than 1 mm/yr. Yeats et al. (1994) argued for a long-term slip rate of 2.5-3 mm/yr based on reverse separation of the base of the Saugus Formation in the Saugus Oil Field, where dip separation is greatest (Yeats and Stitt, 2001). Estimates of long-term slip rate are larger than those for late Quaternary slip rate, suggesting that the slip rate has slowed with time.

The late Quaternary activity of the San Gabriel fault in the San Gabriel Mountains has not been studied. Electron-spin resonance plateau dating of San Gabriel fault gouge in the Little Tujunga area shows that the most recent movement occurred at 39 +/- 6 ka (Lee and Schwarcz. 1996), although this result is inconsistent with evidence for Holocene displacement farther west in Santa Clarita. The fault splays into a northern and southern branch (Ehlig, 1975), renamed by Powell (1993) the San Gabriel fault *sensu stricto* and the Vasquez Creek fault, respectively. In the eastern San Gabriel Mountains, the San Gabriel fault *sensu stricto* is cut off by the left-lateral San Antonio Canyon fault, suggesting that this is the less active strand. We suggest that the major part of the activity shifts to the Vasquez Creek fault, which merges to the southeast with the Sierra Madre fault. The long-term slip rate on the Vasquez Creek fault, based on offsets of basement rocks, is no more than 5 mm/yr (Powell, 1993), but the Quaternary rate must be much less, based on analogy with the San Gabriel fault farther west (cf. Yeats and Stitt, 2001).

South-dipping Reverse Faults

The most damaging earthquake in the history of the United States, the 1994 Northridge earthquake, struck a previously-unknown south-dipping blind reverse fault beneath the eastern Santa Susana Mountains and western San Fernando Valley. Aftershocks of this earthquake terminated updip at the base of the north-dipping 1971 rupture zone (Mori et al., 1995). The Quaternary long-term slip rate on the blind fault was estimated as 1.7 mm/yr (Davis and Namson, 1994; Huftile and Yeats, 1996) based on thickness changes in the Saugus Formation in the Castaic Lowland, a foredeep with respect to the blind fault contributing to uplift of the Santa Susana Mountains and warping of the Santa Susana fault. Only the Saugus Formation appears to have responded to growth of the foredeep (Yeats et al., 1994; Huftile and Yeats, 1996), indicating that faulting began at or after about 2.3 Ma, the age of the base of the Saugus, earlier than the age of initiation of the faster-moving north-dipping Santa Susana fault (Levi and Yeats, 1993; S. Levi and R.S. Yeats, in prep.). The Saugus is even thicker in the Sylmar Basin, which

also acted as a foredeep, but a slip rate based on the Sylmar Basin has not been worked out (Tsutsumi and Yeats, 1999).

Small-scale flexural-slip faulting was recognized by Treiman (1995) in Santa Clarita, where bedding slip in folded Saugus Formation broke the surface of building pads in the Stevenson Ranch housing development during the 1994 Northridge earthquake.

The 1994 earthquake uplifted the footwall of the Santa Susana fault , with the maximum coseismic uplift at Oat Mountain in the hangingwall (Hudnut et al., 1996). The Santa Susana fault occurs high on the south flank of the Santa Susana Mountains rather than at the base of the mountains as the San Cayetano fault does, evidence that uplift of the Santa Susana footwall in 1994 was part of the long-term uplift of the footwall in the late Quaternary accompanying earlier earthquakes on the blind south-dipping fault (Yeats and Huftile, 1995). Other faults with footwalls uplifted by blind faults dipping in the opposite direction are the western San Cayetano fault, underlain by the Sisar fault, and the Red Mountain fault, underlain by the Padre Juan fault (Yeats and Huftile, 1995). The correlation between footwall uplift and blind south-dipping reverse fault is not perfect, however. The fault as illuminated by 1994 aftershocks continues east of the Santa Susana Mountains beneath the San Fernando Valley, and the only uplift is that of the Mission Hills, which could also be explained by uplift on the north-dipping Mission Hills reverse fault. Pujol et al. (2001), using seismic tomography, imaged a south-dipping thrust beneath the north-dipping Northridge Hills thrust.

Yeats and Huftile (1995) interpreted the 1994 south-dipping earthquake fault as the eastern blind continuation of the Oak Ridge fault, which reaches the surface in the Ventura Basin. They proposed that the Oak Ridge fault curves from an east-west strike to east-southeast, following changes in strike in the pre-Saugus Frew and Torrey faults. The long-term slip rate on the Oak Ridge fault is 3.7-4.5 mm/yr near the point where the fault is overridden by the Santa Susana fault (Huftile and Yeats, 1996), a rate at least twice as fast as that of the 1994 blind thrust. The cause of the eastward decrease in slip rate is unclear, unless part is taken up by the south-side-up Holser and Del Valle faults in the east Ventura Basin (Yeats et al., 1994; Yeats, 2001). Long-term slip rate on each of these faults is estimated as not more than 1 mm/yr, but this is poorly constrained because the Saugus is eroded away where fault displacements are largest.

Farther east, in the southeastern San Fernando Valley east of Universal Studios, Weber et al. (1980) mapped a sharp photo lineament south of the Los Angeles River close to a sharp gravity gradient. They correlated this structure to the Benedict Canyon bedrock fault of Hoots (1931), which has left separation where it crosses the Santa Monica Mountains and has its north side down farther east along the northern base of the range. At the eastern end of the Santa Monica Mountains, where the Los Angeles River turns to the south, the bottom of the alluvial

basin appears to be displaced relatively downward 170 m on the north side, near where faceted spurs have been identified on the flanks of the range. However, Weber et al. (1980) were unable to find evidence that this fault displaces Quaternary deposits; the faceted spurs could be caused by fluvial erosion and not fault displacement.

Los Angeles fold-and-thrust belt

Introduction

The M 5.9 Whittier Narrows earthquake of October 1, 1987, occurred on a previously-unrecognized blind thrust fault in the eastern part of the Los Angeles Basin, leading to a paradigm shift in geological understanding of the active tectonics of the basin. This earthquake provided evidence that anticlines housing the great oil fields of the Los Angeles Basin overlie seismogenic source faults. The previous belief had been that Los Angeles is primarily a strike-slip province. The appearance of an earthquake in the Los Angeles Basin with a reverse-fault signature similar to those in the Transverse Ranges led to a reappraisal of the anticlines of the Los Angeles Basin for their earthquake potential. This reappraisal used the tools of the petroleum geologist: oil-well data and seismic profiles, as well as ground-water data (Dept. of Water Resources, 1961) and tectonic geomorphology.

The folds extend from the Newport-Inglewood fault eastward to the Elysian Park, Montebello, Santa Fe Springs, West Coyote, East Coyote, Richfield, and Kraemer anticlines, all housing oil fields except the Elysian Park anticline. Davis et al. (1989) constructed balanced (retrodeformable) cross sections across the Los Angeles Basin and concluded that the blind fault generating the Whittier Narrows earthquake is part of a thrust ramp they called the Elysian Park thrust. The anticlinal feature overlying the thrust ramp was referred to by them as the Santa Monica Mountains anticlinorium, uplift of which produced the Santa Monica Mountains, the Elysian, Repetto, and Montebello Hills, and the Puente Hills. (An anticlinorium is a major anticlinal structure that consists of several smaller anticlines.) The folds were drawn as fault-propagation folds, that is, slip on faults is consumed updip by folding, following Suppe and Medwedeff (1990). The long-term slip rate on the Elysian Park thrust was estimated by Davis et al. (1989) as 2.5-5.2 mm/yr.

Shaw and Suppe (1996) also constructed balanced cross sections across the Los Angeles Basin using a relatively high-quality 2D seismic data set, but in contrast to Davis et al. (1989), they interpreted their folds to be generated by fault-bend folding, following Suppe (1983). The blind thrust consists of thrust flats and thrust ramps, and the folds are generated as a result of the non-planar geometry of the thrust surface. In the Shaw and Suppe model, the thrust ramps generate dip panels that they called trends, and the thrust flats make up the lowlands, principally the central Los Angeles Basin lowland. These make up one very large fault called the Compton-

Los Alamitos thrust. They decoupled their northwest-trending Elysian Park trend from the east-west-trending Santa Monica Mountains anticlinorium of Davis et al. (1989). The slip rate on the thrust ramp beneath the Elysian Park trend was estimated as 1.7 +/- 0.4 mm/yr. Here we discuss the Elysian Park trend within the Los Angeles Basin as limited by Shaw and Suppe (1996). In this summary, we discuss the individual structures making up the Elysian Park trend separately, although the possibility exists that several of these structures might rupture together in a cascade, an implication of the models of both Davis et al. (1989) and Shaw and Suppe (1996).

Las Cienegas fault

The last oil-exploration and development campaign in Los Angeles took place in the downtown area in the 1960s, largely on the Las Cienegas structural shelf between the deep central trough and the Santa Monica Mountains. Hummon et al. (1994) showed that the base of shallow-marine Pleistocene gravels, 0.8-1.0 Ma in age (D. Ponti in Hummon et al., 1994) is upwarped along a broad arch in Hollywood and West Hollywood called by them the Wilshire arch because its axis approximately follows Wilshire Boulevard. The south side of the arch leads into the central trough, and the north side into an elongate low called the Hollywood Basin.

Hummon et al. (1994) proposed that the arch is formed by the blind, north-dipping Wilshire thrust dipping 10°-15° north. If the Hollywood Basin is the backlimb of this arch, a fault-bend fold model yields a dip-slip rate of 1.5-1.9 mm/yr over the past 0.8-1.0 m.y. They also located the fault using an elastic-dislocation model of the wavelength (10 km) and amplitude (400 m) of the Wilshire arch, following King et al. (1988), who showed that the wavelength of a fold associated with an active fault can be compared to the wavelength of coseismic folding. This model locates a fault dippng 30°-35° north, with the fault tip 2.0 to 2.8 km below the surface, consistent with a diffuse zone of seismicity. This yields a right-oblique slip rate of 2.6-3.2 mm/yr.

These models depend on the Hollywood Basin being the backlimb of the fault generating the Wilshire arch. However, Tsutsumi (1996) and Tsutsumi et al. (2001) showed that the Hollywood Basin is a pull-apart basin related to the left step between the Santa Monica and Hollywood faults, hence a strike-slip feature in contrast to the dip-slip backlimb of the Wilshire arch. Schneider et al. (1996) used Pliocene and younger growth strata between the Las Cienegas structural shelf and the central trough to model the blind fault generating the boundary between the central trough and the structural shelf. The vertical component of displacement is the difference in thickness of coeval strata between the shelf and the trough, backstripped to obtain pre-compaction thicknesses. The horizontal component is the difference in shortening by line-length balancing of horizons of different ages. Analysis of growth strata show that the folds grew through progressive limb rotation, with fault dip of 61° at East Beverly Hills Oil Field and

62° at Las Cienegas Oil Field. The slip rates on the fault over the past 5 m.y. were1.1-1.3 mm/yr at East Beverly Hills and 1.3-1.5 mm/yr at Las Cienegas, with horizontal convergence rates 0.5-0.6 mm/yr at East Beverly Hills and 0.6-0.7 mm/yr at Las Cienegas.

Ponti et al. (1996) and Quinn et al. (2000) compared relative vertical displacement between the structural shelf and the central trough for the past 330 ky and found a vertical uplift rate no more than 0.09-0.13 mm/yr, about an order of magnitude lower than the slip rate of Schneider et al. (1996). Although the uplifted side of the Las Cienegas blind fault is still active based on topographic expression (Dolan and Sieh, 1992; M. Oskin, pers. commun., 2000), it is clear that the long-term rate is much higher than the late Quaternary rate. Analysis of additional cross sections eastward in the Boyle Heights and East Los Angeles districts near the Pomona Freeway between Las Cienegas and Bandini oil fields (R.S. Yeats and G.J. Huftile, see R.S. Yeats website) shows that the vertical changes of the Pleistocene San Pedro Formation across the Las Cienegas blind fault are considerably less eastward and essentially non-existent south of Bandini Oil Field (Yeats et al., 1999).

This eastern edge of the Los Angeles trough was depicted in a cross section by Shaw and Suppe (1996, their cross section Y-Y') as the Las Cienegas trend, a fault-bend fold generated by a thrust ramp of their Las Cienegas thrust. Growth triangles imaged on their seismic profiles showed that displacement on the blind thrust took place during deposition of the upper Pico (latest Pliocene) and continued into the Quaternary. Shaw and Shearer (1999) named this structure the Los Angeles segment of their Puente Hills thrust.

Elysian Park anticlinorium

The Elysian Park anticlinorium *sensu stricto* is a southward-verging anticline 20 km long with a curved, southward-convex axis, lying between the left-lateral(?) Hollywood fault on the northwest through the Silver Lake district and the cities of South Pasadena and Alhambra to the right-lateral East Montebello fault on the east in the city of San Gabriel. Uplift of the structure has produced the Elysian, Repetto, and Monterey Park Hills. From the Los Angeles River eastward, the southern range front of the hills is formed by the active axial surface between the south limb of the anticlinorium and the nearly-flat dips of the Las Cienegas structural shelf (R.S. Yeats and G.J. Huftile, work in progress).

Oskin et al. (2000) studied parasitic minor folds in the vicinity of the axial surface, the largest being the Coyote Pass escarpment and monocline close to the range front. Bullard and Lettis (1993) concluded that these folds provide evidence for a southward migration of deformation. Deformed late Quaternary deposits across the Coyote Pass escarpment and related structures allowed Oskin et al. (2000) to estimate a contraction rate across the structure of 0.6-1.1 mm/yr and a late Quaternary slip rate on the blind Elysian Park reverse fault of 0.8-2.2 mm/yr.

The dip of the blind fault was determined by analysis of growth strata, similar to the method of Schneider et al. (1996).

The late Quaternary slip rate on the Elysian Park fault is similar to the long-term slip rate on the Las Cienegas fault, suggesting that convergence is shifting northeastward from the Las Cienegas fault to the Elysian Park fault (Yeats et al., 1999). Unlike the Las Cienegas fault, with structural growth taking place throughout the Pliocene and early Pleistocene, the Elysian Park anticlinorium shows no significant decrease in thickness of the Repetto and early Pico members of the Fernando Formation between the structural shelf and the south limb of the anticlinorium, based on oil-well data. However, Soper and Grant (1932), based on surface geology, concluded that this structure was active in the Pliocene based on an unconformity between the Pico and Repetto members of the Fernando Formation. A possible western continuation of the Elysian Park fault in downtown Los Angeles, the San Vicente fault of Schneider et al. (1996) has relatively small reverse separation superposed on a much larger normal separation during the Miocene. However, the San Vicente fault north of East Beverly Hills Oil Field shows evidence of Pliocene growth, earlier than that at the Elysian Park axial surface (Schneider et al., 1996, their fig. 4) and consistent with observations of Soper and Grant (1932).

An unresolved problem is the origin of the MacArthur Park escarpment southwest of the Hollywood Freeway and several minor folds in alluvium on the crest of the Wilshire arch mapped by Dolan et al. (1997) along Wilshire Boulevard and La Brea Avenue to the north. The MacArthur Park lineament is the northwest-trending range front between southwest-dipping strata of the Elysian Park anticlinorium and Quaternary deposits atop the Wilshire arch, which are cut off at the range front. Oskin et al. (2000) show the MacArthur Park escarpment as the continuation of the Coyote Pass escarpment, based on uplifted fluvial terraces. However, the MacArthur Park escarpment does not correspond to the same axial surface between low-dipping strata of the Las Cienegas structural shelf and southwest-dipping strata of the anticlinorium. Cross sections constructed by R.S. Yeats and G.J. Huftile across the Los Angeles Downtown Oil Field and the Jefferson pool of the Las Cienegas Oil Field (see R.S. Yeats website) show that the range front is northeast of the active axial surface.

Whittier Narrows earthquake source fault

The fault-plane solution for the 1987 Whittier Narrows earthquake showed a moderately-dipping fault plane with an east-west strike (Hauksson and Jones, 1989). Releveling after the earthquake showed an uplifted area extending from the Santa Fe Springs anticline northward across the intervening La Habra syncline to the Montebello anticline (Lin and Stein, 1989). Shaw and Shearer (1999) relocated the mainshock and aftershocks of the earthquake, illuminating a fault plane dipping about 25° north, a dip consistent with fault-plane reflections on

a seismic profile west of the crest of the Santa Fe Springs anticline between -3 and -7 km below sea level. The fault tip is located beneath the south side of the Santa Fe Springs anticline based on a trishear kinematic model (Allmendinger and Shaw, 2000). The long-term slip rate was estimated as 0.5 to 2.0 mm/yr, with the faster limit based on GPS evidence (Argus et al., 1999); a minimum long-term slip rate is 0.5-0.9 mm/yr (Shaw et al., 2000).

High-resolution seismic profiles across the updip projection of the active axial surface between the Santa Fe Springs anticline and low-dipping strata to the south provide structural data within 15 m of the surface, with south dips of 20° to 25° north of the axial surface and horizontal dips to the south (Williams et al., 2000; Christofferson et al., 2000 and in prep.). If these dipping sediments can be dated through borehole traverses and trench excavations, a short-term slip rate could be calculated.

The fault is part of the Puente Hills thrust of Shaw and Shearer (1999), with the Santa Fe Springs segment stepped to the right from their Los Angeles segment farther west. The cloud of aftershocks of the 1987 earthquake is limited to the Santa Fe Springs segment (Hauksson and Jones, 1989).

The Montebello anticline to the north is a separate structure from the Las Cienegas, Elysian Park, or Santa Fe Springs structure. It is described below as part of the Whittier fault system.

Coyote folds

The Puente Hills thrust steps right east of the Santa Fe Springs anticline to a north-dipping reverse fault beneath the Coyote Hills (Shaw and Shearer, 1999). The Whittier earthquake of July 8, 1929, with intensities as high as VII, had its epicenter close to this stepover, with meizoseismals oriented north-south (Richter, 1958).

The Coyote Hills in the cities of La Mirada, La Habra, Fullerton, and Placentia are uplifted along a string of doubly-plunging anticlines. From west to east, these are the West Coyote anticline, housing the West Coyote Oil Field, and the Hualde and Anaheim domes of the East Coyote Oil Field. Farther to the southeast in the cities of Yorba Linda and Orange, the Richfield and Kraemer anticlines converge with the Whittier fault north of the Santa Ana River in the foothills of the Puente Hills. The south-verging Coyote folds each include an axial reverse fault, the South Flank fault of West Coyote and the Stern fault of East Coyote (Wright, 1991). Myers (2001) showed that the Stern fault underwent 1200 m of left-lateral strike slip, when the fault was nearly vertical, and became inactive prior to folding in the Quaternary. This strike-slip fault was traced westward across the Leffingwell Oil Field and must extend eastward south of the Anaheim dome of the East Coyote Oil Field. Folding began during deposition of the Pico member of the Fernando Formation.

Myers (2001) and D. Myers, J. Nabelek, and R. Yeats (in prep.) used dislocation modeling to locate the blind fault generating the Coyote folds, yielding dips consistent with those observed using aftershocks and fault-plane reflections beneath the Santa Fe Springs anticline (Shaw and Shearer, 1999), although there is large uncertainty in fault dip. Several dated horizons were projected into the East Coyote fold: the Brunhes-Matuyama boundary from a water well in Pico Rivera south of the Montebello anticline (D. Ponti, pers. commun., 2000), an age estimate of 1.4 +/- 0.4 Ma of a mollusc in the San Pedro Formation in the West Coyote Hills (Powell and Stevens, 2000), and the dated Nomlaki Tuff (3.4 +/- 0.3 Ma, Sarna-Wojcicki et al., 1991) near the Meyer shale in the Santa Fe Springs Oil Field (A. Sarna-Wojcicki and T.H. McCulloh, pers. comm., 2000). This leads to a slip rate on the blind thrust of 1.2 +1.4/-0.5 mm/yr.

Dislocation modeling was also applied to the Santa Fe Springs anticline, resulting in a slip rate slightly higher than that at East Coyote and a fault dip consistent with that obtained by fault-plane reflections and distribution of 1987 mainshock and aftershocks (D. Myers, J. Nabelek, and R. Yeats, in prep.).

Peralta Hills thrust

South of the Coyote folds, Burruel Ridge and the Peralta Hills project westward into the Los Angeles Basin from the Santa Ana Mountains, possibly deflecting the course of the Santa Ana River westward. This feature is a southward-vergent anticline with the thrust on the south side; west of the Santa Ana River, the anticline projects into the Olive Oil Field. Bryant and Fife (1982) suggested that bedrock structures are thrust southward against Pleistocene terrace deposits, although subsequent geotechnical work by others suggests that they may have mapped a landslide. West of the Costa Mesa Freeway in Orange, immediately south of the Olive anticline, a scarp in alluvial deposits of the Santa Ana River adjacent to Lincoln Avenue appears to be active. A contractional structure, if extended eastward across the northern Santa Ana Mountains, could explain the difference in slip rate between the Elsinore fault at Glen Ivy and the Whittier fault at Santa Ana Canyon.

Northwest-striking faults in the northernmost Peninsular Ranges

Introduction

The southern part of the Los Angeles metropolitan area is tectonically a part of the Peninsular Ranges, with northwest-striking right-lateral faults that are part of the southern San Andreas fault system. Slip rates on these faults are highest on the San Andreas fault itself, lower on the San Jacinto fault, and still lower on the Whittier-Elsinore and the Newport-Inglewood faults (Yeats, 2001b). Davis et al. (1989) and Shaw and Suppe (1996) pointed out that these are

not simple strike-slip faults; reverse slip is also important and locally may be dominant. Davis et al. (1989) even suggested that the Whittier fault may be relatively unimportant compared to the regional blind thrust that underlies the Puente Hills. It seems likely that strain partitioning is an important element in the earthquake evaluation of these faults, just as it is in the central Coast Ranges, affected by reverse-fault earthquakes in 1983 (Coalinga) and 1985 (Kettleman Hills) as well as the great Fort Tejon strike-slip earthquake of 1857 and several Parkfield earthquakes from then until 1966.

Here we discuss those northwest-striking local faults that strongly impact the Los Angeles metropolitan region: the Whittier-Elsinore, Newport-Inglewood, and Palos Verdes faults. The San Jacinto fault is important to the San Bernardino-Riverside metropolitan area, and the San Andreas fault is important to the entire Los Angeles metropolitan region, but these faults are not discussed here. Offshore faults in the California Continental Borderland, in particular the San Diego Trough-San Pedro fault and the San Clemente fault, have an impact on the Los Angeles region, but too little is known about their slip rates to include them in this discussion.

Also included in this section are the east-northeast-striking San Jose fault and the north-northwest-striking Chino fault and a consideration of the active-tectonic significance of the Santa Ana Mountains and San Joaquin Hills.

Whittier-Elsinore fault

The Whittier and Elsinore fault is marked by a band of diffuse seismicity, although this is much less pronounced than the seismicity marking the San Jacinto fault to the east.

The late Pleistocene to Holocene strike-slip rate on the Elsinore fault at Glen Ivy Marsh south of Corona is 5.3-5.9 mm/yr (Millman and Rockwell, 1986), with evidence for 4 to 5 earthquakes of M 6-7 since about 1060 AD (Rockwell et al., 1986). The most recent event was probably the Temescal Valley earthquake of M 6 on May 15, 1910, with about 15 km of surface rupture (Rockwell, 1989). Northwest of Glen Ivy, the fault divides into two subpararallel strands, with the northeastern strand becoming the Chino fault and the southwestern strand, following the northeastern range front of the Santa Ana Mountains, becoming the Whittier fault. East of Santa Ana Canyon, the Whittier fault turns west-northwest into the northern end of the Santa Ana Mountains, where digital terrain images suggest right-lateral stream offsets. At Santa Ana Canyon, the Whittier fault has a right-lateral strike-slip rate of 2-3 mm/yr based on a 400-m offset of terraces of the Santa Ana River that are 140 ka in age (Gath, 1997; Gath et al., 1998; Rockwell et al., 1988). Farther west, at Olinda Creek, one strand of the Whittier fault has a right-lateral strike-slip rate of about one mm/yr. The stream offset by this strand is offset the same amount by another strand, and Gath et al. (1992) assigned a strike-slip rate on both strands of at least 2 mm/yr. The two strands are part of a positive flower structure, with Miocene Puente

Formation thrust over alluvial deposits; however, the displacement is mainly by strike slip (Gath et al., 1992). In addition, the tectonic geomorphic expression of the fault is characteristically strike slip, including right-deflected streams and shutter ridges (Rockwell et al., 1988).

The slip rate difference led Rockwell et al. (1992) to conclude that about 2.6 mm/yr of strike slip escapes along the Chino fault. However, some of this difference can be accounted for by the Coyote folds that intersect the Whittier fault at Santa Ana Canyon. The slip rate on the blind thrust generating the East Coyote folds (Myers, 2001) is enough to account for part of the difference between the strike-slip rate at Glen Ivy Marsh and that at Olinda Creek. Additional displacement could take place on the Peralta Hills thrust and on a footwall anticline beneath the Whittier fault between Turnbull Canyon (Herzog, 1998) and Yorba Linda (see fig. 17 in Myers, 2001, and R.S. Yeats website), including the 304 and 184 anticlines of the Whittier Oil Field (Herzog, 1998) and the Brea anticline of the Brea-Olinda Oil Field. This anticline (locally an anticlinorium) is considered to be active due to footwall uplift east of Turnbull Canyon; west of Turnbull Canyon, the Whittier fault lies at the Puente Hills range front (Herzog, 1998).

At the Whittier Narrows of the San Gabriel River, the Whittier fault turns more northerly to become the East Montebello fault. At Alhambra Wash in Rosemead, Gath et al. (1994) and Gath and Gonzalez (1995) trenched a strand of the East Montebello fault and found a slip rate of only 0.2 +/- 0.1 mm/yr; a second, larger scarp to the west was not investigated. This suggests a lower slip rate than that measured at Olinda Creek, which could be accounted for by growth of the Montebello anticline, which is truncated on the east by the East Montebello fault. The Montebello anticline was not uplifted separately from the Santa Fe Springs anticline during the 1987 Whittier Narrows earthquake (Lin and Stein, 1989), suggesting that its uplift history is controlled by strike slip on the Whittier fault instead of (or in addition to) reverse slip on the blind Santa Fe Springs segment of the Puente Hills thrust.

Despite the evidence for late Quaternary strike slip, the total right slip on the Whittier fault is relatively small. Part of the difficulty in establishing piercing-point offsets is that the modern Whittier fault reactivated a Miocene normal fault with the north side down (Yeats and Beall, 1991; Bjorklund and Burke, in review). McCulloh et al. (2000) estimate the right separation as 8-9 km based on offset facies and isopachs of Paleogene strata. This estimate faces the difficulty that north of the fault, Paleogene facies boundaries turn abruptly westward in the southeastern Puente Hills. The Santa Rosa basalt dated at 10.6 Ma is offset across the Elsinore fault no more than 15 km (Hull and Nicholson, 1992). Bjorklund and Burke (in review) are able to construct isopachs of the late Miocene Sycamore Canyon member of the Puente Formation without any offset, although the isopachs south of the fault are parallel to it, and an undetermined amount of strike slip is permitted by the isopach data.

Throughout most of its length on the south side of the Puente Hills, the fault has reverse separation, north side up, with maximum vertical separation of 4267 m in the northwest Puente Hills (McCulloh et al., 2000). This separation is less to the southeast, and near the Horseshoe Bend of the Santa Ana River, the sense of separation in bedrock (although probably not in late Quaternary deposits) changes to south side up, and the dip is vertical (Bjorklund and Burke, in review; McCulloh et al., 2000). Nonetheless, northwest of Horseshoe Bend of the Santa Ana River, the dominant expression is reverse slip, with a dip of 60° to 75° north. At Rideout Heights at the northwestern end of the Whittier fault, the late Pleistocene-Quaternary uplift rate is 0.6 +/- 0.1 mm/yr, and the dip separation rate is 0.97 +/- 0.1 mm/yr (Herzog, 1998), about the same as the strike-slip rate.

Puente Hills, San Jose Hills, and the San Jose fault

Davis et al. (1989) implied that the uplift of the Puente Hills is dominated by the Elysian Park blind thrust. Shaw and Shearer (1999) named the regional blind thrust generating the 1987 Whittier Narrows earthquake the Puente Hills thrust, although the topographic expression of the Puente Hills thrust is the Santa Fe Springs anticline and the Coyote Hills, not the Puente Hills. Herzog (1998) observed that the Puente Hills are restricted to the region between the Santa Ana and San Gabriel rivers, where the west-northwest-striking Whittier fault is a restraining bend between the northwest-striking Elsinore fault and north-northwest-striking East Montebello fault. Bjorklund and Burke (in review, based on structure contours of the La Vida member of the Puente Formation, map the structure of the Whittier fault hangingwall as a south-vergent anticline with its culmination west of Brea Canyon, next to the Brea-Olinda Oil Field. The uplifted footwall of the fault between Turnbull Canyon and Yorba Linda, related to a footwall anticline, attests to dip-slip on part of the Whittier fault system, evidence of partitioning between strike slip, as seen in the geomorphology and trench excavations, and dip slip, as seen in anticlines in both the footwall and hangingwall.

In contrast to the southern Puente Hills, the northern Puente Hills and San Jose Hills appear to be structurally more complex, and folding dominates (Olmstead, 1950). The San Jose Hills trend east-northeast and are uplifted along a west-southwest-plunging anticline underlain by the La Vida member of the Puente Formation, the Glendora Volcanics, and Cretaceous granitic rocks. The San Jose fault lies at the southern range front, steps left where the anticlinal axis steps left (Tan, in press a, b), and dies out at the surface farther west in the south limb of the anticline. Farther south, the Amar syncline is in an alluviated lowland, and still farther south, the Puente Hills anticline, housing the Walnut Oil Field, is also expressed as tectonic topography in the Little Puente Hills (Tan, in press a, b). This leads to the suggestion by R.S. Yeats that these

folds, along with the Glendora South Hills farther north (Shelton, 1955), may be previously-unrecognized reverse-fault earthquake sources with a Transverse Ranges trend.

This implies that the Upland strike-slip earthquakes of 1988 and 1990 (Hauksson and Jones, 1991) may not have originated on the northeastern continuation of the San Jose fault. However, their source could have been the continuation of a strike-slip fault farther northwest, such as the Walnut Creek fault mapped by Tan (in press a, b) along the southwestern margin of the San Gabriel Valley or the Indian Hill fault mapped in the San Gabriel Valley farther northwest (Dept. of Water Resources, 1966; 1970; located on maps by Hauksson and Jones, 1991). A difficulty in evaluating these sources is that the youngest bedrock is Puente Formation; the thick Pliocene of the western San Gabriel Valley is absent. The Indian Hill fault appears to offset the base of water-bearing sediments, with the north side up (Dept. of Water Resources, 1970).

Chino fault

The Chino fault has been regarded as a strike-slip member of the Elsinore fault system (Rockwell et al., 1992). An earthquake of M 4.3 in February, 1989, with its epicenter southwest of the surface trace of the fault, had a fault-plane solution consistent with right-lateral strike slip on the Chino fault (Hauksson and Jones, 1991). A strike-slip fault with a more northerly strike than that of the Elsinore fault should be transtensional; indeed, small depressions are found at right stepovers along the fault (E.M. Gath, in prep.). On the other hand, the Chino fault has reverse separation throughout its length, with the southwest side up (Gray, 1961; Durham and Yerkes, 1964; Castro, 1975; Schoellhamer et al., 1981). In the Chino Hills, the Mahala anticline in the hangingwall of the Chino fault has topographic expression, following the Chino Hills drainage divide. McCulloh et al. (2000) suggested that the total right slip on the Chino fault can be no greater than a few kilometers, based on isopachs of Paleogene strata. R.S. Yeats (in prep.) suggests that the Mahala-Chino structure might comprise an active fold-reverse fault pair that is propagating north-northwestward toward the San Jose Hills, although the 1989 earthquake provided evidence that this fault can generate strike-slip earthquakes. Alternatively, the Chino fault could bend to a more northerly strike, cutting off the San Jose Hills on the east.

Heath et al. (1982) estimated a slip rate of 0.06 mm/yr horizontal and the same rate vertical near Prado Dam. Their slip rate was based on the 8-m vertical separation of a paleosol, the age of which was estimated as 125 ka. This separation was both by faulting and downwarping. They had no independent evidence for horizontal offset of this paleosol or of younger deposits; they simply assumed that the horizontal offset would be no larger than the vertical. Chris Walls and Eldon Gath suggest that the fault is active and is predominantly right lateral, based on northeast-facing fault scarps, deflected drainage, and beheaded drainage in the

Chino Hills and northeast-facing fault scarps and vegetated lineaments in the alluvium near and southeast of Prado Dam (see also Weber, 1977). Walls and Gath salvage-logged a trench excavation in the Chino Hills in which an organic colluvial layer overlying Puente Formation is offset 4.2-5.6 m right laterally with 10-15 cm apparent vertical separation. Charcoal from this colluvium was dated by Chris Walls as 11,219 +/- 331 and 9543 +/- 55 radiocarbon years.

To the east, the Central Avenue fault may be a right stepover from the Chino fault, based on photo lineations and geomorphic features being studied by J.A. Treiman (in prep.).

Newport-Inglewood fault and the Compton-Los Alamitos trend

Like the Whittier-Elsinore fault, the Newport-Inglewood fault, 70 km long onshore, is marked by a band of diffuse seismicity. Several earthquakes have struck the fault zone, including the March 10, 1933 "Long Beach" earthquake of M 6.4, with its epicenter off Newport Beach, and smaller earthquakes at Inglewood on June 20, 1920 (M 4.9), Gardena on October 22, 1941 (M 4.9), and Torrance-Gardena on November 14,1941 (M 5.4; Hauksson, 1990). Many microearthquakes are characterized by right-lateral strike-slip focal mechanisms, as was the 1933 earthquake (Hauksson, 1987; 1990). No historical earthquake is known to have been accompanied by surface rupture (Barrows, 1974).

The Newport-Inglewood fault continues offshore to the southeast (Fischer and Mills, 1991) and makes landfall in La Jolla as the Rose Canyon fault, which has evidence of Holocene right-lateral strike slip and a slip rate of 1.5 mm/yr (Lindvall and Rockwell, 1995). It is not a continuous surface fault like the Whittier fault, but instead is marked by a series of uplifts and anticlines including Newport Mesa, Huntington Beach Mesa, Bolsa Chica Mesa, Alamitos Heights and Landing Hill, Signal Hill and Reservoir Hill, Dominguez Hills, Rosecrans Hills, and the Baldwin Hills (Barrows, 1974). Farther northwest, it is on trend with the Cheviot Hills and the West Beverly Hills Lineament, the latter marking the left stepover between the presumably left-lateral Santa Monica and Hollywood faults (Dolan et al., 1997; 2000b). The right-lateral stress field is evident from the predominance of reverse faults in the west-trending Dominguez anticline, the coincidence of Signal Hill with a short, northeast step (Pickler fault) in the Long Beach segment of the fault, and normal separation on north-striking faults in Sunset Beach and Huntington Beach oil fields (Yeats, 1973; Harding, 1973).

Freeman et al. (1992) worked out long-term strike-slip rates on the fault by correlating electric-log facies of strata of 6 to 2.3 Ma on one side of the fault to a best match on the opposite side. At Seal Beach and Huntington Beach oil fields, this gave a slip rate of 0.49-0.52 mm/yr. At Long Beach Oil Field, the slip rate is 0.5 mm/yr, and at Inglewood Oil Field, at the northwest end of the zone, the slip rate is 0.31 mm/yr. With error bars, the approximate slip rate can be estimated as about 0.5 mm/yr. Slip rates can also be determined from offset anticlines at Seal

Beach and Inglewood oil fields, and offset isopachs (Freeman et al. (1992). Maximum displacement measured is about 4 km for strata about 7 Ma at Huntington Beach Oil Field. The maximum displacement at Inglewood Oil Field is 1.4 km for strata of 4 Ma (Wright et al., 1973), indicating that strike slip at Inglewood did not start until the Pliocene, later than it started at Huntington Beach. Freeman et al. (1992) estimated the ratio of vertical to horizontal slip to be 1:20. Grant et al. (1997) estimated a minimum Holocene right-lateral strike-slip rate of 0.30-0.55 mm/yr for the southern Newport-Inglewood fault zone in the Huntington Beach Oil Field.

Yet a purely strike-slip history, even taking into account restraining bends such as the one at Dominguez Hills and a transfer of strike slip to folds west of the fault at Sawtelle Oil Field (Tsutsumi et al., 2001), cannot explain the Central Uplift, the name applied by the petroleum industry to the elevated structure of the Newport-Inglewood trend with respect to the central trough to the northeast and the Wilmington structural shelf to the southwest. Davis et al. (1989) accounted for the Central Uplift by a blind thrust. Shaw and Suppe (1996) described the northeast-dipping flank of the Central Uplift as the Compton-Los Alamitos trend, a fault-bend fold that overlies a thrust ramp with 4 km of slip, based on upward-narrowing growth triangles of sedimentary strata above the ramp. The base of the growth triangle, marking the age of initiation of thrusting, was estimated as 2.5 Ma, near the top of the Repetto Member of the Fernando Formation. With this information, the long-term dip-slip rate was calculated as 1.4 +/- 0.4 mm/yr.

T.K. Rockwell and K.J. Mueller excavated a trench, and K.J. Mueller acquired CPT borings across the surface projection of the Compton-Los Alamitos axial surface (Mueller, 1997), showing that this surface does not deform peat deposits dated as 1.9 ka or the Gaspur aquifer (cf. Dept. of Water Resources, 1961) dated as 15-20 ka. Additional work (K.J. Mueller and T.K. Rockwell, in prep.), including structure contours on five aquifers ranging in age from 15-20 ka to 730 ka tied into the global eustatic sea level curve (D.J. Ponti, in prep.), additional trenching and CPT profiles on the Los Alamitos air base, and analysis of a digital elevation model shows no folding of the Gaspur aquifer on the air base. But the Sunnyside (720 ka), Lynnwood (650 ka), and Gage (330 ka) aquifers are folded consistent with the Shaw and Suppe (1996) model but at a slower rate, about 0.5 mm/yr.

Grant et al. (1997) showed that a splay of the North branch of the Newport-Inglewood fault at Huntington Beach has a vertical separation rate of 0.2 mm/yr. They found evidence of five earthquakes, with the oldest shortly after 11.0-12.3 ka. Events younger than 4.4-5.0 ka may be present but are unresolvable with their data.

San Joaquin Hills

Adjacent to the Newport-Inglewood fault where it crosses the shoreline, the San Joaquin Hills are uplifted at a rate of 0.21-0.27 mm/yr, based on mapping and dating late Quaternary shorelines (Grant et al., 1999; in press). The relations are best explained by a southwest-dipping blind thrust with a slip rate of 0.42-0.79 mm/yr. Rivero et al. (2000) consider this southwest-dipping thrust to be part of a larger structure extending offshore to the south and dipping 23°. In their view, the southwest-dipping thrust is a hangingwall structure in their east-dipping Oceanside thrust, a Miocene low-angle normal fault reactivated in the Quaternary. They described a similar thrust farther west, the Thirtymile Bank fault, which is too far offshore to be included in this summary.

Coseismic coastal uplift of the San Joaquin Hills may have generated the largest historical earthquake in the Los Angeles region, an earthquake experienced by the Portolá expedition on July 28, 1769. Late Holocene marsh deposits and shorelines are elevated 1 m to 3.6 m above the active shoreline in a pattern that is best explained by tectonic uplift accompanying an earthquake of M>7. Radiocarbon dating and pollen analysis constrain the date of the earthquake as between 1635 and 1855 A.D., with the strong possibility that this was the earthquake reported by Portolá (Grant et al., in revision).

Palos Verdes fault

The Palos Verdes fault follows the northeastern range front of the Palos Verdes Hills between Redondo Beach and San Pedro, extending across Los Angeles Harbor onto the continental shelf to the southeast. The Palos Verdes Hills are etched by a flight of marine terraces with their ages estimated as 0.45 to 1.5 Ma, leading to an uplift-rate determination of 0.7 +/- 0.2 mm/yr (Ward and Valensise, 1994). The uplift pattern of the Palos Verdes terraces enabled Ward and Valensise (1994) to model the uplift of the Palos Verdes anticlinorium, 15 km long and 8 km wide, as due to a restraining bend on an oblique reverse-right slip fault dipping to the southwest with a long-term slip rate of 3.0-3.7 mm/yr. The uplift rate of Ward and Valensise (1994), and therefore the slip rate on the fault, is controlled by the correlation of the marine terraces; more recent work by D.J. Ponti suggests a slower uplift rate, 0.3-0.5 mm/yr.

Northwest of San Pedro, high-resolution seismic profiles show that the channel of the ancestral Los Angeles River, dated as 120-80 ka, is deflected 300 m, leading to an intermediate-term slip rate of 2.5-3.8 mm/yr, with strike slip predominating (Stephenson et al., 1995). To the southeast, in Los Angeles Harbor, McNeilan et al. (1996) showed that an early Holocene paleochannel has been deflected 21-24 m, indicating a slip rate of 2.7 mm/yr for the past 7.8-8 ka, with the ratio of horizontal to vertical slip 7:1 to 8:1.

In contrast, Davis et al. (1989) interpreted the Palos Verdes anticlinorium and fault along with the Torrance-Wilmington-Belmont (TWB) anticlinorium to the northeast, as overlying a

décollement. Shaw and Suppe (1996) considered the Palos Verdes anticlinorium as the hangingwall of a backthrust related to a fault-bend fold, with uplift of the anticlinorium the same as that calculated by Ward and Valensise (1994). The slip rate of the fault underlying the TWB anticlinorium was calculated as 1.2 +/- 0.4 mm/yr. 3D seismic data suggest that the TWB anticlinorium is a tip-line fold developed above a northeast-dipping thrust ramp that offsets and folds basement; the forelimb of this fold contains deformed Pliocene strata (J. Shaw, in prep.).

Well data show that the TWB anticlinorium stopped growing in middle Pico time and is overlain unconformably by undeformed strata (Wright, 1991). This argues against the TWB being linked to the Palos Verdes fold, dated by younger uplifted marine terraces. However, J. Shaw (in prep.) has found that the unconformity and overlying strata in the TWB anticlinorium are, indeed, folded gently about the axial surface bounding the southern edge of the forelimb, consistent with reverse-fault seismicity described by Hauksson (1990), although the slip rate on this structure has slowed down in the Quaternary. The two models linking the Palos Verdes and Compton-Los Alamitos structures (Shaw and Suppe, 1996) are (1) the Compton structure refolds part of the Palos Verdes fault (favored by J. Shaw, in prep.) and (2) the Palos Verdes fault is offset by the Compton ramp, or is a backthrust above the Compton ramp (Davis et al., 1989).

The Palos Verdes fault extends offshore to the southeast, where it is clearly mapped by sidescan sonar (M.V. Gardner, in prep., C. Goldfinger et al., in prep.) and high-resolution seismic-reflection profiles (Francis et al., 1999 and in prep.). At a point about 10 km southeast of the breakwater, the fault bends southward (releasing bend) and breaks up into several youthful traces that cut through the Beta Oil Field (Fischer et al., 1977; Kelsch et al., 1998). The fault appears to bend into a more northerly trend (transtensional) that controls the location of San Gabriel submarine canyon, as shown by multibeam bathymetry of Gardner et al. (2000). The fault splits into two major faults around Lasuen Knoll, a restraining-bend pop-up structure. The principal trace of the Palos Verdes fault lies along the southwest flank of Lasuen Knoll, where it is clearly expressed in seismic profiles (Bohannon et al., 1998; Mallory et al., 2000). The Palos Verdes fault zone continues southeast as the Coronado Bank fault zone with alternating regions of transpressional pop-up structures and broad transtensional sags (Legg, 1985; Legg and Kennedy, 1991; M. Legg and C. Goldfinger, in prep.) Overall, the Palos Verdes-Coronado Bank fault zone is complex and segmented, commonly with two sub-parallel faults. Uplift at left bends and sags at right bends show the right-slip character. The eastern fault zone from Lasuen Knoll to La Jolla submarine canyon is poorly known and may be tied to the Oceanside detachment/thrust fault system (M. Legg, C. Sorlien, and C. Nicholson, in prep).

To the northwest, off Redondo Beach, the fault is not as easy to trace on sidescan sonar (C. Goldfinger, M. Legg, R.S. Yeats, and G.J. Huftile, in prep.). The shelf is cut by the Redondo and Santa Monica submarine canyons (Nardin and Henyey, 1978); uplifted areas on the shelf

bring Miocene strata to the surface (Junger and Wagner, 1977). Some authors extend the Palos Verdes fault northwest as a strike-slip fault to an intersection with the Dume fault. An alternative is for various "horsetail" strands to splay westward, including the Redondo Canyon fault. These western splays should have reverse separation and consume slip in Santa Monica Bay on the north side of the Shelf Projection anticline of Nardin and Henyey (1978). Hauksson (1990; see also Davis et al., 1989) showed this region as the northwestern continuation of their Torrance-Wilmington fold and thrust belt. A north-trending graben near the head of Redondo submarine canyon suggests a pull-apart origin at a right stepover on the Palos Verdes fault where it extends offshore. Numerous fault traces have been mapped on the shelf in Santa Monica Bay (Vedder, 1986) although possible nearshore fault traces are presently unknown due to lack of data in the immediate coastal area. The coast-parallel trend of ancient Ballona Creek (Los Angeles River channel) immediately offshore Playa del Rey to Manhattan Beach may be fault-controlled (M. Legg and D. Francis, in prep.).

Earthquakes in Santa Monica Bay with reverse-fault focal mechanisms, with the largest the Malibu earthquakes of January 1, 1979 and January 19, 1989, each with magnitude 5.0 (Hauksson and Saldivar, 1989; Hauksson, 1990), are too far south to be attributed to the Dume fault. These earthquakes may be related to the western splays of the Palos Verdes fault. However, there are also many strike-slip earthquakes in this region, so the northern end of the Palos Verdes fault still remains poorly located.

The overall pattern of a segmented Palos Verdes fault, with alternating areas of extension and contraction, continues in Santa Monica Bay. The predominance of west to west-northwest trending anticlinoria along the southwest flank of the Palos Verdes fault is consistent with a reduction of strike slip northwestward toward the Transverse Ranges, with slip taken up by shortening on folds and horsetail splays.

Discussion: Problems for SCEC II

Introduction

The main purpose of this report is to synthesize what we know about the earthquake geology of the Los Angeles metropolitan area rather than analyze the data with respect to conflicting tectonic hypotheses. However, it is possible to see where we stand at the end of SCEC I and point out the major unsolved problems for SCEC II. The questions that we raise today could not have been posed at the time SCEC I began.

Convergence rate discrepancy between late Quaternary geology and GPS

Walls et al. (1998) compared the convergence rates across the Los Angeles metropolitan area with convergence rates based on geologically-determined slip rates on individual faults.

These rates appeared to be in agreement when the higher rates of Davis et al. (1989) and Davis and Namson (1994) were used (Argus et al., 1999), but recent studies of late Quaternary slip rates, summarized above, suggest that the geological rates in the Los Angeles and San Gabriel basins are slower than the GPS rates would predict. Bawden et al. (2001), after removing GPS sites contaminated by groundwater- and oil-pumping effects, determined an average southward shortening across the Los Angeles Basin of 4.4 +/- 0.8 mm/yr in a direction N35° +/- 5° E. The GPS rates could be a temporary velocity transient, as has been suggested for parts of the Great Basin, but this is less likely in Los Angeles because the GPS and geological rates appear to be in agreement in the Ventura Basin (Huftile and Yeats, 1995; 1996) and opposite the Cucamonga fault east of the San Jose Hills. In fact, the geologically-determined rates are higher than GPS rates in the western Ventura basin.

The principal problem is the unexplained lower slip rate on the Sierra Madre fault between the 1971 rupture zone and the Cucamonga fault (Crook et al., 1987, reinforced by more recently-determined late Quaternary slip rates, discussed above). The shortening across the Sierra Madre, Elysian Park, and Puente Hills faults, together with a contractional component across the Raymond and Whittier strike-slip faults, sums to 3-3.5 mm/yr. The discrepancy could be accounted for by the San Jose fault and a blind reverse fault beneath the northern Puente Hills anticline at Walnut, but this is not yet known. West of the San Fernando Valley, the Santa Susana, San Cayetano, and Oak Ridge faults have slip rates that are high enough to be consistent with GPS results (Huftile and Yeats, 1995; 1996), and this may be the case also for the Cucamonga fault. The Verdugo fault in the eastern San Fernando Valley could take up some of the strain, but the Eagle Rock fault between the Verdugo and Raymond faults has poor geomorphic expression and probably hase a low slip rate.

Some of the shortening could be taken up by folding. The blind Santa Monica Mountains thrust was thought to have a high slip rate by Namson and Davis (1994), but studies of the marine terraces along the Malibu coast show that the slip rate of that thrust is much lower, possibly an order of magnitude lower.

This is a major problem for SCEC II because of the possibility of other faults, as yet unidentified, that take up the missing horizontal convergence indicated by GPS. We don't want to be surprised by another Northridge blind thrust.

Short-term vs long-term slip rates

In the western Ventura Basin, the short-term rates are somewhat faster than the long-term rates but are in a general way consistent in that they involve the same faults. In the Los Angeles Basin, the long-term slip rates (2-5 x 10^6 yrs) on the Las Cienegas and Compton-Los Alamitos faults are much higher than the short-term rates measured in 10^4-10^5 yrs. Strike slip on the

Newport-Inglewood fault appears to have started earlier in the southeastern Los Angeles Basin than farther northwest. High slip rates on both the Raymond and Whittier faults must be considered in light of low total displacement on these faults, evidence that the presently-operating strike-slip phase is relatively young. The northwest-striking right-slip faults of the Peninsular Ranges may have propagated into the Los Angeles metropolitan area only in the Quaternary, implying that slip rates on these faults might approach zero as the Transverse Ranges boundary is approached.

If confirmed by additional work, this leads to a higher weighting of slip rates based on late Quaternary offsets than longer-term rates in probabilistic hazard analyses.

Offshore faults

The Newport-Inglewood, Palos Verdes, Santa Monica, and Malibu Coast faults extend offshore, where their geology is poorly understood compared to onshore faults. Newly-emerging technology of side-scan sonar, high-resolution swath bathymetry, high-resolution seismic profiling, and remotely-operated submersibles is expensive, but these techniques, together with piston cores, are necessary to characterize the offshore portions of onshore faults. For example, high-resolution multibeam bathymetry offshore from metropolitan Los Angeles (Gardner et al., 2000; Marlow et al., 2000) has provided a new understanding of the geometry and recency of movement on major offshore faults, including the San Pedro Basin and Avalon Knoll fault zones, both of which have prominent seafloor expression and likely Holocene activity. In addition, some faults are completely offshore, but close enough to metropolitan areas that they will impact the Los Angeles and San Diego metropolitan areas, just as a modern repetition of the December 21, 1812 earthquake would impact coastal cities around the Santa Barbara Channel.

Offshore paleoseismology is possible based on the analysis of turbidites in submarine channels, as has already been shown by work by C. Goldfinger, H. Nelson, and Gorsline et al. (2000). Turbidites at the mouth of Noyo Canyon off the northern California coast have been age-calibrated by AMS dating of foraminiferal tests, giving a paleoseismological record of the northern San Andreas fault for the past 13,000 years, a record consistent with the shorter record available from trench excavations (C. Goldfinger and H. Nelson, in prep.). Gorsline et al. (2000) concluded that the larger, more areally extensive turbidites in Santa Monica Basin were generated by earthquakes. These turbidites were dated using ^{210}Pb and AMS ^{14}C and by counting varves. The most recent turbidite might have recorded the 1812 earthquake in the western Transverse Ranges. Recurrence frequency of these large turbidites is 470 years. Submarine fans and turbidite-filled channels in the Borderland can be surveyed with high-resolution seismic imagery combined with piston cores to provide information on fault displacements during individual earthquakes and strong shaking generating turbidites.

The present Group C team comprises terrestrial geologists, with a few notable exceptions, and terrestrial geology has dominated most of the funding. A major problem is the expense of gathering data, but this can be alleviated by forming partnerships with other agencies, including NOAA, NSF, and USGS Marine Geology Branch.

Strain partitioning

The early days of SCEC were characterized by lively debate between those advocating a dominance of dip-slip faulting, especially blind thrusting, vs those suggesting that strike-slip faulting is important also. In part, the two camps were using two different time scales. Slip rates based on blind thrusting are based on growth strata deposited over several million years whereas slip rates on strike-slip faults are based on trench excavations and late Quaternary tectonic geomorphology, including stream deflections and shutter ridges.

It appears that both camps are partly correct. Strike slip on the Newport-Inglewood fault does not explain the Central Uplift, atop which the Newport-Inglewood oil fields are located, and strike slip on the Whittier fault does not explain footwall uplift between the Whittier and Brea-Olinda oil fields, nor does it explain uplift of the Coyote Hills. A clue may be seen in examining focal-mechanism solutions in Santa Monica Bay (Hauksson and Saldivar, 1989), which show both strike-slip and reverse-slip solutions. The mainshock of the 1987 Whittier Narrows earthquake was a reverse fault, but the largest aftershock was strike slip, probably on the East Montebello fault. The 1986 Oceanside earthquake (Hauksson and Jones, 1991) had a northwest-trending thrust mechanism although it took place on a restraining bend of the San Diego Trough fault (Legg, 1985). Alternatively, this earthquake may have been related to the blind, low-angle Thirtymile Bank fault (Rivero et al., 2000).

A problem for SCEC II is the question of how dip-slip earthquakes relate to strike-slip earthquakes. Would a Los Angeles cascade include both dip-slip and strike-slip events? Does the fast-moving Raymond strike-slip fault sometimes rupture alone and at other times rupture with the Sierra Madre or Hollywood fault, or with the San Andreas fault? Would a dip-slip event on the Sierra Madre fault reduce strain buildup on the Raymond fault across strike from it, or would a dip-slip event on the Puente Hills blind thrust reduce or add to strain buildup on the Whittier fault?

A corollary to this problem is the accommodation of north-south convergence. Is convergence accompanied by east-west escape-block tectonics, as proposed by Walls et al. (1998) or by crustal thickening, as favored by Argus et al. (1999). Part of the debate in these two papers is influenced by how the right-lateral shear strain on the San Andreas fault is factored out to get at the convergence signal, but the late Quaternary geology is important, too.

Most of the useful late Quaternary slip rate data in Los Angeles have been published in the past five years, as AMS radiocarbon dating has become more widely available. SCEC II has the opportunity of following up on this breakthrough in a focused late Quaternary dating project, including attempts to do paleoseismology on blind thrusts, as has already been accomplished in the San Joaquin Hills (Grant et al., in revision) and is currently being attempted for the Puente Hills blind thrust. A key to the success of this endeavor is a better age-calibrated stratigraphy for the late Quaternary, already begun by the USGS on the Las Cienegas structural shelf and in the Los Angeles Basin west of the Newport-Inglewood fault (Ponti et al., 2001). East of the Newport-Inglewood fault, late Quaternary marine deposits have been dated in the San Joaquin Hills (Grant et al., 1999) and are currently being correlated with marine faunas (Powell et al., submitted). In addition, with the availability of higher-quality imaging and digital elevation models, including TOPSAR, there is a need to quantify tectonic geomorphology to the point that it can contribute to an estimate of slip rates.

Paleoseismology of blind thrusts

Study of multichannel seismic profiles and petroleum-industry well data has resulted in the delineation of blind thrusts in the Los Angeles Basin, including the source fault for the 1987 Whittier Narrows earthquake (Dolan et al., 1995; Shaw and Suppe, 1996, Schneider et al., 1996; Shaw and Shearer, 1999; Tsutsumi et al., 2001), but little progress has been made in determining slip rates and recurrence intervals on these faults. High-resolution seismic profiles (Williams et al., 2000; Christofferson et al., 2000), trenching, and analysis of water-well logs (Mueller, 1997; K.J. Mueller and T.K. Rockwell, in prep.) and high-resolution late Quaternary stratigraphy (Ponti et al., 1996; D.J. Ponti, in prep.) are necessary to obtain a paleoseismic history of blind thrusts comparable to that obtained by trenching of surface faults.

Dates of most recent large earthquakes

Research by SCEC geologists has demonstrated that many active faults are potentially very hazardous to the Los Angeles metropolitan region because of their proximity to densely-populated areas. The slip rates of many metropolitan faults are difficult to measure because the faults are blind, the slip rates are low, or the data have been destroyed by urbanization. Therefore, it may be difficult to reconcile geologically-derived slip rates with geodetically-measured deformation. However, it would be useful to learn where Los Angeles is in the seismic cycle of potentially-hazardous urban faults. Two historical earthquakes have been correlated to local faults: the 1769 earthquake reported by the Portolá expedition (Grant et al., in revision) and the May 10, 1910 Temescal Valley earthquake on the Elsinore fault (Rockwell, 1989). More

paleoseismic data are needed for time-dependent hazard calculations, analysis of deformation rates, and studies of triggered earthquakes and strain partitioning.

The Los Angeles metropolitan area needs a focused study comparable to BAPEX in the San Francisco Bay area. This would include study of the late Quaternary history of the San Jose, Walnut Creek-Indian Hill, Chino, Peralta Hills, and Newport-Inglewood faults, and the Palos Verdes fault northwest of Los Angeles Harbor.

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The
NORTHRIDGE EARTHQUAKE, USA
and its
ECONOMIC AND SOCIAL IMPACTS

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1. INTRODUCTION AND GENERAL DESCRIPTION

1.1 General Description

The Northridge earthquake that struck at 4.31 a.m. on Monday, January 17, 1994 affected an area of 2,192 square miles in the San Fernando Valley, a densely populated residential area of northern Los Angeles, California.[1] Three counties, Los Angeles, Ventura and Orange were affected by the earthquake. The area has been repeatedly struck by moderate to large earthquakes, and Los Angeles County is one of the best-prepared regions of the United States. Yet in terms of financial losses, Northridge is one of the worst disasters in US history.

The earthquake was of moderate size, measuring 6.7 moment magnitude, on an unknown 'blind thrust' fault 20 miles northwest of Los Angeles. The depth of the earthquake was 11 miles (18 km), and near-record ground shaking was recorded. Peak horizontal ground accelerations approached or exceeded 1g in the region of the epicentre, and 11 of 100 monitoring instruments measured in excess of 0.25g. The peak vertical acceleration measured 0.48g. There were 14,000 reported aftershocks, many in the magnitude of 4.0-5.0 range. The duration of the earthquake was 15 seconds.

Human Impacts:
57 people were killed, and 72 deaths have been attributed to the earthquake.[2] 11,800 people received hospital treatment for injuries. 22,000 people were left homeless. The earthquake occurred in the early morning on a national holiday.[3] Had it occurred at another time of day or date, building occupancies would have led to more extreme human losses. A number of bridges and multi-storey car parks collapsed, yet only one person died as a result.

Economic Impacts:
Preliminary total damage estimate were USD 15-17 billion,[4] but these total direct loss estimates have been revised upwards over time.[5] The Average Reported Estimated Direct Loss (AREDL) has been calculated to be USD 41.8 billion, using the estimates set out in section 2.1. The scale of the losses was unprecedented and indirect losses were high, exceeding all previous predictions. The earthquake alerted federal and state governments, as well as private insurers to the magnitude of potential losses from earthquakes in urban areas.

1.2 Detailed Description of Earthquake

The Northridge earthquake occurred on an unknown 'blind thrust', meaning that the rupture never spread to the earth's surface, but stopped some way below it. Several hidden fault zones have subsequently been identified which have changed the perception of earthquake risk in the greater Los Angeles area.[6] The earthquake occurred in the densely populated San Fernando Valley, which has been repeatedly struck by moderate to large earthquakes. This is a predominantly residential area in one of the most well prepared regions of the United States.

[1] See http://www fema.gov/NR/nr_0106 htm
[2] ibid
[3] EQE (1994)
[4] ibid
[5] Scawthorn et al (1997), Eguchi et al (1998), Bolin and Stanford (1998), FEMA (2000)
[6] Smolka (1995)

The size of the earthquake was moderate, yet some affected areas had ground motions more than twice those allowed for in the building code. Most of the structures in the affected area had been built within the last three decades and the relevant building standards had been considered to be reasonably earthquake resistant. As a result, the percentage of buildings destroyed by the ground motions was small, and the greatest damage occurred within about 16 km of the epicentre. Approximately 114,000 residential and commercial structures were damaged, including some 450 public buildings, sections of six freeways and 27 bridges, as well as power, water and sewer utilities.[7] Liquefaction and landslides were not a major cause of structural damage.

Lifelines:
Lifelines[8] were badly affected by the earthquake, particularly power, water and sewer utilities. Utility lifelines were restored within days, in most cases. The longest restoration period was 12 days for the gas supply.[9] Damage to transportation lifelines was more severe. Traffic disruptions were a major problem after the earthquake, as the area is almost entirely dependent on automobiles. Portions of 11 major arteries into Los Angeles had to close and 9 bridges on major interchanges collapsed.[10] Months afterwards there were still major traffic disruptions and sections of the Interstate (I) 5 and the Santa Monica Freeway were closed. These highways returned to normal service at varying rates, and transport-related effects included freight problems with raw materials and manufactured goods, as well as employee and consumer commuting problems.[11]

1.3 Emergency Response

The California Governor's Office of Emergency Services (OES) co-ordinates overall state agency response. 104 emergency service stations were operational and traffic congestion was minor, in part due to the timing of the earthquake. Emergency operations appear to have been well co-ordinated. Immediately after the earthquake, local building and safety departments organised teams of inspectors to identify the extent of the damage. Buildings were inspected and tagged according to their structural safety. These coloured tags did not include damage to contents and damage that was not easily visible, and the full extent of earthquake damage was often unknown until wall surfaces had been exposed and the structure examined. 105,000 inspections were carried out in the building safety process.[12]

There were 110 fires. The Los Angeles County Fire Department lost its computer aided dispatch capability for a critical 7 hours, and subsequent fire fighting was hampered by the lack of water.[13] Fortunately, there was little wind and the Northridge earthquake was 'linear', unlike Kobe, so the increased demand for manpower and material resources during and after the earthquake did not exceed the available supply.[14]

Prior to the earthquake, the OES had commissioned an Early Post Earthquake Damage Assessment Tool (EPEDAT)[15] to serve both the emergency response and planning needs of the agency. Immediately after the earthquake, an estimated shaking-intensity map for the Los Angeles area with likely damage levels was compiled, reducing uncertainty and enabling emergency managers to locate and focus on the hardest hit areas. This Geographical Information Systems (GIS) system

[7] EQE (1994)
[8] A common definition for utility and transportation systems. See Eguchi (1997)
[9] Eguchi (1997)
[10] ibid
[11] Gordon et al (1996)
[12] Eguchi et al (1998). Refer to section 4.2 for a discussion on the social impacts
[13] EQE (1994)
[14] Eguchi (1997), p 117.
[15] Goltz (1996).

improved the amount and timing of information available for the emergency response. The initial damage assessment was prepared for the California Office of Emergency Services (OES) immediately after the earthquake using GIS for the first time. This data were collated, analysed and distributed through a field office set up by the Federal Emergency Management Agency (FEMA) to co-ordinate activities. The United States Geological Survey (USGS) was entrusted with the communication of information. FEMA also introduced a teleregistration scheme to speed the federal disaster response.[16]

2. ESTIMATED LOSSES

2.1 Direct losses

The preliminary total damage estimate ranged between USD 15-17 billion,[17] and was prepared for the California Office of Emergency Services (OES) the day after the earthquake. This was required for the disaster aid application to the President and Congress, and Governor Wilson, the Governor of California warned that the disaster could cost as much as USD 30 billion. A refined loss estimate of USD 13-22 billion was prepared for the OES by 25th January, eight days after the event.[18] Later estimates of total direct losses totalled USD 25 billion,[19] then upwards to figures of USD 39.6 billion[20] and USD 44 billion.[21] The Average Reported Estimated Direct Loss (AREDL) has been calculated to be USD 41.8 billion,[22] using the estimates set out in the table below.

TABLE 1:

ESTIMATES OF LOSSES in billion USD				
Source	**Time after disaster**	**Direct or total**	**Primary or Secondary**	**Amount of Estimate (USD)**
OES (EQE, 1994)	1 day	direct	secondary	USD 15-17 billion
OES (in Goltz, 1996)	8 days	direct	secondary	USD 13-22 billion
RMS. (1999)	15 months	total	secondary	USD 25-30 billion
Smolka (1995)	18 months	total	secondary	USD 40 billion
Scawthorne et al (1997)*	***20 months***	***direct***	***Primary***	***USD 39.6 billion***
Collins (1998)		total	secondary	USD 30-40 billion
OES* (in Eguchi et al, 1998)*	***3+ years***	***direct***	***Primary***	***USD 44 billion***
Bolin and Stanford (1998)*	4 years	direct	secondary	USD 44 billion
AREDL				***USD 41.8 billion***

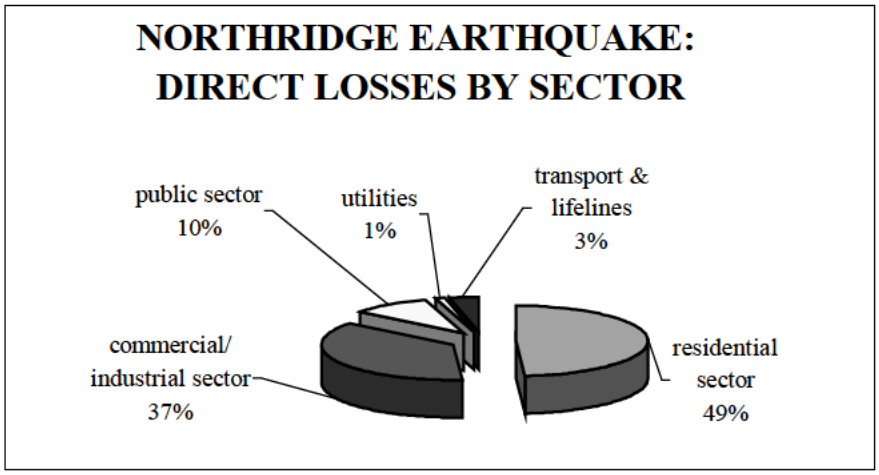
(Estimates used for calculation of AREDL)

The increase in the losses over time was due to the initial damage estimates being prepared by building inspectors checking for safety, rather than losses. 105,000 initial safety checks were made. 333,000 insurance claim inspections were made later by loss adjusters, with increased estimates.[23] Many buildings did not pose an immediate safety concern, but required repair. Structural damage was found in many modern structures, hidden by finishes and fireproofing. Damage to contents,

[16] See http://www.fema.gov/rt/10442-e2 html
[17] EQE (1994). See http://www.eqe.com/publications northridge/execside htm
[18] Goltz (1996)
[19] RMS (1999)
[20] Scawthorn et al (1997)
[21] Eguchi et al (1998), Bolin and Stanford (1998)
[22] There is always a wide range of reported loss estimates. The Average Reported Estimated Direct Loss (AREDL) meets the following criteria: only estimates of direct losses, only estimates made at least four months after the disaster, only primary estimates or those based on original data.
[23] Refer to Eguchi et al (1998) for a detailed discussion

water damage due to broken pipework, the exposure of asbestos-related materials, as well as retroactive building code requirements for replacement work all increased the direct economic losses even further.

FIGURE 1: Direct losses by sector



Most damage was incurred in the residential and commercial sectors, as shown in figure 1 and table 2. Although the Northridge earthquake occurred in a residential area, commercial and industrial losses were proportionately very high. Damage to agriculture was comparatively minimal. Public sector losses were relatively small, but Los Angeles is a car-bound society dependent on motor vehicles for urban transportation, and damage to infrastructure affected indirect losses. These indirect losses have been estimated to be over USD 7.5 billion,[24] of which more than 80% were from business interruptions. Most of these losses were uninsured and have had major social and economic impact on the affected area. Tax revenue losses are estimated to be USD 0.86 billion. Almost 1% of the USD 4.1 billion Small Business Administration loans has currently defaulted. The San Fernando Valley had been subjected to a recession for three years prior to the earthquake, and this exacerbated the effects of the earthquake.[25]

TABLE 2: ESTIMATED DIRECT ECONOMIC LOSSES IN USD BILLIONS

Sector	Estimated direct losses in USD billions	Percentage share of direct losses	Amount insured, in USD billions	Amount uninsured, in USD billions
Residential	20.6	49.3%	9.88	10.72
Commercial/Industrial	15.2	36.4%	4.02	11.18
Public infrastructure	6.0	14.3%	No mention	6.0
Agricultural	No mention	na	0.004	na
DIRECT LOSSES	**41.8**	**100%**	**13.9**	**27.9**

[24] Refer to table 3
[25] Alesch & Holly (1996), Bolin & Stanford (1999)

Public Sector Losses

Losses resulting from damage to infrastructure (power, gas, water) and direct damage to production centres were initially estimated at USD 6 billion, equivalent to 15 -30% of actual property losses. Lifeline damage was estimated at USD 2 billion.[26] Some 450 public buildings, sections of six freeways and 27 bridges, as well as power, water and sewer utilities were damaged.[27]

Transportation: Traffic disruptions were a major problem after the earthquake, as the area is almost entirely dependent on automobiles for urban transportation. Portions of 11 major arteries into Los Angeles had to close and 9 bridges on major interchanges collapsed. All of these structures had already been scheduled for retrofitting after the 1989 Loma Prieta earthquake, when 860 structures were identified in need of retrofit. None of the 122 structures, which had already been strengthened, failed in the Northridge earthquake.[28] A report prepared for the California Department of Transportation concluded that had the bridges been retrofitted, they would have survived the earthquake with little damage.[29] There was no significant damage to any of the airports in the vicinity.

Lifelines: Various lifelines were affected by the earthquake, and losses varied considerably as set out: LADWP (Power) - USD 136m, SoCal Edison - USD 0.5m, LADWP (Water) - USD 44m, MWD - USD 5m, LA City (Sewer) USD 36m, SoCal Gas - USD 60m, PacBell - USD 26m, GTE USD 3.5m, Caltrans - USD 1450m. Almost 95% of the damage to lifelines were eligible for federal assistance. Under the terms of the Stafford Act, FEMA was liable for 90% of these costs, while the utilities had to cover the 10% shortfall, USD 0.3 billion.[30]

Schools: Almost half of Los Angeles schools were damaged and costs exceeded USD 100 million.[31]

Hospitals: 31 Los Angeles area hospitals were damaged, and 9 were forced to evacuate.

Corporate/Business Losses

Corporate damage has been estimated at approximately USD 15.2 billion.[32] The area's largest shopping centre, the Northridge Fashion Centre, was virtually destroyed and did not open for more than a year and a half. Several multi-storey reinforced concrete parking structures collapsed, and many were severely damaged, causing indirect retail losses.[33] 57% of Los Angeles businesses in the affected area reported experiencing some type of direct physical damage due to the earthquake, of which the most common type was non-structural (68% of those with reported damage) damage to furnishings (56%) damage to equipment (52%) damage to inventory or stock (50%) structural damage to building (39%) and buildings declared unsafe (15%).[34]

In some buildings the structural damage exposed asbestos (insulation and fireproofing), which delayed reconstruction due to the specialist removal requirements. In addition, the structural damage caused large-scale failure of sprinkler and utility pipes in inadequately braced ceilings and equipment. These failures of air conditioning units, ducting and sprinkler systems caused serious interior damage to many business premises, flooding the contents below. This in turn affected the ability of some stores to reopen, exacerbating the indirect business interruption losses. [35]

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[26] Eguchi (1997)
[27] EQE (1994)
[28] EQE (1994) Scawthorn et al (1997)
[29] Eguchi (1997), p 121.
[30] Eguchi (1997), Eguchi et al (1998)
[31] EQE (1994)
[32] Updated from Scawthorn et al (1997). The original figure was based on total losses of USD 39.6 billion, and has been amended by the same percentage.
[33] EQE (1994)
[34] Tierney (1997)
[35] EQE (1994), Smolka (1995)

Residential Losses

Total damage from residential exposure has been estimated as USD 20.6 billion, 49% of the total losses.[36] Building inspectors with the task of estimating initial damage estimated that 82% of all structures rendered uninhabitable by the earthquake were residential.[37] This percentage totalled 14,600 dwelling units, of which 77% were apartments and 23% were single family dwellings. Soil conditions played a major role in damages.[38] Many structures failed due to inadequate bracing or lack of connection to foundations. Mobile homes were found to be more vulnerable to fires, and 100-150 mobile homes were destroyed by conflagrations from gas and propane lines.[39]

Agriculture Losses

There is no data readily available, although some insured losses have been reported.

2.2 Indirect Losses

A number of studies assessing the indirect losses have been undertaken, usually with a focus on the restoration of lifelines. Indirect impacts associated with the failure of lifeline systems may far outweigh the direct costs of repairing the system.[40] Several studies have surveyed businesses in the impacted area,[41] and one such study modelled the economic impacts using their Southern California Planning Model, estimating business interruption losses to total USD 6.5 billion in terms of lost output.[42]

TABLE 3:

ESTIMATED INDIRECT LOSSES in billion USD		
Commercial	Business interruption	**6.402**
Unemployment	69,014 person-years of employment	
Residential	Vacated housing	**0.098**
Other federal agencies	Default on SBA loans	**0.376**
Federal and state losses	Tax revenue losses	**0.86**
TOTAL		**7.736**

Source: Gordon et al (1996), FEMA (1999), SBA (1999)

[36] Updated from Scawthorn et al (1997). The original figure of USD 19.5 was based on total losses of USD 39.6 billion, and has been amended by the same percentage.
[37] EQE (1994)
[38] ISO (1994)
[39] EQE (1994) This vulnerability is due to the likelihood of detachment of the structure from its foundation and the effect of this failure on utility lines such as gas and propane.
[40] Eguchi (1997)
[41] Alesch & Holly (1996), Tierney (1997)
[42] Gordon et al (1996)

Public Sector Losses

Lifelines have been shown to be extremely vulnerable to earthquakes, and their failure can result in substantial direct and indirect losses.[43] Transportation lifelines proved to be problematical, and months after the earthquake there were still major traffic disruptions and sections of the Interstate (I) 5 and the Santa Monica Freeway were closed. These highways returned to normal service at varying rates, and transport-related effects included freight problems with raw materials and manufactured goods, as well as employee and consumer commuting problems.[44]

Corporate/Business Losses

Aggregate business losses have been estimated at USD 6.4 billion, of which 48% were direct business interruptions.[45] Losses of $1 billion were suffered outside the region. Studies indicate that 15-30% of businesses damaged closed down permanently.[46] Some business losses were alleviated by the quick restoration of utilities, but damage to transportation routes, car-parking garages and retail areas affected losses. Residents who remained in Northridge changed their shopping habits. Businesses were also hampered by the slow response of public agencies, and their inability to obtain Small Business Administration loans.

Only about 20% of businesses carried earthquake insurance for damage or business interruption and only slightly more than 25% of those filed claims.[47] The highest job losses were in the retail (24%) and health service (18%) sectors. Half of the Northridge job losses, equivalent to 69,014 person-years of employment, occurred in the fault zone. Tax revenue losses associated with business interruption amounted to a total of USD 0.86 billion, of which USD 530 million was at federal level, USD 163 million at State level, and USD 164.4 million at local level.[48]

Indirect losses have major economic and social impacts on society. Many individuals change their spending patterns and draw on savings, current earnings and credit for essential rebuilding after a major disaster. Discretionary income is drastically reduced, which in turn affects many small businesses. Damage was not found to be a reliable predictor of business failure, while entrepreneurial skills were a critical factor in the ability of a business to survive. Some small businesses were failing as a result of the Northridge earthquake two years after the event.[49]

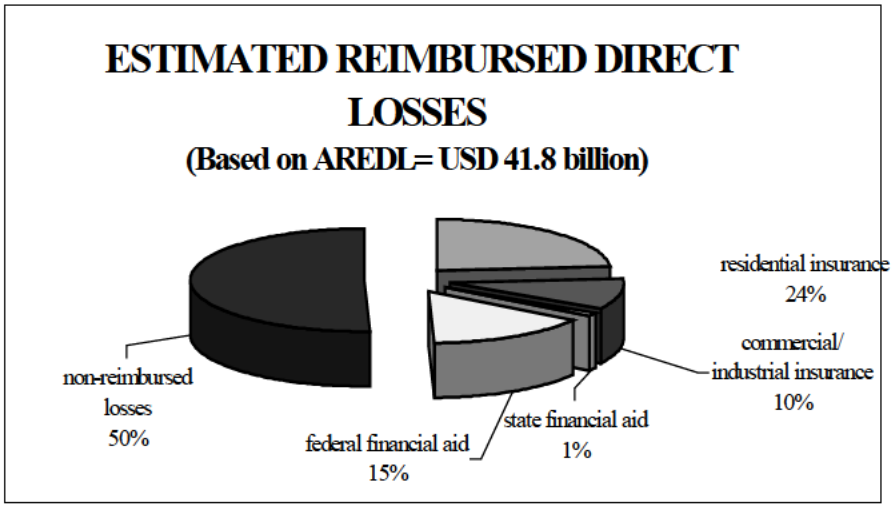
Residential

There were 9 billion unit-days of vacated housing. 25% of damaged multi-dwellings and 80% of damaged single dwellings were vacated for more than 3 months. This amounted to USD 98 million, approximately 1.5% of the total cost of business interruption.[50]

[43] Eguchi (1997)
[44] Gordon et al (1996))
[45] Gordon et al (1996)
[46] ibid.
[47] Tierney (1997)
[48] Gordon et al (1996)
[49] Alesch & Holly (1996)
[50] Gordon et al (1996)

3. REIMBURSED LOSSES

FIGURE 2:



Source: FEMA (2000) HUD (2000), Eguchi et al (1998) Scawthorne (1997), IBHS (1999)

TABLE 4:

REIMBURSED LOSSES in USD billions					
		Insured	**Uninsured**	**TOTAL**	***Direct reimbursed losses***
FEMA	Public Assistance program		4.578	**6.197**	*4.0**
	Individual Assistance program		1.424		*1.193*
	Administrative costs		0.195		
Other federal agencies	HUD		0.837	**1.962**	*0.837*
	Dept of Interior		0.005		*0.005*
	Department of Education		0.256		*0.256*
	Federal costs unaccounted for (this includes mission assignments to other agencies)		0.864		
California State*	Public Assistance program		0.45	**0.606**	*0.45*
	Individual Assistance program		0.06		*0.06*
	State Employment Dept		0.041		
	State Board of Control		0.055		
Voluntary aid	Red Cross, Salvation Army		0.037	**0.037**	
Insurance payments	Residential insurance	9.88		**13.9**	*9.88*
	Commercial insurance	4.02			*4.02*
TOTAL REIMBURSED LOSSES		**13.9**	**8.8**	**22.7**	***20.7***

Source: FEMA (2000) HUD (2000), Eguchi et al (1998) Scawthorne (1997), IBHS (1999)

* *Estimated portion of direct loss reimbursements for public assistance programme.*
Estimates of total losses include structural damage, individual and family grants, as well as *rental assistance, relocation costs, debris removal, mission assignments, medical and funeral costs.* (*Items italicised have not been included in the direct loss estimate.*)

3.1 Government

Federal aid

A Major Disaster Declaration must be requested by the governor, and declared by the president. It includes an agreement to commit state funds and resources to the long-term recovery.[51] On February 12th 1994, President Clinton signed the bill for the President's Disaster Relief Fund that authorised USD 8.6 billion in aid for the earthquake victims.[52] The Federal Emergency Management Agency (FEMA) co-ordinates federal assistance when disasters and emergencies are declared and so administers this fund. The proportions for Northridge were 90% federal and 10% state.

Total federal expenditure amounted to USD 13 billion,[53] of which USD 8.16 billion were reimbursed federal losses by the Federal Emergency Management Agency (FEMA) and other federal agencies. Federal assistance was generous, perhaps due to the political importance of California. The earthquake occurred in a congressional election year.[54] Although FEMA plays a key role in disaster assistance, other agencies such as the Small Business Administration (SBA) U.S. Department of Agriculture (USDA), Department of Housing and Urban Development (HUD), U.S. Department of Transportation (DOT) U.S. Department of Interior (DOI) are also involved.

TABLE 5:

FEMA FUNDING in USD billions		
Individual Assistance:		
Temporary housing, emergency home repairs, mortgage assistance	**1.193**	**1.424**
Personal property replacement, permanent repairs, transportation, medical and funeral expenses	***0.167***	
Disaster unemployment assistance	***0.009***	
Housing inspection services	***0.023***	
Crisis counselling	***0.032***	
Public Assistance		
Payments to state and local governments for repair and replacement of damaged infrastructure, emergency services and debris removal		**4.578***
Mission assignments to other federal agencies		***0.020***
Administrative costs		***0.194***
Hazard mitigation measures		***0.741***
Total FEMA relief costs		**6.957**

Source: FEMA (2000)

Note that items italicised have not been included in the direct loss estimate.

**Estimated portion of direct loss reimbursements for public assistance programme = USD 4 billion. This excludes indirect loss reimbursements, such as debris removal and emergency services.*

Table 5 sets out the current details of reimbursements from FEMA, dated January 31, 2000, totalling USD 6.957 billion. Other federal expenditure amounted to USD 6.043 billion, of which some costs relate to the Small Business Administration loans and hazard mitigation projects. Direct reimbursements from FEMA have been estimated at USD 5.193 billion and those from other

[51] See http://www.fema.gov/about/4-sect1 htm
[52] ISO (1994)
[53] FEMA (2000)
[54] Bolin & Stanford (1998)

agencies USD 1.098 billion, totalling 6.291 billion for direct federal reimbursements.[55] By the close of 1994, FEMA reported that some 667,801 Southern Californians had applied for federal aid, three times as many as following Hurricane Andrew in 1992.[56]

Other federal agencies disaster aid

Although FEMA plays a key role in disaster assistance, other agencies such as the Small Business Administration (SBA) U.S. Department of Agriculture (USDA), Department of Housing and Urban Development (HUD), U.S. Department of Transportation (DOT) U.S. Department of Interior (DOI) are among those that also play a role. The details available of aid from these agencies are set out below.

Department of Housing and Urban Development (HUD)	USD 0.837 billion[57]
Department of Interior - historic preservation work	USD 0.005 billion[58]
Department of Education	USD 255.6 million[59]
Federal costs unaccounted for	USD 0.864 billion[60].
TOTAL	**USD 1.098 billion**

Federal Disaster Loans

The federal government provides assistance to victims in the private sector through the Small Business Administration (SBA), who make low-interest long-term loans (generally 4%, up to 30 years). SBA loans are available to restore structures to their pre-disaster condition, and may be increased up to 20% to include mitigation measures. Loans to a limit of USD 200,000 are available to residential homeowners, renters and non-farm businesses. Similar loans, to a maximum of USD 1.5 million, are available to businesses and private, non-profit organisations. In some cases, the SBA will refinance existing mortgages on homes and business properties.

39,129 commercial and 193,867 residential SBA applications were made (as of 24.3.1995), an unprecedented number.[61] Of a sample population, 11% had applied for SBA loan assistance for their business losses. Of this number, half had received loan amounts requested, 30% had their applications turned down and 10% of the loans were still pending. For the businesses that had received SBA loan assistance, the median percentage of business losses covered was about 50%.[62] 124,245 SBA loans, amounting to USD 4.1 billion[63] were approved. The SBA announced that 9,144 loans totalling USD 286 million were in default, and have estimated that a further USD 90 million of Northridge borrowers are likely to default on their loans.[64]

[55] Refer to table 5 for details. Direct reimbursements exclude rental assistance, relocation costs, debris removal, medical and funeral costs, mission assignments and administration costs.
[56] See http://www.fema.gov/NW294/94_015 htm
[57] HUD (2000)
[58] See http://www.fema.gov/NW295/95_129.txt
[59] See : http://nces.ed.gov/pubs/d96/D96T356 html, item 96.
[60] This figure is the unknown element of the federal disaster relief programme, and includes the FEMA USD 0.20 billion assigned to other federal agencies.
[61] Gordon et al (1996)
[62] Tierney (1997)
[63] See http://www.fema.gov/library/df_4htm
[64] See http://www.sba.gov/IG/sar3-99.pdf

3.2 State Sector

The Governor's Office of Emergency Services (OES) co-ordinates overall state agency response to major disasters. Under the Stafford Act, the state was liable for 10% of the costs of the federal assistance programme and contributed USD 0.6 billion in reimbursements. California voters rejected a proposed USD 2-billion bond issue earmarked for earthquake relief, and so only some of the repair and rebuilding needs could be met. A plea was made to President Clinton, who agreed to redistribute USD 225 million from infrastructure budgets to enable the affected cities to make 30-year no-interest deferred loans to owners of damaged buildings.[65]

State Board of control	USD 0.055 billion
California Employment Development Department	USD 0.041 billion
Individual/Family Grant programmes	USD 0.06 billion
Public Assistance	USD 0.45 billion
Total California State share	**USD 0.6 billion[66]**

3.3 Private Insurance Sector

There are two estimates of insured losses. The Property Claim Services (PCS) estimated the final losses to be USD 12.5 billion, after adjusting them upwards eight times from an initial USD 2.5 billion to a final figure of USD 12.5 billion, 20 months later. The Institute of Building and Home Safety (IBHS) reached a final estimate of USD 15.3 billion. The National Research Council (NRC) recommends the use of both the PCS and IBHS figures, the advantage of the IBHS figures being that they provide disaggregated catastrophe claims information.[67] The average has been calculated to be USD 13.9 billion, as set out in table 6 below.

TABLE 6:

ESTIMATES OF INSURED LOSSES			
	PCS estimate[68]	**IBHS estimate[69]**	**Average**
Residential	USD 8.4 billion	USD 11.35 billion	**USD 9.88 billion**
Commercial	USD 4.1 billion	USD 3.95 billion	**USD 4.02 billion**
TOTAL	USD 12.5 billion	USD 15.3 billion	**USD 13.9 billion**

Source: IBHS (1999), Kerney (2000), Scawthorne et al (1997), Eguchi et al (1998)

Both the PCS and the IBHS adjusted their estimates of insured losses upward over time. Several factors have contributed to the large increases. The seismological data on which initial estimates were based was incorrect, and estimates were prepared assuming a smaller earthquake with an epicentre further from central Los Angeles.[70] Adjustment (such as replacement of new for old) and retroactive building codes contributed to the underestimation of these losses.[71] Reopened claims with additional discovered damage, higher living expenses resulting from longer repair periods, and a large number of claims initially thought to be below the level of the deductible all increased estimates. Underinsurance was a major issue that was not reflected in most of the settlements, due

[65] See http://www.huduser.org/publications/destech/bigone/sect1 html
[66] Eguchi et al (1998)
[67] NRC (1999)
[68] Kerney (2000), Scawthorne et al (1997), Eguchi et al (1998)
[69] IBHS (1999)
[70] Scawthorne (1995)
[71] Eguchi et al (1998), Scawthorne (1995)

to its political sensitivity.[72] It has also been suggested that insurers were generous in their claims settlement to influence moves to repeal the mandatory offer requirement.[73]

Legal issues regarding Northridge claims have centred on the interpretation of the statute of limitations in residential property claims, delayed discovery of loss, waiver and estoppel, and the obligations of the insurer. The California Department of Insurance (CDI) instigated a mediation program to resolve disputes over earthquake claims without costly litigation. This program has investigated more than 3,300 complaints about insurance-related claims and recovered over USD 71 million from insurers.[74] Allstate opened 9,000 of its 46,000 homeowner's claims for reevaluation, as part of a settlement of two civil suits that charged Allstate with deliberately underreporting estimates by loss adjusters during inspections. Allstate put aside USD 60 million to deal with these claims, and have earmarked USD 5 million to set up a charitable foundation.[75]

3.4 Aid from other sources

Volunteer assistance was received from volunteer organisations including the American Red Cross (ARC) and Salvation Army. The ARC sheltered 22,000 people, served 1.7 million meals and operated various other programmes. The ARC spent USD 36 million on their programme. The Salvation Army spent more than $1 million for displaced persons' housing and mass feeding.[76]

4. ECONOMIC AND SOCIAL IMPACTS

4.1 Economic Impacts

Almost 67% of all estimated direct losses were uninsured. Federal financial aid met over 15% of these losses, while 1% were covered by state financial aid.[77] Over 56% of the federal aid programme went to meet the public losses through the Public Assistance programme, while approximately 28% of private losses were met by the FEMA and other federal aid programmes. Despite generous federal, state and insurance reimbursements half of the direct losses were borne by the disaster victims.[78] "*Many homeowners, renters and businesses paid thousands of dollars out of their own pockets to rebuild their own lives*",[79] said James Witt, director of FEMA.

Northridge earthquake demonstrated the success of a modern building code in reducing deaths and injuries to a very small fraction of the affected population. Most of the buildings were built within the last three decades, and were considered to be reasonably earthquake resistant.[80] However, there was considerable economic loss and social disruption, raising the issue of how much protection should be provided economically. This debate should not be the sole responsibility of the engineers and code developers; society must participate in the process of weighing the costs and benefits of more protection.

[72] Collins (1998)
[73] Eguchi et al (1998)
[74] See http://www.insurance.ca.gov/PRS/PRS1997/Pr032-97.htm
[75] See http://www.claimsmag.com/Issues/November/feature_allstate.asp
[76] See http://www.fema.gov/NR/nr_0106.htm
[77] Refer to figure 2, and table 4 for details
[78] Based on AREDL=USD 41.8 billion. Refer to section 2.1 for details
[79] See http://www.fema.gov/library/wittspch5.htm
[80] EQE (1994)

The scale of losses inflicted by the Northridge earthquake has forced both federal and state governments to reassess the levels of disaster aid, particularly in the current climate of shrinking budgets and federal cutbacks. The focus of government has increasingly shifted from post-disaster relief operations to pre-disaster mitigation measures,[81] and the stated mitigation goal of FEMA is to reduce natural disaster losses by half by the year 2010. Northridge earthquake illustrated graphically the value of the seismic strengthening and risk reduction programmes, which can avoid substantial losses. None of the failed transportation structures had been strengthened, yet all 122 strengthened structures were undamaged.[82] Examples of other retrofitting successes, such as department stores, hospitals etc. have been highlighted and used by FEMA as justification for their shift of policy to mitigation.[83]

Small businesses are often hardest hit by natural disasters, as they seldom carry insurance or possess the resources to make a meaningful recovery. Small businesses are also rarely diversified in terms of products or services, and their customers are often victims of the same disaster. They have less mobility than other members of the community, and generally suffer both personal and business losses. Damage is not a reliable predictor of business failure. Small businesses were still failing as a result of the Northridge earthquake two years after the event. Entrepreneurial skills were a critical factor in the ability of a business to survive. When these businesses fail, there are costs to the individual and to the community. A significant effect can be the downward spiral of a neighbourhood. In contrast, large businesses are able to relocate their operations temporarily, and offset losses against other locations. [84]

Business interruption effects have been estimated to be USD 6.5 billion, of which USD 5.5 billion were in the Northridge region. [85] Most businesses had earthquake insurance for their homes, but only 13% of small businesses were insured. This led to large uninsured losses, and many business failures. The rate of business failure varied among sectors. Manufacturing was the least affected, due to customers outside the region, while retail and service firms were most badly affected.[86] Tax revenue losses associated with business interruption amounted to a total of USD 0.86 billion, of which USD 530 million was at federal level, USD 163 million at State level, and USD 164.4 million at local level.[87]

Northridge earthquake was a direct hit on an urban area and the scale of losses caused by the earthquake far exceeded expectations. The threat of the 'Big One' has occupied much forethought and research at local and national level.[88] The US has a large concentration of localised industries, such as the entertainment and aerospace industries in southern California, the electronics industry in San Francisco, the aerospace industry in the Pacific Northwest and the financial sector in New York. These industries could be seriously affected in the case of a major earthquake.[89]

4.2 Social Impacts

Disasters are often accompanied by a desire for a recovery to reproduce a return to normalcy, and achieve the status quo of the socio-economic and built environment prior to the earthquake. This is

[81] See http://www.fema.gov/library/wittspch5.htm
[82] EQE (1994), Eguchi (1997)
[83] See http://www.fema.gov/library/wittspch5.htm and http://www.fema.gov/impact/impact00.htm
[84] Alesch & Holly (1996)
[85] Gordon et al (1996)
[86] Alesch & Holly (1996)
[87] Gordon et al (1996)
[88] See http://www.huduser.org/publications/destech/bigone/sect1 html
[89] Scawthorne et al (1997). The risks are greater in areas where earthquake preparedness is less established, rather than California.

almost impossible to achieve. There are many federal, state and local participants each with their own political, economic, social or environmental agenda, and at best recovery takes the form of restructuring, rather than the desired reversion to the previous status quo.

There are certain groups less likely to achieve any semblance of their prior socio-economic level, and these groups are often the most vulnerable members of society - the low income, immigrant, unemployed and elderly groups. They also have the least access to resources to manage their losses.[90] Social, economic and political processes structure the lives of different groups of people in different ways and affect their ability to react to a natural hazard. Their level of vulnerability only becomes apparent in the face of disaster.[91]

The earthquake affected a large area of the San Fernando Valley, which supports half of the city of Los Angeles' population. Approximately 48% of the population were homeowners - middle class and therefore not obviously insecure- yet many proved to be vulnerable to the hazard. This vulnerability had been increased by the declining market value of housing in the area (which followed a boom of the 80s), job redundancies due to corporate restructuring, defence spending cuts, increasing liabilities due to underemployment, as well as the high insurance deductibles, which are based on the value of the property rather than the level of damage.[92]

Northridge earthquake provided a generous system of federal social protection by international standards, yet victims received at most partial compensation for their losses and had to find means to cover their losses. Many individuals changed their spending patterns and drew on savings, current earnings and credit for essential rebuilding after the disaster. Discretionary income is drastically reduced, which in turn impacts many small businesses.[93]

Despite substantial financial aid, people and businesses moved out of damaged downtown areas and did not return. An estimated 60,000 people migrated and only 20,000 moved into the area. Many of these newcomers were Hispanic and Korean, and were younger and poorer than their predecessors. These migrants had different retail habits, which changed the social structure of the area.[94] The downtown areas of Whittier, Santa Cruz and Northridge were slow to recover.[95]

Disasters also offer an opportunity to improve safety measures. The moves initiated by Northridge earthquake were an increase in the level of geological hazard mapping, the development of new building code standards, seismic retrofitting of older structures to meet revised seismic codes, as well as improved emergency preparedness. This preparedness involved emergency training for households and residents and the creation of Disaster Assistance Response Teams, (DART). A non-profit corporation, the Emergency Network Los Angeles (ENLA) was established to act as an umbrella organisation for the NGOs (non-governmental organisations) and approximately 300 CBOs (community based organisations) that provided a second tier protection for the vulnerable members of society, whose needs were not met through conventional channels. The other aim of the ENLA is to provide a network for future disasters.[96] Both government and non-governmental organisations have benefited from a history of collaboration over a number of Californian earthquakes.

[90] Bolin & Stanford (1998)
[91] Blaikie et al (1994)
[92] Bolin & Stanford (1998)
[93] Alesch & Holly (1996)
[94] Alesch & Holly (1996)
[95] CDI (1997/8)
[96] Bolin & Stanford (1998)

Due to the localised impact of the earthquake, damage was concentrated in particular areas. 15 of such areas (later increased to 17) with red-tagged[97] damage levels averaging 60% of the housing stock, were designated 'ghost towns' by the Los Angeles Housing Department (LAHD). All but 4 of these areas were heterogeneous, middle-income neighbourhoods. The high number of abandoned structures soon made these areas a target for looters, and they were rapidly blighted by squatters and street gangs. This degeneration had serious social effects on the remaining housing, businesses and neighbourhoods. The federal Department of Housing and Urban Development (HUD) and its state counterpart, the LAHD targeted assistance towards these areas, but it was not always economically viable to reconstruct this housing stock in a weak housing market. As a consequence, there is less available low-income housing provision in Los Angeles. In many cases non-structural damage, damage to parking facilities and outbuildings was not repaired. This has led to neighbourhood decline and a negative spiral of property values.[98]

5. INSTITUTIONAL ASPECTS

5.1 Regulatory/legal framework

The Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 is the core legislation under which federal emergency relief is managed. In order to qualify as a major disaster the event must be clearly more than state or local governments can handle alone. A Major Disaster Declaration must be requested by the governor, and declared by the president. This declaration is based on the damage assessment, and an agreement to commit state funds and resources to the long-term recovery.[99] There are two main categories of disaster aid, namely:

- Individual Assistance (IA), for damage to residences, businesses and personal property losses. This aid includes Disaster Housing, Disaster Grants and other Disaster Aid Programmes, such as legal aid, unemployment assistance, crisis counselling. Applications are made through a Disaster Application Centre or by tele-registration, normally to a 60-day deadline. Low-Interest Disaster Loans are also available through the Small Business Association.
- Public Assistance (PA), is aid to the state or local government to pay part of the costs of rebuilding the community's damaged infrastructure and public facilities. This may include debris removal, emergency protective measures, loans for essential government functions and grants for public schools.

Under the Stafford Act the financial burden of emergency assistance is placed on the taxpayers, and the federal government provides funds to state, local governments and private non-profit organisations to cover at least 75% of the costs of the repair, restoration or replacement of public facilities. At the time of Northridge, the percentage (the Volkmer percentage) provided by the federal government met 90%[100] of the replacement costs. Generally, public assistance programs pay 75% of the approved project costs, but this can be increased at the discretion of the President.

[97] Tagging of buildings is set out in the California State Post-Disaster Safety Assessment Plan. Inspectors affix tags to inspected buildings. Green tags indicate that no hazards have been discovered, yellow tags allow only limited entry, and presuppose a potential danger, while red tags indicate immediate danger and non-admittance. (Eguchi et al, 1998)

[98] Comerio (1996), in Bolin & Stanford (1999)

[99] See http://www.fema.gov/about/4-sect1 htm

[100] According to the Insurance Services Office, the federal government has reduced its share of disaster assistance programmes from 100% for Hurricane Andrew, 90% for the Midwest floods, to 75% for the Northridge earthquake. ISO (1994) Other authors, such as Kunreuther (1998), Bolin & Stanford (1998) maintain that the percentage for Northridge was 90%.

5.2 Mitigation measures

Current policy, as set out in the Stafford Disaster Relief and Emergency Assistance Act of 1988, places the financial burden of emergency assistance on the taxpayer. This policy has meant that local communities have had little interest in investing in mitigation measures.[101] FEMA breakdown of costs indicate that USD 0.741 billion was spent on hazard mitigation directly as a result of Northridge.[102] As a result of the increasing losses from natural hazards, FEMA adopted a National Mitigation Strategy, aimed at reducing loss of life and property damage by increasing mitigation. There are five main elements:

- Public Awareness and Training for architects, engineers, building and local officials.
- Leadership and Co-ordination: all twenty nine affected federal agencies have issued regulations to incorporate seismic safety measures in all new buildings owned or leased by the Federal Government and to reduce the earthquake risk to existing federally owned or leased buildings.
- Hazard Identification and Risk Assessment: FEMA has commissioned the National Institute of Building Sciences to develop a nationally applicable standardised method for estimating potential earthquake losses.
- Applied Research and Technology Transfer: Reports, recommending the NEHRP provisions for new buildings and a comprehensive set of nationally applicable consensus-backed guidelines has been distributed.
- Incentives and Resources: The 1993 Volkmer Amendment to the Stafford Act following the Midwest floods incorporated a new formula for post-disaster mitigation funding. This increased the Northridge mitigation funds to nearly USD 1billion instead of the USD 200 million under the old formula.[103]

Under the terms of the Stafford Act the state must prepare a disaster mitigation plan for future events. For each major disaster declared by the President, FEMA will fund up to 75% of the eligible costs of each mitigation project, provided the additional 25% is raised by the state or local sources, in cash, in-kind services or donated materials. Small Business Administration (SBA) applicants can request up to 20% increase in their loan for appropriate hazard mitigation.[104] The Hazard Mitigation Grant Program (HMGP) can provide up to 15% of the federal share of Public and Individual Assistance programmes, minus administrative expenses.

FEMA also created a Seismic Hazard Mitigation Program for Hospitals (SHMPH), which provided grants totalling USD 1.7 billion to participating hospitals, almost 25% of the costs incurred. The program was initiated after disagreement with the California OES about the state requirements, under PIN3, that hospitals meet the 1992 California Building Code.[105] FEMA has established a community based disaster mitigation programme, 'Project Impact', which has absorbed USD 80 million of funding.[106] Other mitigation measures have been undertaken, which include:

Research into design criteria for steel moment-resisting construction	USD 8.7 million[107]
FEMA Preparedness, Training and Exercises Directorate	USD 144 million[108]
US Fire Administration	USD 29 million
Risk Assessment of natural hazards	USD 128 million

[101] See Kunreuther & Roth (1998) introduction.
[102] FEMA (2000)
[103] Moore (1997)
[104] See http://www.huduser.org/publications/destech/bigone/sect1.html
[105] See http://www.fema.gov/IG/shmp_bk.htm
[106] See http://www.fema.gov/nwz98/98017 htm and http://www fema.gov/impact/impact00 htm
[107] See http://www.fema.gov/NWZ95/95_129.txt This was done as a direct result of the poor performance of the steel construction method, which is widely used, and was believed to be seismically resistant.
[108] See http://www.fema.gov/nwz98/98017 htm

Emergency Food and Shelter Program	USD 100 million
LA Unified School District (securing of overhead lights in schools)	USD 120 million[109]

The pressures of the immediate needs of constituents ensure that mitigation measures are often short-term recovery plans rather than long-term mitigation measures. California State offered USD 250 million for financing of seismic retrofitting and another USD 50 million to match funds to help localities retrofit public buildings[110]. The California Department of Insurance (CDI) initiated two earthquake retrofit programmes in 1997, providing grants or low interest loans for low- to moderate-income households so reducing the risk of earthquake damage. The CDI also organised home inspections and mitigation measures using CDI approved seismic retrofit contractors.[111] The California Earthquake Authority launched a retrofit programme, SAFER, in October 1999.[112]

Mitigation measures could include better structural design, tougher enforcement of building codes or improved land-use planning. In view of the low frequency of catastrophic events, individual homeowners and small businesses are often unwilling to commit their funds to mitigation measures.[113] Such measures could reduce some of the potential losses from an earthquake, but there appears to be reluctance by the insurance industry to provide incentives such as premium reductions to encourage their adoption. Regulatory restrictions constrain realistic setting of rates and incentives would encourage residents in high-risk areas to purchase coverage, thus increasing insurers risks.[114] Suggestion has been made for a seal of approval for structures complying with building codes, similar to current termite and radon inspections, as a mandatory condition for use when financing a property.[115]

Building Codes:

Building Design Codes:

Los Angeles building codes specify buildings to resist a horizontal acceleration of 0.4g. The model codes only require consideration of vertical acceleration in special design cases such as the design of cantilevered elements, and in areas of high seismicity. Los Angeles City adopted an Unreinforced Masonry Retrofit code in 1981, but this was not adopted in other areas affected by the earthquake such as Fillmore, Whittier, Santa Cruz and Coalinga, due to the high costs associated with the strengthening procedures.[116]

When designed to conform to the lateral force requirements of the code the structure should:

- Resist minor earthquake motions without damage
- Resist moderate earthquake ground motions without structural damage, but may experience some non-structural damage
- Resist major earthquake ground motion having an intensity equal to the strongest forecast for the building site, without collapse, but with possible structural damage.

Current building codes focus on saving lives, and not property loss. "*The purpose of the Uniform Building Code is to provide minimum standards to safeguard life or limb, property and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location and maintenance of all buildings and structures.*" Prescriptive building codes,

[109] See http://www.fema.gov/library/wittspch5 htm
[110] See http://www.huduser.org/publications/destech/bigone/sect1.html
[111] See http://www.insurance.ca.gov/EXECUTIVE/CatSeries/Earthquake/Earthquake.3.htm and http://www.insurance.ca.gov/PRSarchive/PRS1999/Pr149-99 htm
[112] See http://www.earthquakeauthority.com/data/about/about html
[113] Petak (1998). The CEA provides an incentive of 5% premium discount for retrofitted houses.
[114] Roth (1997)
[115] Kunreuther (1996)
[116] Bolin & Stanford (1999)

based on proven performance standards, are perceived to be a way of addressing the economic consequences of earthquakes.[117]

Building codes form the primary form of protection against losses from earthquakes, but adoption of a code will not necessarily ensure that building practice meets the standards set out in the code without competent enforcement. Building codes are often not enforced in hazard-prone areas, and varying levels of enforcement lead to different standards.[118]

The state of California requires all cities to adopt the most current version of the Uniform Building Code (UBC) as the minimum code for the city/county. [119] A city/county may choose to adopt a more restrictive code; so the requirements and regulations could differ between San Francisco and Los Angeles. The City of Los Angeles introduced retroactive building codes to improve the seismic standards of buildings, and replacement work had to comply with these codes in order to obtain building permits.

The UBC code contains seismic design provisions and it existed long before the National Earthquake Hazards Reduction Program (NEHRP) provisions were developed. The NEHRP standards were drafted by the Building Seismic Safety Council (BSSC), a council under the National Institute of Building Sciences (NIBS). The NEHRP provisions have enabled the Federal Emergency Management Agency (FEMA) to provide a uniform guide for seismic risks, but states are not obliged to adopt these measures.

FEMA has issued a set of guideline provisions that all three code bodies in the US have adopted, which set out design criteria based on the seismic risk of the area. Federal policies have encouraged a uniform set of codes. The advantages are that of legal liability (the uniform code would be widely accepted as up to date practice) as well as the increased efficiency of a uniform standard for compliance and enforcement.[120]

The International Code Council[121] (ICC) is a non-profit organisation created in order to develop a single set of national codes, and the final draft of the International Building Code[122] for the United States has been completed. This code provides a comprehensive set of construction codes without regional limitations, but it will require adoption and enforcement by state, county and municipal authorities. FEMA has signed an agreement with the ICC to work together on Project Impact, a series of mitigation measures, and has committed funding to encourage adoption and enforcement of the new International Code.[123] There is a competitive effort led by the National Fire Protection Association, but it does not look likely to succeed.[124]

Land-Use Planning:

The Alquist-Priolo Act of 1972 is the principal form of land use planning for earthquakes in California, and is designed to prevent development along active fault lines. The legislation requires evaluation of the site by an engineering geologist who can make recommendations for 'safe' construction, and it also requires real estate agents or sellers to disclose risks if the property lies

[117] Moore, FEMA representative (1997); Petak (1998)
[118] Kunreuther (1996)
[119] Petak (2000)
[120] Wright (2000)
[121] The ICC was founded in 1994 as an umbrella organisation by the Building Officials and Code Administrators (BOCA), the International Conference of Building Officials (ICBO), and the Southern Building Code Congress International (SBCCI).
[122] See http://www.intlcode.org
[123] See http://www.intlcode.org/newsrel/nr100899.html
[124] See http://www.nfpa.org.

within 1/8 mile of a trace of an active earthquake fault. Studies indicate that this legislation has not been implemented.[125]

6. EARTHQUAKE INSURANCE

6.1 Earthquake insurance in the US

The insured losses of Northridge cost more than three times the total earthquake premiums California insurers collected in the 25-year period prior to the disaster. Prior to Hurricane Hugo in 1989, with insured losses of $4 billion, the insurance industry had never suffered losses in excess of $1 billion. Since then, over 10 disasters have exceeded that amount.[126]

These recent losses have made it more difficult and expensive to find insurance for natural disasters. The increased risks posed by natural disasters are also due to the increasing number of Americans living in high risk areas, increasing capital investment - sometimes in new technologies, a large number of unsafe buildings, vulnerable lifelines, as well as the increasing interdependence of people. Some insurers and reinsurers consider the earthquake premiums inadequate at present and believe that the potential losses far exceed their capacity, encouraging them to withdraw from the market completely.[127]

Earthquakes pose a significant risk in at least 39 states. Unlike California, these states are not well prepared for these events, and as a consequence are potentially likely to face higher human and physical losses than a comparable earthquake in California. Although the potential for US earthquake insurance appears great, each state has a different regulatory body and system, which makes the potential risk difficult and expensive for the insurer to determine. The eastern United States has experienced a number of damaging earthquakes, such as the 1755 Boston, 1811 New Madrid, and 1884 New York earthquakes. There are longer recurrence periods, and therefore less information and greater uncertainty about these risks. There is a credible risk of a magnitude 5-6 earthquake affecting cities such as Philadelphia, Boston or New York, yet no planning has been made for this risk.[128] Although there are some current moves to make lifelines more resilient to earthquakes, and for new construction to meet seismic building codes, the overall lack of preparedness, ageing buildings and infrastructure leave society exposed.

Earthquake insurance can be purchased as a supplement to standard coverage, but the take-up is low except in high-risk areas. California, and subsequently Washington, the Midwest and Oregon have all seen increased pricing plans, based on more detailed information of the seismic risks. Insurers are now departing from their past practice of basing earthquake premiums on historical data and using scientific research and computer simulation models to predict earthquake risks.[129] Earthquake insurance policies are usually for replacement coverage, replacing old for new, which increases the liability of the insurance company.[130]

6.2 Earthquake insurance in California

[125] Palm (1998)
[126] Kunreuther (1998)
[127] CDI (1997/8), Roth (1997)
[128] Jacob (1995)
[129] Risk Management Solutions, in New York Times (1999)
[130] Roth (1997)

Demand for both residential and commercial earthquake insurance has increased over the past 15 years, due to earthquakes, media publicity and rising property values. At the time of the Northridge earthquake, 40% of homes in Los Angeles County had earthquake insurance. This earthquake insurance tends to be purchased by higher-value homeowners, and similarly larger commercial businesses. Mortgage lenders do not normally require earthquake insurance. The reasons given for this are that most loans are on post-1940 properties (built according to some earthquake code) therefore the probability of default is unlikely if there is still positive net equity in the property. Lenders also spread their risks geographically and often pass the risks on to others, and may not discriminate on mortgage loans, because of state and federal anti-redlining legislation.[131]

In general, it is large multistate companies with multiple lines of insurance business that have the financial resources to provide insurance against natural catastrophes. The Northridge earthquake demonstrated that the losses were subsidised by other lines of business and business written in other states.[132] Over the last decade, the number of insurers writing homeowners policies in California has dropped by 23%, resulting in a higher concentration of policies, an increased market share and therefore, a disproportionately larger exposure for the three largest homeowners insurers.[133] Seismologists from the United States Geological Survey (USGS) have predicted an increase in seismic tremors and major magnitude 8 earthquakes, and the occurrence of earthquakes of a magnitude of 6.0+ is expected every 1.6 years for the next 30 years, which has increased insurers concerns about their exposure.[134]

Residential earthquake insurance.

In 1985 California State introduced the 'mandatory offer law', which required insurers selling homeowners policies on one- to four-family units to offer earthquake coverage for these structures.[135] This law requires any insurer writing residential property insurance to offer its prospective and existing clients coverage for loss due to earthquake. The offer must be in writing, subject to minimum coverages. The client has 30 days to accept the offer, but if it is not accepted, the insurer must renew the offer every 2 years.[136]

The mandatory earthquake offer requirement took away from insurers the ability to manage their total risk exposure as they were required to insure old structures in poor condition as well as newer structures, leading to adverse selection problems. After the Northridge earthquake, homeowners decided to avail themselves of this insurance policy, but the high level of losses and seismologists' predictions of further earthquakes caused most insurers to stop writing residential policies, the only legal recourse open to them due to the mandatory offer law. This caused an insurance availability crisis.

The California Earthquake Authority (CEA) was created by the Legislature in 1996 to address the crisis in insurance availability. It is a state-run company funded by the private sector offering earthquake insurance as an endorsement of homeowners' insurance policies. The funds to pay insured loss claims come from premiums, participating insurance companies and reinsurance purchased by the CEA. No public money, including the State General Fund, is pledged to cover losses. The CEA has a total claims-paying capacity of $7.2 billion.

[131] Palm (1998)
[132] Roth (1998)
[133] ISO (1996)
[134] This information stems from "Seismic Hazards in Southern California: Probable Earthquakes 1994-2024", and is discussed in CDI (1997/8), Macilwain (1994), NYT (1999).
[135] Roth (1997), CDI (1997/8)
[136] CDI (1999)

The CEA commissioned earthquake risk analyses for the entire state, dividing the state into 19 separate rate territories. Rates are dependent on earthquake risk, as well as the age and construction of the home, soil type and proximity to faults. These rates subsequently doubled to actuarially based premiums, but due to political pressure the rates in northern California were reduced despite the results of the risk modelling.[137] The rating structure of the CEA has been controversial since its inception.[138] The average cost for a basic policy is now $2.79 per $1,000 coverage, but can be as high as $8 per $1000.[139]

Deductibles were increased from 5-10% to a standard 15%, the value of contents was lowered to $5000 and additional living costs was limited to $1500. The standard coverage offered by the CEA does not cover out buildings and structures, for example detached garages, garden walls, swimming pools, patios, fences or driveways. Some participating companies have introduced a reduced 10% deductible, and higher coverage limits for personal property and additional living expenses. Depending on its date and type of construction, a retrofitted house may be eligible for a 5% premium discount.

It is important to note that the deductible is 15% of the replacement cost of the structure itself. This ensures that the CEA will not pay any claims for structure damage or contents damage unless the damage to the structure exceeds 15%. Should any residents be forced out of their home, the policy will, however, still pay the additional living expenses allowance, up to its $1500 limit, even if there is minimal structural damage. Many homeowners have chosen not to insure due to the increased premium rates, reduction in coverage offered by the CEA and the low chance that the loss will exceed the 15% deductible. These factors have caused the average level of residential earthquake coverage in California to drop by half to 17%.

Commercial earthquake insurance

There is no mandatory offer requirement for commercial earthquake insurance. Commercial rates are low and appear to be readily available. Approximately 80% of earthquake exposure are on commercial property, yet it is the owners of commercial properties, rather than the small businesses renting the space that purchase this earthquake insurance. Most commercial buildings are only partially insured for earthquake damage, and many older buildings are not covered at all. Small businesses do not buy insurance due to the high cost of cover, their short time horizon, the low number of assets at risk, and the perceived availability of loans and grants. There is generally little coverage for loss of use or business interruption losses.[140]

7. CONCLUSIONS

Northridge earthquake was relatively small in terms of seismic intensity, yet its financial impact made it one of the worst disasters in US history. The economic losses were extreme, exceeding all previous predictions. The earthquake provided a graphic illustration of the magnitude of potential losses, alerting federal and state governments, as well as private insurers, to the large risk exposure from earthquakes and the need for greater loss control to reverse the trend. Research has shown that potential direct losses from natural disasters are only likely to increase over time as more Americans live in 'high risk' areas, yet often fail to take the commensurate structural steps to safeguard their property. Indirect losses have also escalated due to the increased interdependence of people and businesses on all forms of communication and other infrastructure.

[137] Petak (2000)
[138] Consumer Watchdog (1999)
[139] III (2000)
[140] CDI, 1997/98

Although the earthquake occurred in one of the best-prepared regions of the world, the extent of the financial losses was extreme. The levels of reimbursement were high; yet non-reimbursed losses still amounted to 50% of the total losses. These losses of approximately USD 21 billion were met by the victims of the disaster and have had major social impacts on the communities affected.

The federal and state governments provided the primary source of relief and economic recovery. FEMA estimates of total federal expenditure on Northridge are more than USD 13 billion, making it the most expensive natural disaster in US history for the federal government. However, federal disaster relief programmes have been reduced over time from 100% assistance for Hurricane Hugo, 90% for Northridge to a current lower level of 75%. This level could be reduced further, particularly in the light of federal cutbacks. This is likely to mean that future disasters will not be covered by government aid to the same extent.

The future role of private insurance in the protection of financial losses from catastrophic events is uncertain, and will depend on the extent of future federal relief programmes for natural disasters. Should these federal programmes be reduced, the demand for private insurance will increase. However, the increasing scale of these losses has made it more difficult and expensive to find insurance for natural disasters. The insured losses inflicted by the Northridge earthquake were so extreme they amounted to three times the total earthquake premiums collected by California insurers in the 25-year period prior to the disaster. As more research becomes available regarding the risk of potential losses posed by earthquakes, insurers increase their premiums, increase the levels of the deductible or reduce the level of coverage. This in turn lowers the level of insurance penetration and leaves more of society vulnerable should a disaster occur.

Northridge earthquake highlighted the value of two preventive measures. First, it showed that good data collection and the use of Geographical Information Systems (GIS) could reduce delay and minimise losses. The proactive steps taken by the California Office of Emergency Services (OES) in the commission of a GIS system appeared to serve the emergency response and planning needs of the agency admirably. It enabled data to be collated, analysed and distributed which in turn improved the ability of the authorities to co-ordinate the response and to focus on the hardest hit areas.

In addition, the earthquake proved the value of seismic strengthening and mitigation measures in reducing deaths and injuries to a very small fraction of the affected population. Current building codes focus on saving lives, but this does not reduce the economic and social costs to a community. The economic costs of better seismic protection are high, and the issue of how much building codes should address the economic consequences of earthquakes has led to considerable debate. The public is not always willing to invest in costly mitigation measures that are essentially long-term, when the likelihood of residential occupation is short-term. This risk debate cannot be restricted to the engineers and code developers, and society at large must participate in assessing the costs and benefits of better seismic protection. In addition, the earthquake demonstrated the vulnerability of some of these building types. Most of the structures affected by the earthquake were constructed in the last three decades and were considered to be earthquake resistant, but not all buildings proved resistant. This has led to improved seismic building codes and highlighted the need for a modern standardised building code.

The probability of another Northridge earthquake, with a similar or greater scale of losses, appears to be high. Yet federal and state governments are keen to shift the responsibility for disaster relief, and funding is unlikely to be equally generous next time. Insurers have grown wary - as the increased premium rates and reduced coverage offered by the California Earthquake Authority indicate - and earthquake insurance is no longer as widely carried by the public as before. Who will

bear the costs of the next Northridge earthquake? Will it be the federal government? The state government? The private insurers? Or the disaster victims? The likelihood is that it will be the latter, but this will result in clear political, economic and social costs. The situation becomes more complex as the percentage of society vulnerable to natural disaster increases. There is no simple solution to this problem, and the result will probably be a trade-off between political, economic and social factors. The issue this trade-off raises is one that only society at large can make.

"With few exceptions, the country's catastrophe strategy has been to stay lucky. It has worked, in an era of infrequent catastrophes, smaller populations and exposures. But it cannot work forever and, will not work where increased populations and exposures are a fact of life." [141]

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From:	Christine Rowe
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01); Fellows, Merrilee (HQ-LD000)
Subject:	Fwd: NASA Santa Susana Field Laboratory
Date:	Wednesday, September 25, 2013 8:47:43 AM
Attachments:	SSFL-P~2.pdf

Dear Mr. Elliott,

Please include this letter in my public comment on the NASA DEIS.

Thank you.

Christine L. Rowe

Sent: 8/30/2013 4:06:04 A.M. Pacific Daylight Time
Subj: NASA Santa Susana Field Laboratory

Dear Administrator Bolden,

This week I attended two meetings on the NASA Draft Environmental Impact Statement which I find to be insufficient for the members of my community to make informed decisions related to the cleanup.

Yesterday, I participated as a NASA Section 106 consultant in a meeting at the NASA facilities at Santa Susana.

We learned in the NASA Draft Environmental Impact Statement that all of the Santa Susana Field Laboratory was declared Sacred Lands under an Executive Order.

In looking through the thousands of documents on my computer related to Santa Susana, I found a presentation given to members of DTSC's Public Participation Group - of which I was a member.
I have attached that Power Point given by DTSC employees.

Since I do not understand the NASA Chain of Command, I respectfully request that you direct the appropriate people to consider my following comments:

1. It is my understanding that the Federal Department of Justice consulted with the Federal Agencies - I assume with NASA. It is my interpretation of the DOJ's conclusion that the Administrative Orders on Consent (AOC) was not signed to comply with SB 990. As a technical stakeholder at many DTSC meetings on the 2009 Proposed Consent Order - I respectfully disagree with that interpretation. The 2010 AOCs were written, in my opinion, to comply with the 2007 Consent Order and SB 990. See page one of the Power Point.
2. If the 9th Circuit Court upholds the lower courts ruling on SB 990, then SB 990 should be null. NASA therefore should consider renegotiating the AOC for a number of reasons.
3. According to the Power Point by DTSC, CEQA review should have been started in 2011 - we are almost into 2014. (page 13 of the Power Point) We have not started a CEQA review.

4. With three Responsible Parties all cleaning the SSFL site at one time, it will be detrimental to my community and the environment to send so many trucks down one route over a very short period of time.
5. The AOC's will not bypass CEQA, the Endangered Species Act, and **Historic preservation.** - page 10
6. As a scientist, you are aware that the first thing that a scientist does is to define a term that they are going to use. The term: "Historic preservation" is not defined in this Power Point, therefore, it can refer to historic structures or archaeological sites (in my opinion) - see page 10
7. In the NASA AOC with DTSC, under possible exceptions, this line discusses the cultural aspects of the site: "Native American artifacts that are formally recognized as
   Cultural Resources ". This term **artifact** is not defined. (page 43 Adobe of the NASA AOC).
   http://ssfl.msfc.nasa.gov/documents/governance/NASA_DTSC_Final_AOC_Dec_2010.pdf
8. In our Section 106 Consultation meeting, someone that is much more knowledgeable than me asked "Who did a NEPA and a Section 106 Review prior to NASA signing the AOC". That is my interpretation of that question. We were not given an answer.

In conclusion, I respectfully request that NASA renegotiate the agreements with DTSC. I respectfully request that NASA consider the NASA OIG's comments in terms of this not being a risk based clean up when almost every other comment that I heard at the NASA DEIS meetings were related to offsite risk and future risk.

- Please go back to the 2007 Consent Order and do a risk based clean up.

- I respectfully request that your NEPA / Section 106 Department review any other agreements with the State of California before they are signed.
- And I respectfully request that NASA review the new March 2013 NEPA CEQA Joint document from CEQ.
- Finally, I respectfully request that NASA continue its original EIS process that considered five alternatives - not just one. We now have much more to consider than just the clean up of the site.

We all want this site to be cleaned up. But at the Section 106 meeting yesterday, I believe the key words that I was hearing were **preservation** - preservation of historical resources and cultural resources. **Protection** - protection of the wildlife, the oak trees, and the Native Species.

If NASA can put a "Science Lab" on Mars, NASA can renegotiate a contract with DTSC that protects public health and safety, preserves historical and cultural assets, and protects both the local and global environment. Please help me to preserve and to protect.

Respectfully,

Christine L. Rowe

West Hills resident
NASA Section 106 consultant

Administrative Orders on Consent

Presentation to the
DTSC Public Participation Group
May 25, 2011

Administrative Orders on Consent: A Path Forward

- Represent a compromise
- Resolve disagreements over interpretations and implementation of SB 990 (Kuehl, 2007)
- Accelerate the process to more quickly get to cleanup
- Provide certainty and eliminate concerns about the unknown outcome of the cleanup process
- Take advantage of U.S. EPA's ongoing site survey and soil sampling work ***and*** U.S. EPA's expertise on radiological contamination

What are the Administrative Orders on Consent?

- The final agreements between DOE and DTSC and between NASA and DTSC
- Integrate the Agreements in Principle with cleanup and environmental review procedures
- Include key elements that govern the relationship between DOE and DTSC, and NASA and DTSC
- Establish the requirements as binding and enforceable

A Brief History

- 2007

  Legislature passed and Governor signed SB 990

  - Boeing Letter of Intent
  - Cal/EPA Secretary Letter of Intent (with community)
- 2008

  Discussed implementation details with RPs
- 2009

  Negotiated new agreement with RPs

A Brief History (continued)

- November 2009
  - Public comment period on agreement
  - Boeing tolling agreement
  - DTSC draft of agreement (based on community comments)
  - Boeing lawsuit

A Brief History (continued)

- <u>February 2010</u>

  High level conversations

  - Cal/EPA Secretary Adams, DOE Secretary Chu, NASA Administrator Bolden
  - Desire to resolve differences and find path forward

- <u>March 2010</u>

  DOE offer to “clean to background”

A Brief History (continued)

- March 2010 – August 2010

  Negotiate details of "clean to background"
  - What, who, how
  - Exceptions
  - Enforceability
- September 2010

  NASA agrees to use same approach

A Brief History (continued)

- September 2010
  - Public comment on Agreements in Principle
- October 2010 – November 2010
  - Public comment on draft Administrative Orders on Consent
- December 2010
  - Administrative Orders on Consent signed

What do the Administrative Orders on Consent do?

- Integrate the Agreements in Principle
- Clean up to Background Levels
  - No contaminated soils to be “left in place”
  - No contaminated soils to be buried or landfilled on-site
- Direct use of Detection Limits
  - For chemicals = reporting limit
  - For radionuclides = minimum detectable activity

What do the Administrative Orders on Consent ***NOT*** do?

- Do not bypass other requirements/laws
  - CEQA
  - Endangered Species Act
  - Historic preservation

- Do not include groundwater or soils being contaminated by groundwater

How will the groundwater be cleaned up?

- The 2007 Consent Agreement (including Boeing, DOE and NASA) is still in effect for groundwater
  - Boeing, DOE and NASA have been and will continue their groundwater investigation and cleanup responsibilities
  - Groundwater (and soils being re-contaminated by groundwater) will be taken care of with the groundwater cleanup

Public Participation

- Public will have an opportunity to review and comment on ***all*** draft plans and reports
- DTSC to host technical roundtable sessions on key activities and work phases
- PPG will be asked for its input at key decision points
  - DTSC approval of key documents (at a minimum)
    - Lookup Tables
    - Characterization Report
    - Remedial Action Implementation Plan
    - Completion Report

California Environmental Quality Act

- CEQA Scoping to begin in 2011
- CEQA analysis documents to be made available for public review and comment at the same time as the draft Soils Remedial Action Implementation Plan
- Analysis to take into account mitigation described in Plan

Funding

- Investigation and cleanup activities to be funded by DOE (or NASA)

- DTSC oversight (and USEPA activities) to be fully funded by DOE (or NASA)

Regulatory Oversight

- Characterization and cleanup (for both chemicals and radiologic contaminants) of both soils and groundwater are subject to DTSC approval

- U.S.EPA available in a vital technical consultative/advisory role

US EPA Role

- Continue with radiologic background study and survey of Area IV and Northern Buffer Zone
- Provide local background values and reporting limits for radionuclides
- Provide “split” samples to DTSC during its Area IV/Northern Buffer Zone soil sampling
- Conduct post cleanup radiation assessment to verify cleanup
- Verify that backfill/replacement soils do not exceed local background

Summary Judgment Order (Judge Conti Decision)

- DOE cannot transfer ownership or possession, or relinquish control over any portion of Area IV until it completes an EIS
- The Court retained jurisdiction until DOE has met its legal obligations
- DOE and DTSC to seek and obtain the support of the plaintiffs in applying for relief from the court's order to allow the AOC to be carried out

NASA Administrative Order on Consent

Primary Differences

NASA AOC v. DOE AOC

- Area II and portion of Area I
- NASA to focus primarily on chemical contaminants
  - If radiological contamination is discovered, sampling and disposal plans developed as needed
- No role for US EPA (no ongoing investigation or survey work)

Primary Differences
NASA AOC v. DOE AOC

- Investigation/chemical data
  - Continue with investigation activities underway
  - DTSC to identify data gaps and direct data gathering

Primary Differences

NASA AOC v. DOE AOC

- Confirmation sampling protocol to be developed (similar to DOE's)
- Investigation and cleanup activities to be funded by NASA
- DTSC oversight to be fully funded by NASA

Boeing Lawsuit
Recent Court Decision

- DTSC will continue to implement the Administrative Orders on Consent
- DTSC will appeal the court's decision
- DTSC will continue efforts to reach resolution with Boeing

Questions?

From:	Christine Rowe
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01); ZORBA, PETER D. (HQ-LP040); Fellows, Merrilee (HQ-LD000)
Subject:	Fwd: New Community Jewish High School Traffic Report 2011
Date:	Monday, September 09, 2013 3:54:42 AM
Attachments:	TRAFFIC RPT 22622 Vanowen St RevMay 2011.pdf

Dear Mr. Elliott,

I am sending you the Traffic Study for the New Community Jewish High School. This school has been in West Hills with ever expanding enrollment for about a decade. Until just last week, the high school was located on the campus of Shomrei Torah Synogogue on Valley Circle in West Hills.

This new high school would most likely fall within your Region of Influence Roadways.

I read this Traffic Study, and I also made many comments on it which I took to the LADOT. I disagree with routes that were proposed by the traffic consultant based upon discussions that the West Hills Neighborhood Council and local stakeholders had with the high school's representatives.

I was recused on this project due to the State laws regarding living within 500 feet of a project as an elected official. Therefore, I did not have the influence on my Neighborhood Council that I would like to have had since my neighbors and I studied the traffic study in depth

Please consider that these will be af.fluent high school students driving to and from school - there will be very few school buses. The reason that I state that these students are affluent is that their parents will be paying about $30,000 per year per student. Therefore, it is highly unlikely that they will walk to school - many come from Calabasas, and other places in Ventura County; a number of them come from the West Los Angeles area and will be taking the Topanga or Shoup exits and entrances to go and from school if their parents don't drive them.

Please consider this as a new unforeseen impact if your traffic study was prepared in 2011.

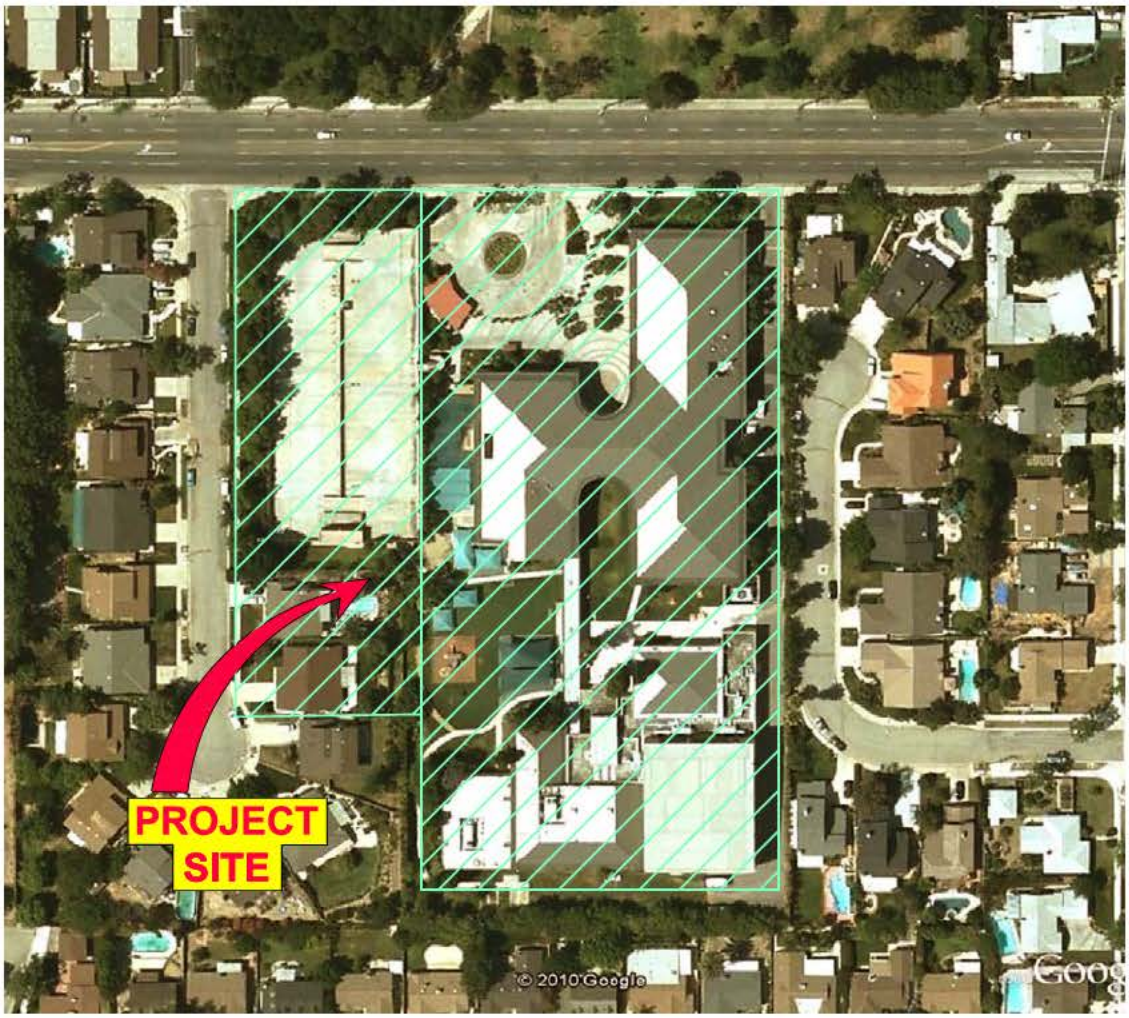
Respectfully submitted.

Christine L. Rowe

Overland Traffic Consultants, Inc.

TRAFFIC IMPACT ANALYSIS FOR NEW COMMUNITY JEWISH HIGH SCHOOL

Located at 22622 Vanowen Street
in the West San Fernando Valley Area
in the City of Los Angeles



Prepared by:
Overland Traffic Consultants, Inc.
27201 Tourney Rd. #206
Santa Clarita, California 91355
(661) 799-8423

APRIL 2011

TRAFFIC IMPACT ANALYSIS FOR A 450 STUDENT PRIVATE HIGH SCHOOL

22622 Vanowen Street
In the City of Los Angeles

Prepared for:
New Community Jewish High School

Prepared by:

Overland Traffic Consultants, Inc.
27201 Tourney Road #206
Santa Clarita, California 91355
(661) 799 – 8423

April 2011

EXECUTIVE SUMMARY

The project being analyzed in this traffic study is a new 450 student high school. New Community Jewish High School is a private coed 9th - 12th grade college preparatory school proposed at 22622 Vanowen Street in the City of Los Angeles, as shown in the following aerial photograph. The school will be relocating from its current location on Valley Circle Boulevard with the same number of students. The new school will displace 50,300 square feet of recreational community center and office at the existing building. A portion of both will remain along with a 100 student day care center along with the new high school.

It is estimated that the 450 student enrollment could generate a net of approximately 164 daily trips with approximately 167 inbound and 118 outbound morning peak hour trips and 11 inbound and 7 fewer outbound evening peak hour trips. Due to the low number of evening trips the traffic study focuses on the morning peak hour.

The focus of this traffic study is to evaluate the potential traffic impact created by the new student enrollment at the project site. The traffic volume generated and routing assignment to the study area was determined using assumptions approved by the City of Los Angeles Department of Transportation (LADOT). Intersections and roadways with low volumes of project traffic were not included in this analysis.

Using the criteria established by LADOT, it has been determined that the added traffic volume generated by the proposed high school will significantly impact one of the study intersections in the Existing + Project evaluation and Future with Project evaluation. Project mitigation is proposed to reduce these impacts to a level of insignificance as indicated below.

Existing + Project

<u>Shoup Avenue & Victory Boulevard</u>

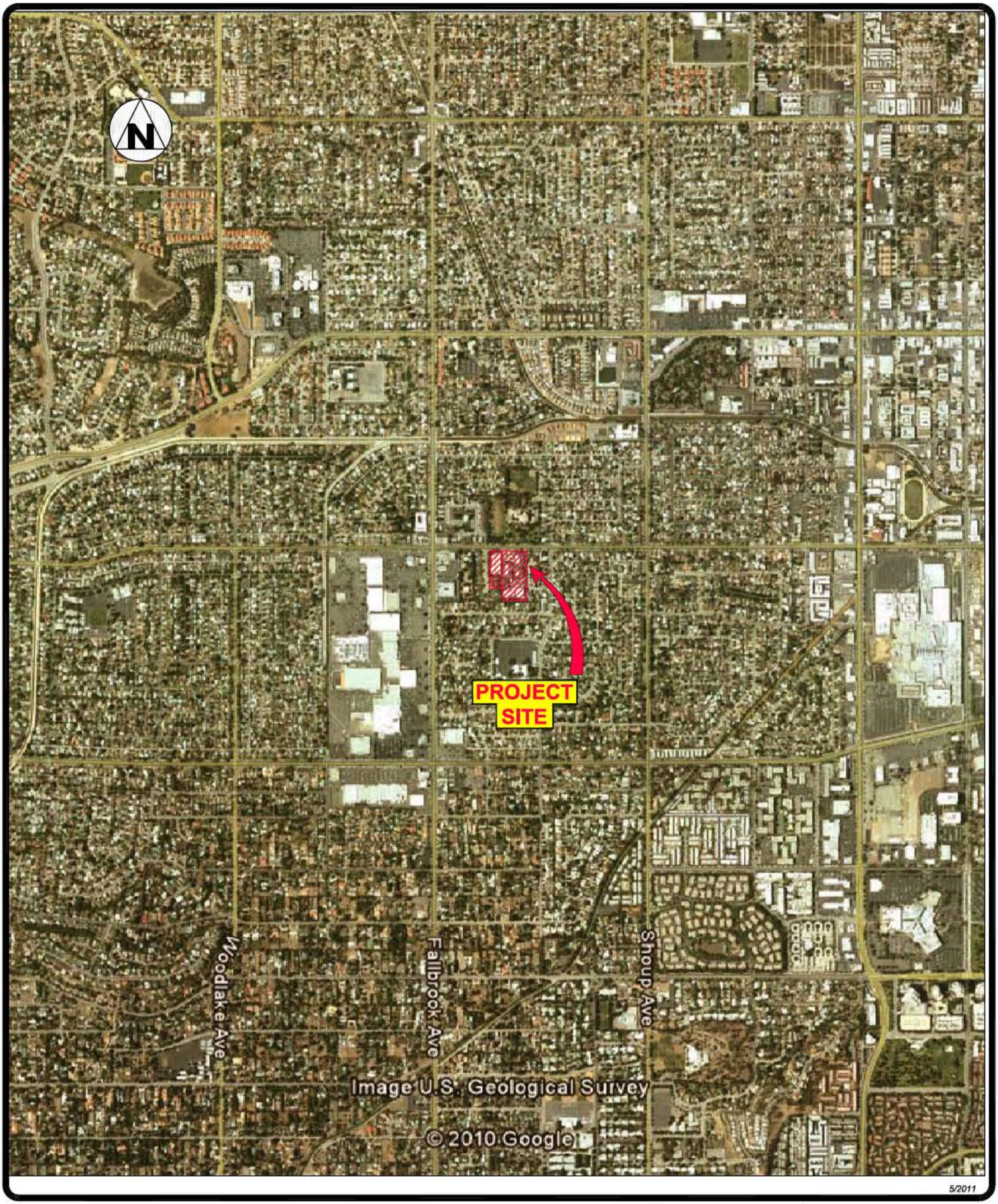
Implement a project specific Transportation Demand Management (TDM) Plan to encourage students, teachers and administrators to use mass transit, rideshare, walk

and cycle to and from the school site. The goal of the TDM plan would be a 30% reduction in vehicle trips to and from the site.

Future With Project

Shoup Avenue & Victory Boulevard

Implement a project specific Transportation Demand Management (TDM) Plan to encourage students, teachers and administrators to use mass transit, rideshare, walk and cycle to and from the school site. The goal of the TDM plan would reduce the number of vehicle trips to and from the site by one half. In addition, a traffic signal improvement is proposed. This improvement would include the design and installation of a safety improvement for an east and westbound left turn phase on Victory Boulevard, and upgrade to loop detectors, pedestrian indicators, and traffic controller as needed.



PROJECT SETTING

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CHAPTER 1 INTRODUCTION

As part of the project's environmental review, an evaluation of the potential traffic impact of the proposed development on the surrounding area is required. Therefore, the traffic impact analyses in this traffic study has been conducted using the procedures adopted by the City of Los Angeles Department of Transportation (LADOT) to analyze the potential traffic impact of new development projects. The intersections were evaluated using the LADOT Critical Movement Analysis (CMA) method. The CMA method calculates the operating conditions of each individual study intersection using a ratio of peak hour traffic volume to the intersection's capacity. Any change to the intersection's peak hour operating condition caused by an increase/decrease in traffic volume can be quantified (i.e. traffic impact) using this analysis method.

Potential traffic impacts caused by a development project that exceed limits established by the City of Los Angeles as specified in Department of Transportations Traffic Impact Study. Any significantly impacted intersections are then evaluated for possible traffic mitigation measures.

Pursuant to the City of Los Angeles traffic impact guidelines, the following steps have been taken to develop the future traffic volume estimate:

(a) Traffic counts 2011 existing;

(b) Traffic in (a) plus the proposed project traffic (existing + project);

(c) Base year 2011 plus ambient growth to 2012 (added additional 2% per year);

(d) Traffic in (c) plus related projects (future "without project" scenario);

(e) Traffic in (d) plus the proposed project traffic (future "with project" scenario);

(f) Traffic in (e) plus recommended traffic mitigation, if necessary.

A CMA analysis of the existing and future traffic conditions analysis has been completed at those locations expected to have the highest potential for significant traffic impacts. Morning and afternoon peak hour conditions have been evaluated at 12 key intersections approved by LADOT. The intersections most likely to be affected by the development of

the project were selected for analysis. It should be noted that future traffic conditions include the potential construction of the development of 15 other land development projects in the general vicinity of the project site.

These intersections are:

1. Vanowen Street and Woodlake Avenue;
2. Fallbrook Avenue and Vanowen Street;
3. Sale Avenue and Vanowen Street;
4. Shoup Avenue and Vanowen Street;
5. Topanga Canyon Boulevard and Vanowen Street;
6. Criswell Street and Fallbrook Avenue;
7. Fallbrook Avenue and Victory Boulevard;
8. Shoup Avenue and Victory Boulevard;
9. Fallbrook Avenue and Oxnard Street,
10. Oxnard Street and Shoup Avenue,
11. Fallbrook Avenue and Ventura Boulevard; and
12. Eastbound Ventura Freeway Onramp and Ventura Boulevard.

CHAPTER 2 PROJECT DESCRIPTION

New Community Jewish High School (NCJHS) is a private coed 9th-12th grade college preparatory Jewish high school with an enrollment of 450 students proposed at 22622 Vanowen Street. The location of the new school is displayed in Figure 1. The school currently operates at 7353 Valley Circle Boulevard. Upon completion of this project, the school will leave their existing site.

The NCJHS relocation will displace approximately 50,300 square feet of the Jewish recreational community center (Jewish Community Center – (JCC)) and office on their new site. Currently the Vanowen site is used for community center, recreational activities, office and a 100 student preschool. A portion of the existing community center and office uses will remain on the site. It is estimated that one third of the space to be removed is currently used for office and two thirds for community center. The 100 student preschool will remain. Interior renovations will be made to accommodate the new high school. A crescent portion of the back of the building will be enclosed.

Vehicular access to the parking lot will be from Vanowen Street between Fallbrook Avenue and Sale Avenue. Two driveways currently exist at the project site. One driveway will be used for entry only and one driveway for both entry and exit. Left turns will be prohibited both in and out of the property. The driveways will be enhanced to accommodate the new use. There is a circular drive upon entry which is open but monitored by a guard to screen visitors and direct parking. Two lanes are provided on the circular drive. The drop-of and pick-up activities will be conducted within the circular drive with queuing directed to the parking garage.

The entry drive and parking structure provide a total of 269 parking spaces. These parking spaces will be used by the new NCJHS and the existing uses which will remain. A limited number of students are permitted to drive and parking on site. NCJHS offers

bus transportation for a fee to/from a wide variety of areas. Transportation details are published at the beginning of each school semester

Families are encouraged to drive in carpools. During the summer, zip code lists are sent to all families to assist in forming carpools. Students with drivers' licenses are permitted to drive to school and must park on school grounds. Students may not leave and return to campus during the school day.

Figure 2 illustrates the existing site and access.

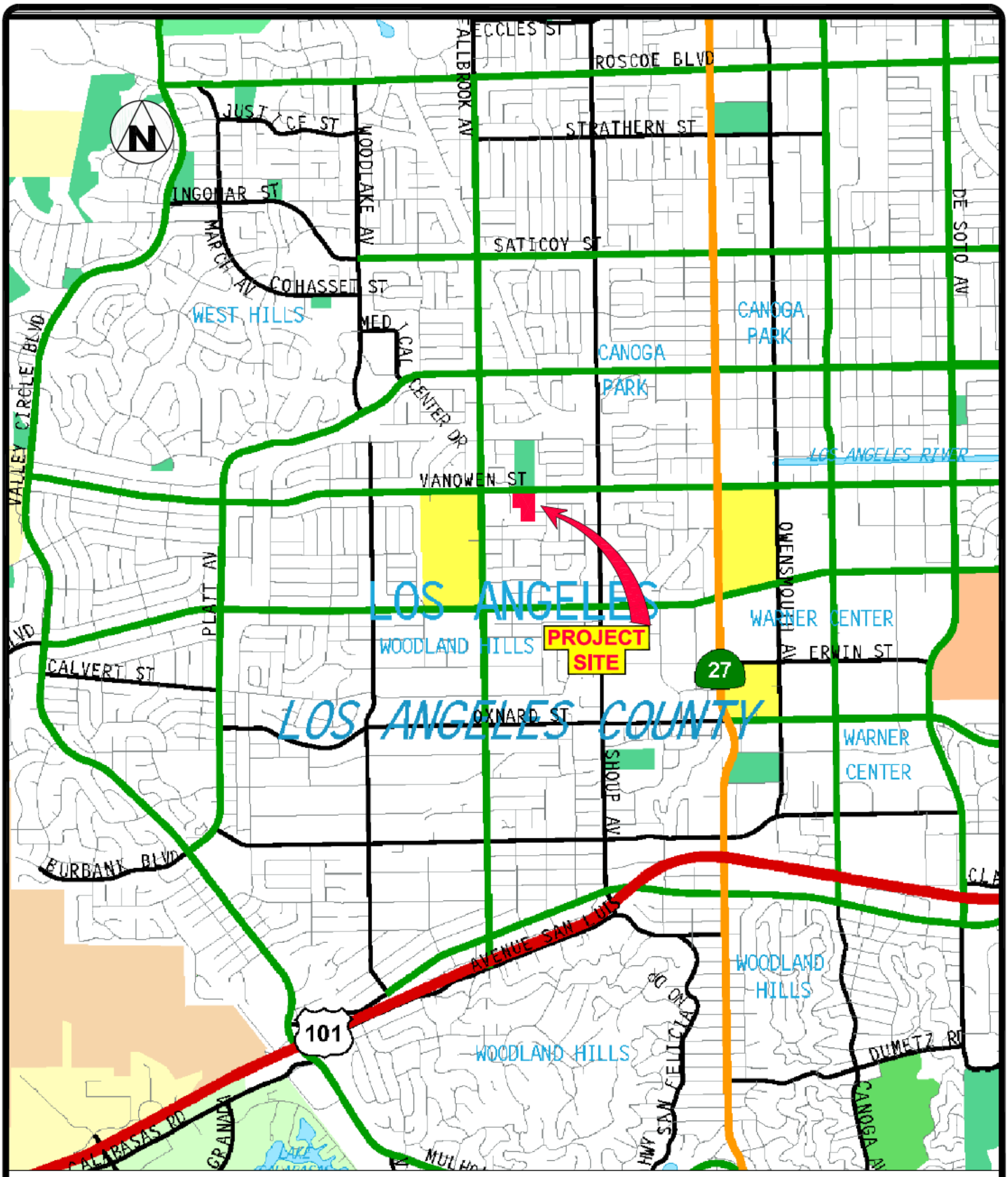

FIGURE 1

1/2011

PROJECT LOCATION

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FIGURE 2

3/2011

PROJECT SITE

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CHAPTER 3 ENVIRONMENTAL SETTING

Land Use

The project is located in the Canoga Park – Winnetka – Woodland Hills – West Hills Community Plan area generally bounded by Roscoe Boulevard to the north, Corbin Avenue to the east and the city limits to the west and south. The Community plan area contains 17,894 square acres with 59.7% zoned residential, 5.4% zoned commercial, 3.8% zoned industrial, 11.8% zoned open space/public and 19.3% allocated for streets. Appendix A contains the Community Plan land use information.

In addition to collecting traffic volume data, field surveys were conducted in the study area to determine the roadway and intersection geometry and traffic signal operations. Figure 3 illustrates the study locations, type of intersection traffic control and lane configurations. A brief description of the adjacent roadway facilities is provided below. Street plans of the roadways, city street standards and the general circulation map are provided in Appendix B.

Freeway and Roadway Characteristics

The Ventura Freeway (U.S. Highway 101) is located approximately 2 miles south of the project site. This east-west freeway provides four mixed flow lanes in each direction in the vicinity of Woodlake Avenue. The closest full access location to the 101 Freeway is via Topanga Canyon Boulevard. Partial freeway access is provided from Woodlake Avenue and Ventura Boulevard. The Ventura Freeway traverses Ventura County, the San Fernando Valley and downtown Los Angeles with an average daily traffic (ADT) volume of 208,000 vehicles per day near Woodlake Avenue. Current non-directional peak hour traffic volume is approximately 15,400 vehicles per hour (VPH).

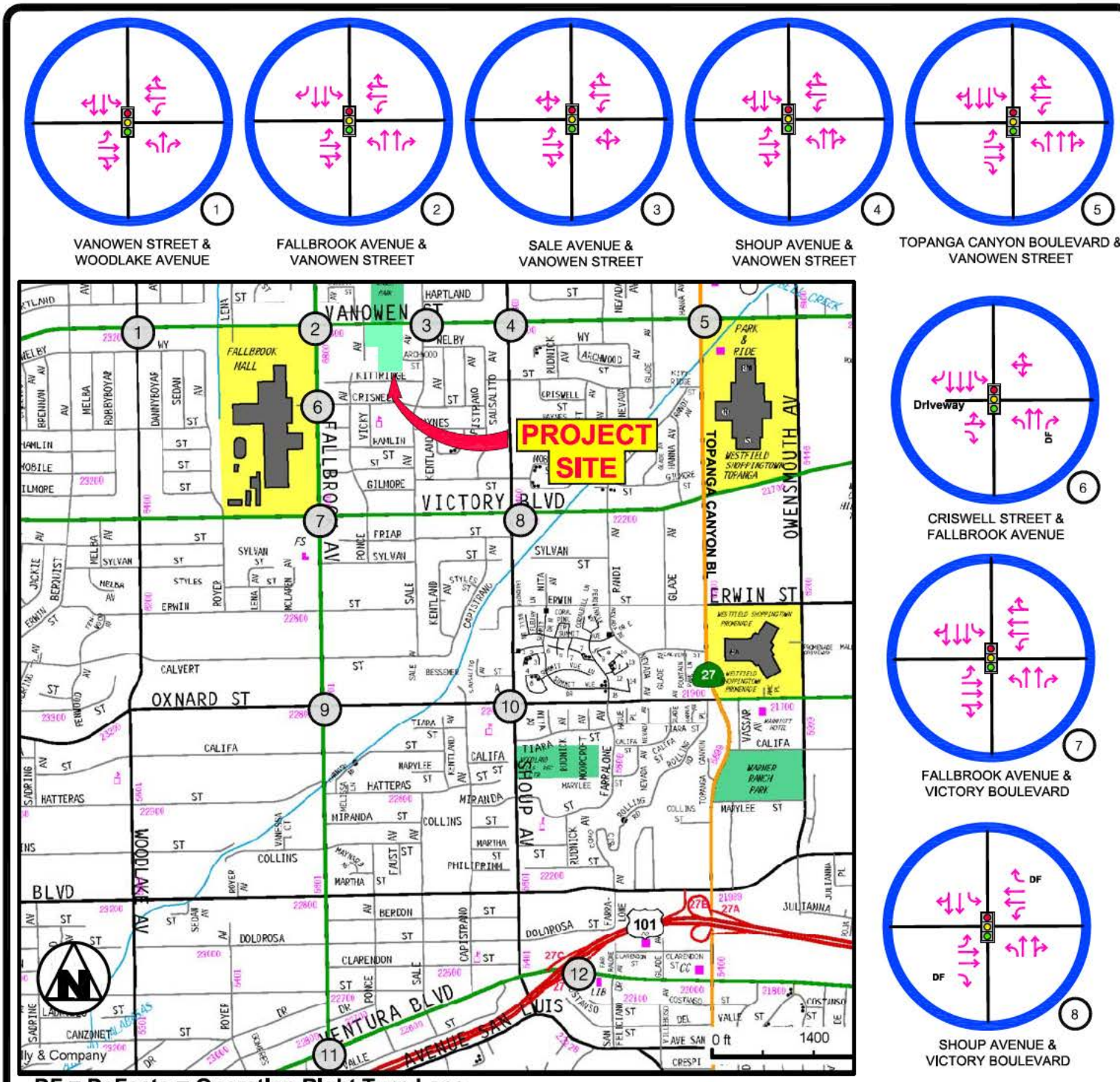

FIGURE 3

2/2011

INTERSECTION CHARACTERISTICS

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Woodlake Avenue is a north-south secondary highway in the streets and Highways element of the City's General Plan. Woodlake Avenue provides 1-2 lanes in each direction with median channelization and street parking on both sides. Woodlake Avenue terminates approximately 0.25 miles north of Vanowen Street. The roadway provides direct access to the westbound ramps for Highway 101.

Platt Avenue is a north-south class II major highway with two lanes in each direction, median channelization, class II bike lanes, and on-street parking for both sides of the street in the project vicinity.

Fallbrook Avenue is a north-south designated class II major highway. Fallbrook Avenue geometrics accommodate 2 lanes in each direction with median channelization, a class II bike lane and on-street parking. Between Vanowen Street and Victory Boulevard, a third southbound lane is installed and parking is restricted on the westside of the street, adjacent to the Fallbrook Mall. Traffic signals control the intersections of Fallbrook Avenue with Sherman Way, Vanowen Street, Criswell Street and Victory Boulevard.

Shoup Avenue is a north-south secondary highway with two lanes in each direction, median channelization and unrestricted parking on both sides of the street.

Topanga Canyon Boulevard is a designated north-south State Highway route (SR 126). The roadway provides 2-3 lanes in each direction and median channelization in the study area. SR 126 has predominantly commercial development and is under jurisdiction of the State of California (Caltrans). Topanga Canyon Boulevard provides direct access to the Ventura Freeway.

Vanowen Street is a designated east-west secondary highway that provides two lanes in each direction and on-street parking. Median channelization is provided at all major intersections and where there is sufficient roadway width.

Victory Boulevard is an east-west class II major highway with two lanes in each direction, median channelization and class II bike lanes in the study area. The roadway width varies but is generally 80 feet in width.

Ventura Boulevard is an east-west class II major highway with two to three lanes in each direction, median channelization and regional access along the Ventura Freeway and through limited stop bus routes.

Criswell Street is an east-west collector street with one lane in each direction. Criswell Street forms a T type intersection with Fallbrook Avenue and is opposite a Fallbrook Mall driveway.

Sale Avenue is a north-south collector street with single family residential frontage. Its intersections with Vanowen Street and Victory Boulevards are traffic signal controlled.

Transit Information

Public transportation in the study area is provided by the Metropolitan Transportation Authority (Metro). Metro provides route 165 on Vanowen Street. Metro Route 165 connects to north-south transit lines and ultimately to other east-west lines through the Metro route system. The transit line is illustrated in Appendix C.

CHAPTER 4 PROJECT TRAFFIC

This chapter describes the procedures for estimating the potential traffic volume generated by the project and its directional orientation.

Traffic Generation

Traffic-generating characteristics of private high schools as proposed and the recreational community center and office to be displaced have been surveyed by the Institute of Transportation Engineers (ITE). The results of these traffic generation studies have been published in a handbook titled Trip Generation, 8th Edition. This publication of traffic generation data is the industry standard for estimating traffic generation for different land uses and is used when analyzing traffic impacts.

The ITE studies indicate that private schools exhibit trip-making characteristics as shown by the average traffic generation rates per student. The trip generation for an community center and office are based on trips per 1,000 square feet. The ITE trip generation rates used in this study and approved by LADOT are shown in Table 1. Table 2 shows estimates of the project traffic volume using the trip rates as displayed in Table 1. The existing uses to remain are not displayed.

Table 1
Project Trip Generation Rates

	ITE	Daily	AM Peak Hour			PM Peak Hour		
Description	**Code**	**Traffic**	**Total**	**In**	**Out**	**Total**	**In**	**Out**
Recreational Community Center	495	22.88	1.62	61%	39%	1.45	37%	63%
Private School	536	2.48	0.81	61%	39%	0.17	43%	57%
Office	710	11.01	1.55	88%	12%	1.49	17%	83%

Rates are per student for school and per square foot (sf) for community center and office

Table 2
Estimated Project Traffic Generation

Description	Size	Daily Traffic	AM Peak Hour Total	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out
Proposed Project								
Private High School	450 students	1,116	365	223	142	77	33	44
Existing to be Removed								
Recreational Community Center	33,533 sf	767	54	33	21	49	18	31
Office	16,767 sf	185	26	23	3	25	4	21
Total	50,300 sf	952	80	56	24	74	22	51
Net Total (Proposed-Existing)		**164**	**285**	**167**	**118**	**3**	**11**	**-7**

Existing 100 student Day Care, Balance of Office and Community Center to remain
JCC considered 2/3 community center and 1/3 office

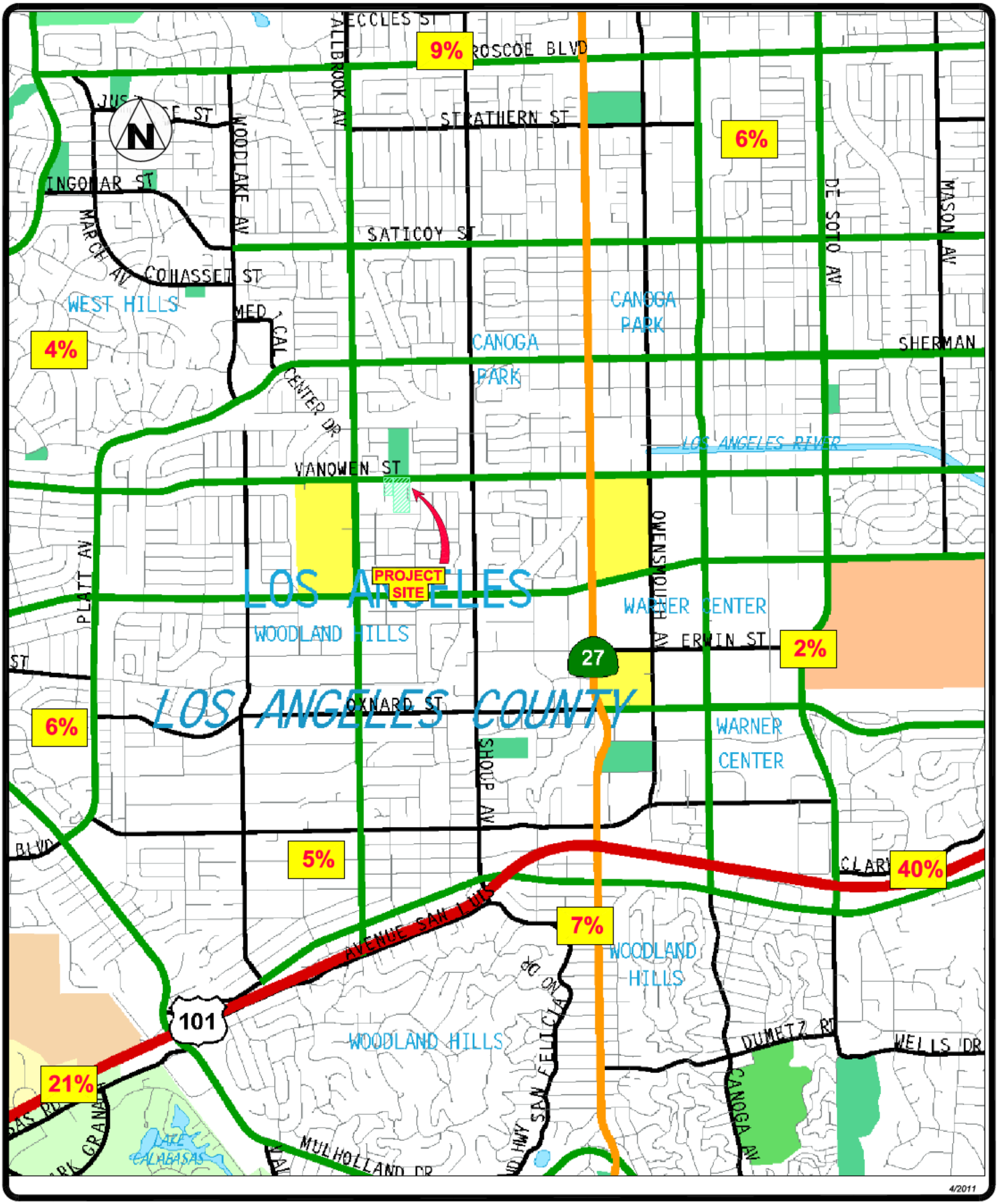
The project will generate a net of 164 daily trips with 285 during the AM Peak Hour and 3 during the PM Peak Hour. Due to the low volumes during the PM Peak Hour no significant traffic impacts are anticipated during the evening. Only the AM Peak Hour is evaluated in further detail.

Distribution of Trip Origins and Destinations

The primary factor affecting the distribution of the school traffic flow is the location of the student population which would generate trip origins and destinations. The estimated directional trip distribution for the new school was developed based on the location of the zip code location for the existing student enrollment as provided in the original traffic study approved by LADOT. The detail on the zip code analysis which determined the project distribution is provided in Appendix D. The closer in overall distribution percentages are provided in Figure 4 which illustrates the estimated project traffic distribution percentages derived from the school database.

Assignment of project traffic volume to surrounding streets

Traffic to and from the school has been assigned to the most direct and reasonable routes considering the school location and surrounding street system. Percentages of the project traffic flows are illustrated in Figure 5. The hourly traffic volume at each study intersections was calculated by multiplying the assigned intersection percentages as shown in Figure 5 to the traffic generation estimates in Table 2. The resulting peak hour traffic volumes are shown in Figure 6 for the morning peak hours.



PROJECT DISTRIBUTION

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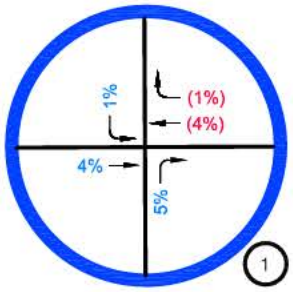
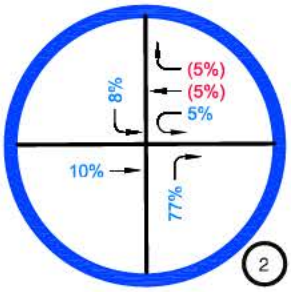


VANOWEN STREET &
WOODLAKE AVENUE



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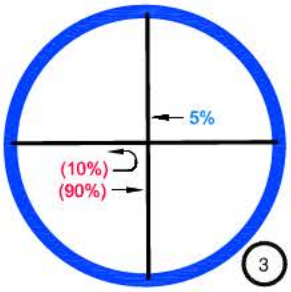

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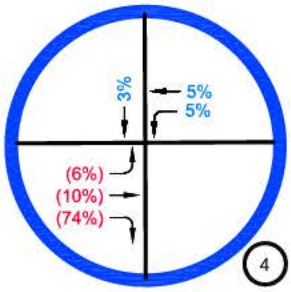

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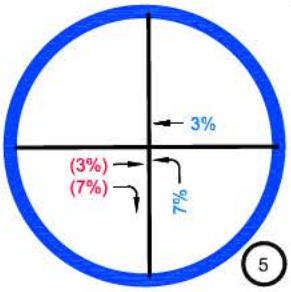

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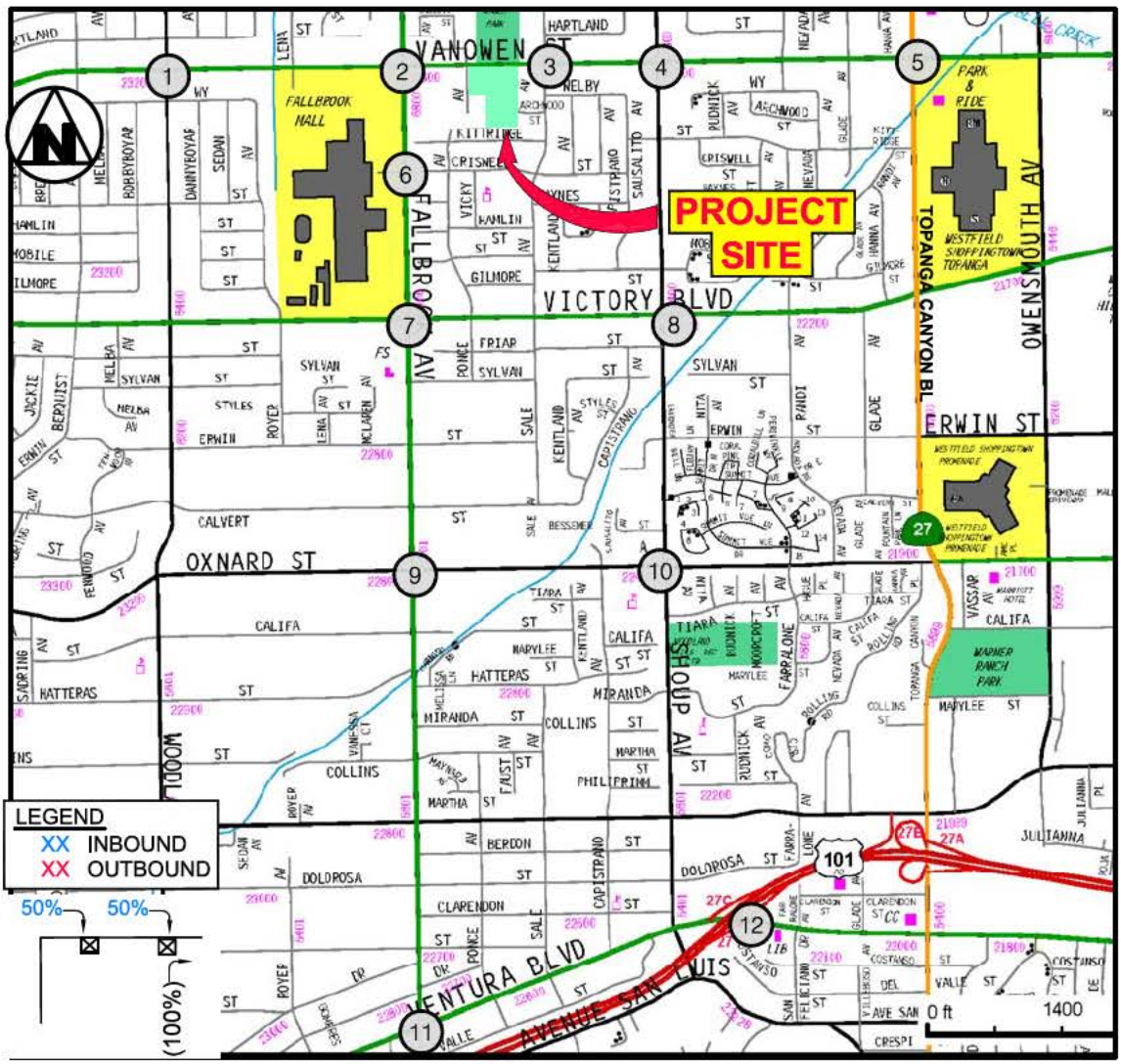
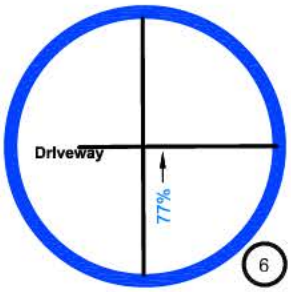
VANOWEN STREET





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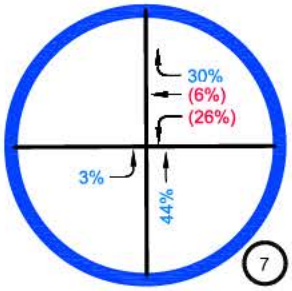
FALLBROOK AVENUE



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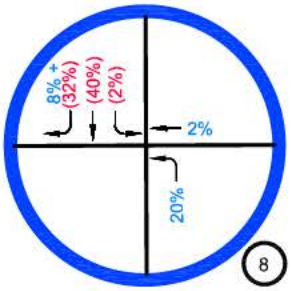
VICTORY BOULEVARD



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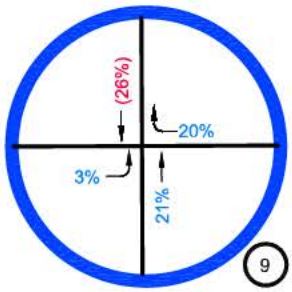
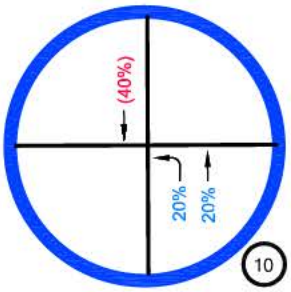
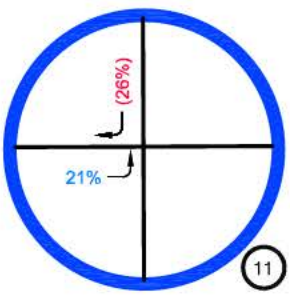
VICTORY BOULEVARD



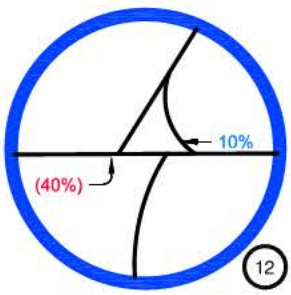
FALLBROOK AVENUE &
OXNARD STREET



OXNARD STREET &
SHOUP AVENUE



FALLBROOK AVENUE &
VENTURA BOULEVARD



EB-101 (SB) VENTURA FWY ONRAMP
VENTURA BOULEVARD

FIGURE 5

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PROJECT TRIP DISTRIBUTION AT INTERSECTIONS

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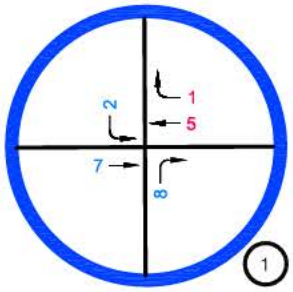
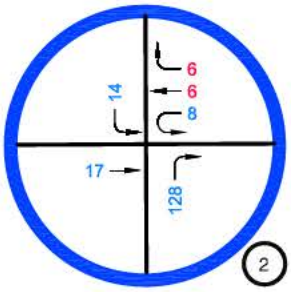
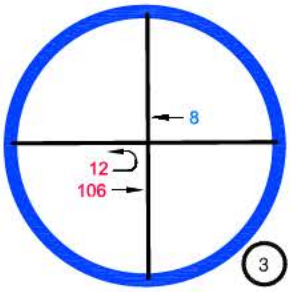


VANOWEN STREET &
WOODLAKE AVENUE



FALLBROOK AVENUE &
VANOWEN STREET



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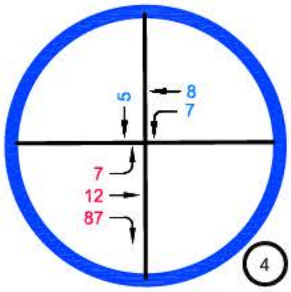
VANOWEN STREET



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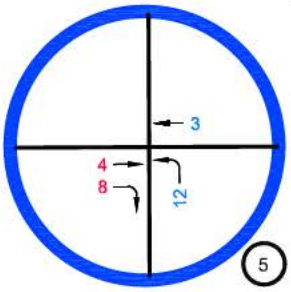
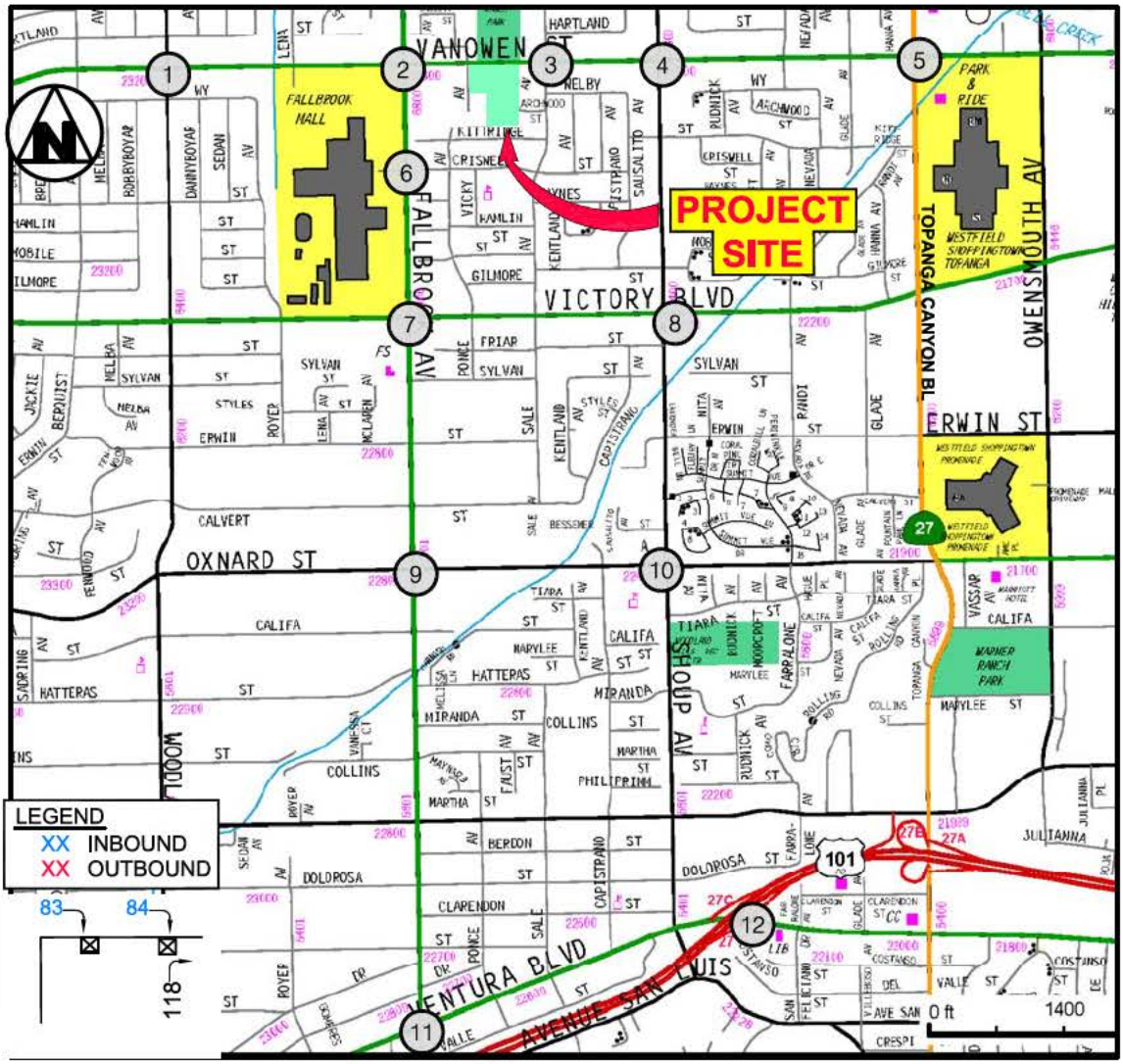
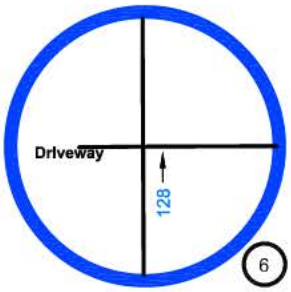
VANOWEN STREET

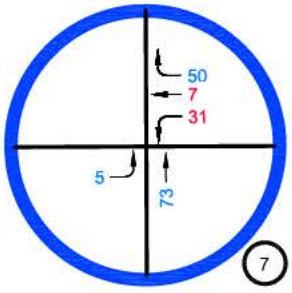


TOPANGA CANYON BOULEVARD &
VANOWEN STREET

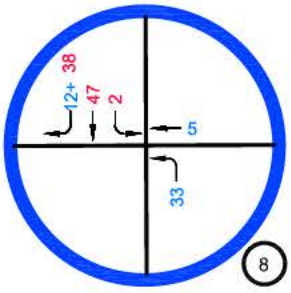




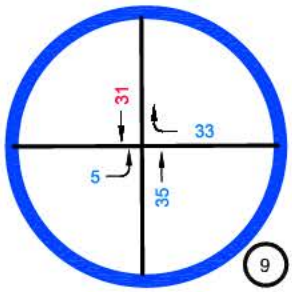
CRISWELL STREET &
FALLBROOK AVENUE



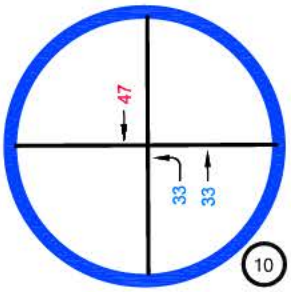
FALLBROOK AVENUE &
VICTORY BOULEVARD



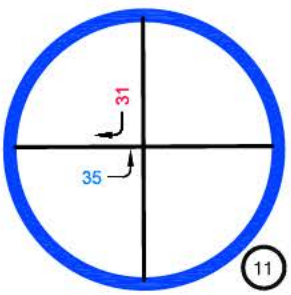
SHOUP AVENUE &
VICTORY BOULEVARD



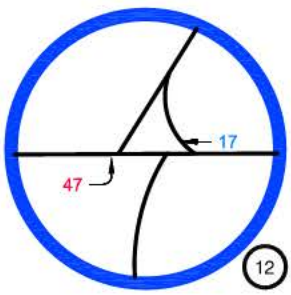
FALLBROOK AVENUE &
OXNARD STREET



OXNARD STREET &
SHOUP AVENUE



FALLBROOK AVENUE &
VENTURA BOULEVARD



EB-101 (SB) VENTURA FWY ONRAMP
VENTURA BOULEVARD

FIGURE 6

4/2011

PROJECT ONLY TRIPS

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Pedestrian Access Evaluation

Figure 7 displays the one mile radius around the project. The major intersections include:

Sherman Way at Woodlake Avenue, Fallbrook Avenue, Shoup Avenue, Topanga Canyon Boulevard

Vanowen Street at Woodlake Avenue, Fallbrook Avenue, Shoup Avenue, Topanga Canyon Boulevard

Victory Boulevard at Woodlake Avenue, Fallbrook Avenue, Shoup Avenue, Topanga Canyon Boulevard

Oxnard Street at Fallbrook Avenue

All 13 of these intersections are signalized with crosswalks for pedestrians. Pedestrian indicators are available for crossing all directions with adequate timing for crossing. Some, but not all, have count down pedestrian indicators. The intersection of Vanowen Street and Victory Boulevard has yellow crosswalks indicating further caution for the adjacent school. In addition to the major intersections, several of the smaller intersections within the mile radius are also signalized including:

Sherman Way at Medical Center Drive, Sherman Way at Farralone,

Vanowen Street at Marlin Avenue, Vanowen Street at Sale Avenue,

Victory Boulevard at Royer Avenue, Victory Boulevard at Sale Avenue, Victory Boulevard at Randi Avenue and

Shoup Avenue at Erwin Street.

These additional signalized locations will assist in pedestrian access to the site. The signal at Vanowen Street and Sale Avenue and Vanowen Street and Fallbrook Avenue are the closest to the project site and will assist with immediate area pedestrian activities.

Fallbrook Avenue has a dedicated bicycle lane on the street which will assist with bicycle access to and from the site in the north and south direction. Sherman Way also has a dedicated bicycle lane on the street which will assist with bicycle access to and from the site in the east-west direction.

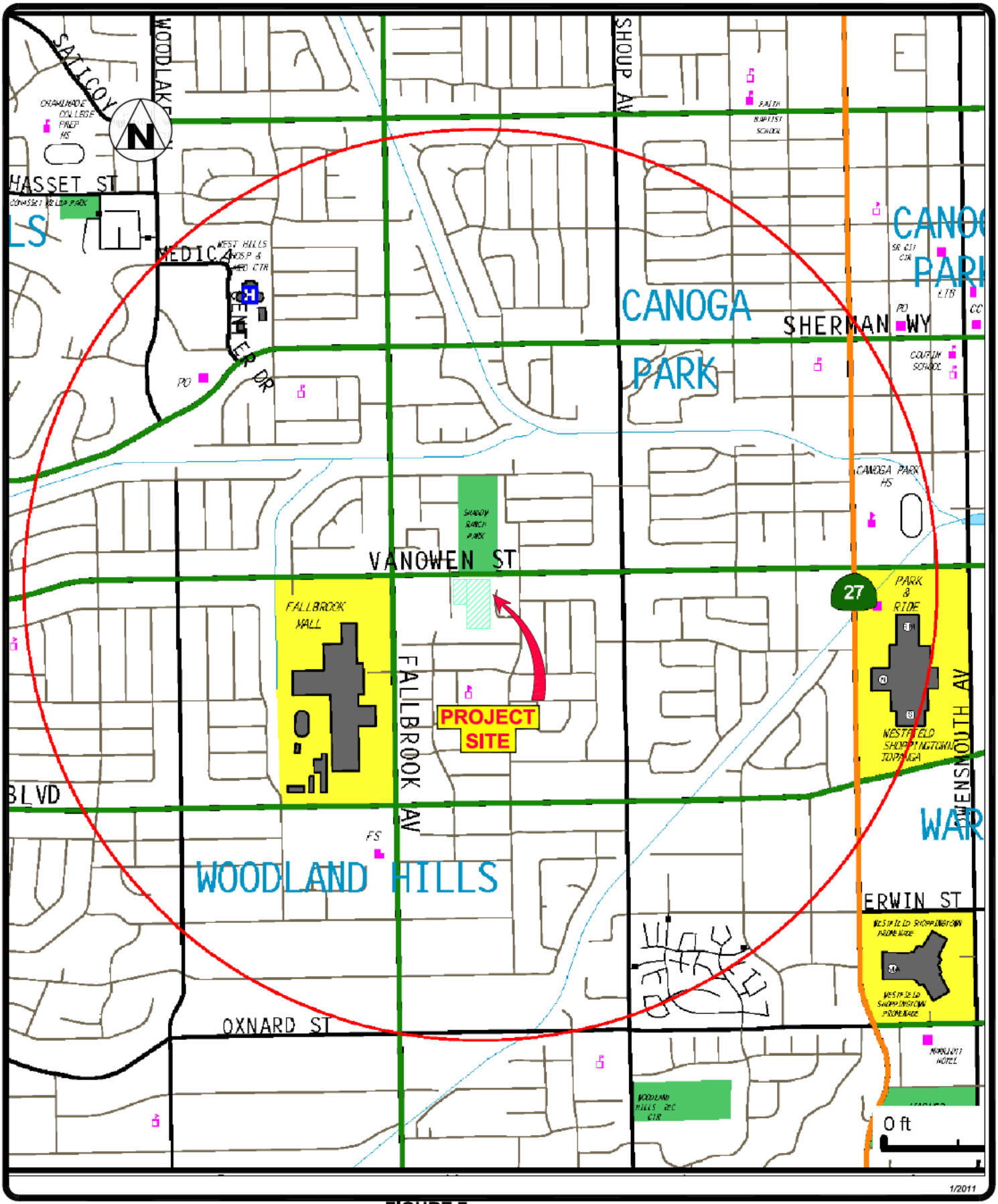

FIGURE 7

ONE MILE RADIUS FROM PROJECT

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Parking, Site Access, and Circulation

Vehicular site access will be from a one-way entry and two way driveway off of Vanowen Street. Parking is prohibited by red curb on the approach and departure of both driveways and between the two driveways which improves visibility. A two-way left turn lane is provided on Vanowen Street in front of the project site allowing for left and right turns in and out of the site. However, to improve traffic flow on the street and within the site, the driveways will be restricted to right turn only in and out of the property. The entry driveway provides access to the circular drive and to the right for the five levels of garage (two below surface, one at surface, and two above ground levels).

The City of Los Angeles has a policy which requires that school have on-site drop-off/and pick-up areas. Vanowen Street provides a wide curb lane with parking north and south of the project driveways. Student drop off and pick up will be conducted on the circular drive with queuing routed to the parking structure. A queue analysis has been conducted to ensure that vehicles will queue onto the public right-of-way. This analysis indicates a potential demand for up to 27 vehicles queuing. The project will provide space for more than 32 vehicles to queue depending on spacing of the drivers. The drop-off and pick-up activities will be monitored by school personnel to ensure that it is running efficiently. Modifications to the drop-off and pick-up plans will be conducted as necessary. Appendix E provides a detail analysis of the school queues.

The existing school has programs in place for allocating parking permits for students who are old enough to drive, busing and ridesharing. This practice will be continued, expanded and catered to the new project site.

Currently parking around the site is minimally used throughout the weekday. No single land use is creating an on street parking demand. There are no parking restrictions on the north and south side of Vanowen Street. A wide curb lane provides for on street parking on Vanowen Street. Although not observed, there is a park on the north side of Vanowen Street across from the school which is likely to create periodic demand on

weekdays peaking in the afternoon. Safety for students must be highlighted to discourage any jaywalking across Vanowen Street. A traffic signal is provided at both Fallbrook Avenue and Sale Avenue east and west of the school. Parking on Vicky Avenue and Sale Avenue should be discouraged due to the residential nature of these two streets.

The project site has an inventory of 269 parking spaces on-site. A meeting with Building and Safety indicated that Los Angeles City code required parking would be based on auditorium square footage of 1 per 35 square feet, plus 1 space per 500 square feet of office space for administrators (not teachers), plus 1 space per nursery school classroom (assuming max of 20 students per room). The gym is strictly for gym (not assembly) usage and events in the gym and auditorium would not coincide. Table 3 displays the Code required parking.

Table 3
Parking Requirements

Proposed Use	Size	Code Requirement	Required Spaces	Provided	Surplus
Com Ctr Office	3,900 sf	1 per 500 sf	7.8		
High School Administration	6,850 sf	1 per 500 sf	13.7		
Auditorium	3,712 sf	1 per 35 sf	106.1		
PreSchool	100 students	1 per classroom (max 20 students per class)	5.0		
TOTAL			**133**	**269**	**136**

sf = square feet

The project will be providing 136 parking spaces in excess of that which is required by code.

ITE Parking Demand 4, 2009 provides national parking standards which indicate a parking demand for a high school as 0.23 to 0.31 spaces per student with an average of 0.26 spaces per student average. This indicates a need for between 104 to 140 parking spaces for the high school alone (including staff). The code required parking above requires 120 parking spaces for the school needs. This is within the range of the national standard. Since this is a private school, parking can be managed by school

personnel. A selected number of junior and senior parking permits will be provided to assure that adequate parking is provided on-site for the school, remaining office and preschool. The school has indicated a desire to monitor off-site parking so that the school does not spill over into the surrounding residential neighborhoods. When events are planned, the school will lease off-site parking and provide shuttles to and from the project site. No parking impacts are anticipated with the project.

CHAPTER 5 TRAFFIC CONDITIONS ANALYSIS

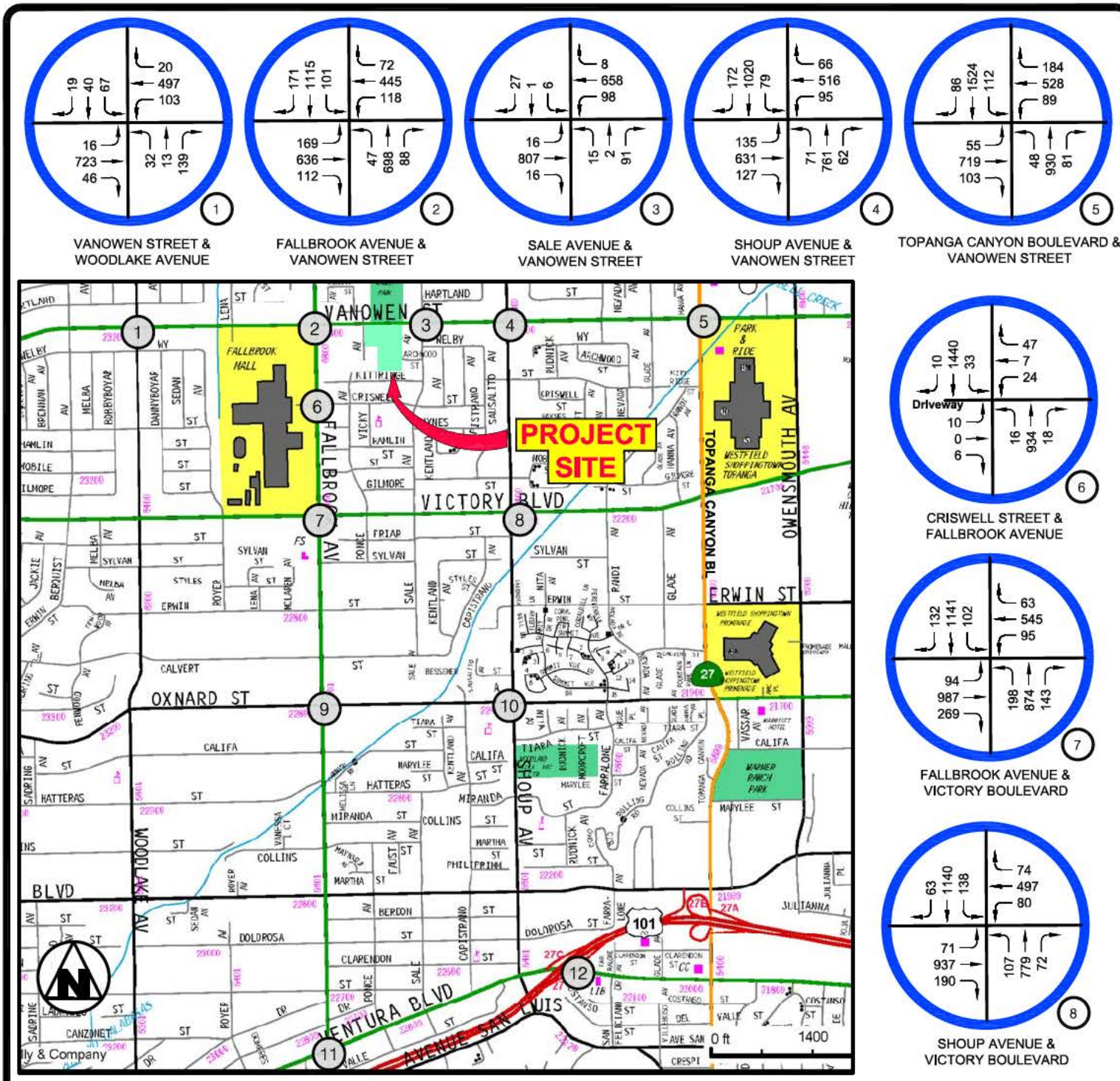
Existing Peak Hour Traffic Volumes

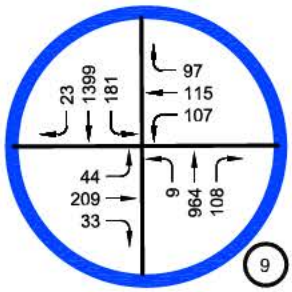
Traffic volume data used in the following peak hour intersectional analysis were based on traffic counts conducted by The Traffic Solution, an independent traffic data collection company. The AM peak period counts were conducted manually from 7:00 AM to 9:00 AM in February 2011. Traffic counts were conducted by counting the number of vehicles at each of the twelve study intersections making each movement. The peak hour volume for each intersection was then determined by finding the four highest consecutive 15-minute volumes for all movements.

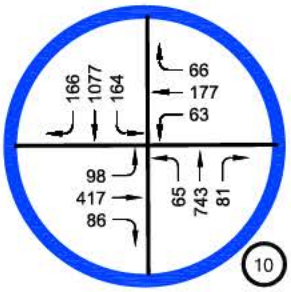
Existing peak hour traffic volume at each study intersection is illustrated in Figure 8 for the morning rush hour. Data collection worksheets for the peak hour counts are contained in Appendix F.

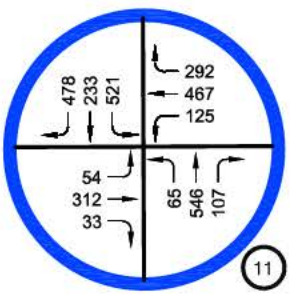
Analysis of Existing Traffic Conditions

The traffic conditions analysis was conducted using the Critical Movement Analysis (CMA) method. All study intersections were evaluated using this methodology pursuant to the criteria established by the City of Los Angeles Department of Transportation for signalized intersections. The peak hour traffic counts were used along with current intersection geometrics and traffic controls to determine the intersection's operating condition. The CMA procedure uses a ratio of the traffic volume to the capacity of an intersection. The highest combinations of conflicting traffic volume (V) at an intersection are divided by the intersection capacity value. Intersection capacity (C) represents the maximum volume of vehicles which has a reasonable expectation of passing through an intersection in one hour under typical traffic flow conditions.









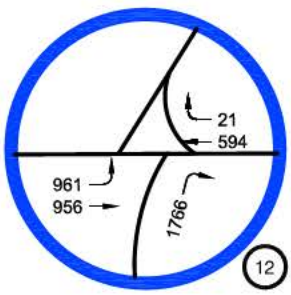


FIGURE 8

3/2011

EXISTING TRAFFIC VOLUMES
AM PEAK HOUR

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The CMA procedure uses a ratio of the traffic volume to the capacity of an intersection. This volume-to-capacity (V/C) ratio defines the proportion of an hour necessary to accommodate all the traffic moving through the intersection assuming all approaches were operating at full capacity. V/C ratios provide an ideal means for quantifying intersection operating characteristics. For example, if an intersection has a CMA value of 0.70, the intersection is operating at 70% capacity with 30% unused capacity.

Once the volume-to-capacity ratio has been calculated, operating characteristics are assigned a level of service grade (A through F) to estimate the level of congestion and stability of the traffic flow. The term "Level of Service" (LOS) is used by traffic engineers to describe the quality of traffic flow. Definitions of the LOS grades are shown in Table 4.

Reductions for traffic signal improvements in the area are included in the analysis. The area currently has Automated Traffic Surveillance and Control (ATSAC) systems improvements which increase capacity at the intersection through computer aided signal progression. The City of Los Angeles has determined that this type of improvement increases capacity by approximately 7%. In the future, the City will supplement all signal systems with an upgrade to the ATSAC system which includes advance loop detection at the intersections and system wide progression computer programming with system wide interaction between the traffic signals. This system is known as the Adaptive Traffic Control System (ATCS) system. An additional 3% capacity increase is estimated with this signal system. The existing and future conditions include ATSAC and ATCS.

Table 4
Level of Service Definitions

LOS	V/C) Ratio	Operating Conditions
A	0.000 – 0.600	At LOS A, there are no cycles that are fully loaded, and few are even close to loaded. No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication. Typically, the approach appears quite open, turning movements are easily made, and nearly all drivers find freedom of operation.
B	>0.600 – 0.700	LOS B represents stable operation. An occasional approach phase is fully utilized and a substantial number are approaching full use. Many drivers begin to feel somewhat restricted with platoons of vehicles.
C	>0.700 – 0.800	In LOS C stable operation continues. Full signal cycle loading is still intermittent, but more frequent. Occasionally drivers may have to wait through more than one red signal indication, and back-ups may develop behind turning vehicles.
D	>0.800 – 0.900	LOS D encompasses a zone of increasing restriction, approaching instability. Delays to approaching vehicles may be substantial during short peaks within the peak period, but enough cycles with lower demand occur to permit periodic clearance of developing queues, thus preventing excessive back-ups.
E	>0.900 – 1.000	LOS E represents the most vehicles that any particular intersection approach can accommodate. At capacity (V/C = 1.00) there may be long queues of vehicles waiting upstream of the intersection and delays may be great (up to several signal cycles).
F	>1.00	LOS F represents jammed conditions. Back-ups from location downstream or on the cross street may restrict or prevent movement of vehicles out of the approach under consideration; hence, volumes carried are not predictable. V/C values are highly variable, because full utilization of the approach may be prevented by outside conditions.

By applying these procedures to the intersection data, the CMA values and the corresponding Levels of Service (LOS) for existing traffic conditions were determined for each intersection. The LOS values are summarized in Table 5. Supporting capacity worksheets are contained in Appendix H of this report.

Table 5
Level of Service for Existing Conditions

No.	Intersection	Peak Hour	Existing CMA	Existing LOS
1	Vanowen Street & Woodlake Avenue	AM	0.328	A
2	Fallbrook Avenue & Vanowen Street	AM	0.631	B
3	Sale Avenue & Vanowen Street	AM	0.316	A
4	Shoup Avenue & Vanowen Street	AM	0.661	B
5	Topanga Cyn Blvd. & Vanowen Street	AM	0.828	D
6	Criswell Street & Fallbrook Avenue	AM	0.292	A
7	Fallbrook Avenue & Victory Boulevard	AM	0.726	C
8	Shoup Avenue & Victory Boulevard	AM	0.738	C
9	Fallbrook Avenue & Oxnard Street	AM	0.613	B
10	Oxnard Street & Shoup Avenue	AM	0.541	A
11	Fallbrook Avenue & Ventura Boulevard	AM	0.687	B
12	EB (SB) 101 Fwy On & Ventura Boulevard	AM	0.678	B

Analysis of Existing + Project Conditions

An evaluation has been conducted to evaluate potential project impacts to the existing conditions. This has been done by adding the project traffic to the existing traffic. A description of the significant impact definition is provided further in the study under the future conditions Table 8. As noted below in Table 6, one significant traffic impacts occurs. This same significant impact occurs in the future with project conditions. Mitigation is proposed in a further chapter of this report to mitigate to a level of insignificance.

Table 6
Traffic Conditions for Existing + Project

No.	Intersection	Peak Hour	Existing CMA	Existing LOS	Existing + Project CMA	Existing + Project LOS		Impact	Significant Impact?
1	Vanowen Street & Woodlake Avenue	AM	0.328	A	0.337	A	+	0.009	No
2	Fallbrook Avenue & Vanowen Street	AM	0.631	B	0.642	B	+	0.011	No
3	Sale Avenue & Vanowen Street	AM	0.316	A	0.351	A	+	0.035	No
4	Shoup Avenue & Vanowen Street	AM	0.661	B	0.700	C	+	0.039	No
5	Topanga Cyn Blvd. & Vanowen Street	AM	0.828	D	0.829	D	+	0.001	No
6	Criswell Street & Fallbrook Avenue	AM	0.292	A	0.335	A	+	0.043	No
7	Fallbrook Avenue & Victory Boulevard	AM	0.726	C	0.749	C	+	0.023	No
8	Shoup Avenue & Victory Boulevard	AM	0.738	C	0.792	C	+	0.054	**YES**
9	Fallbrook Avenue & Oxnard Street	AM	0.613	B	0.623	B	+	0.010	No
10	Oxnard Street & Shoup Avenue	AM	0.541	A	0.579	A	+	0.038	No
11	Fallbrook Avenue & Ventura Boulevard	AM	0.687	B	0.712	C	+	0.025	No
12	EB (SB) 101 Fwy On & Ventura Boulevard	AM	0.678	B	0.697	B	+	0.019	No

Analysis of Future Traffic Conditions

Future traffic volume projections have been developed to analyze the traffic conditions after completion of other planned land developments including the proposed project. Pursuant to the City of Los Angeles traffic impact guidelines, the following steps have been taken to develop the future traffic volume estimate:

(a) Existing traffic plus ambient growth (2 percent total) to 2012 study year;

(b) Traffic in (a) plus related projects (without project scenario);

(c) Traffic in (b) with the proposed project traffic (with project scenario);

(d) Traffic in (c) plus traffic mitigation, if necessary.

The future cumulative analysis includes other development projects located within the study area that are either under construction or planned. As part of this analysis, development information was obtained from the City of Los Angles Department of Transportation and Department of Planning. Development lists were reviewed and checked in the field to identify those projects that could produce additional traffic at the study intersections by the future study year 2012. It should be noted that this project, or any actions taken by the City regarding this project, does not have a direct bearing on these other proposed related projects. The locations of the related projects are shown in Figure 9, with their descriptions provided in Table 7.

To evaluate future traffic conditions with the related projects, estimates of the peak hour trips generated by the other developments were developed or provided by LADOT. The potential net increase in traffic from the related projects is provided in Appendix G. The related project only traffic volumes are provided in Figure 10.

The traffic impact of traffic volume increases has been calculated by adding the existing traffic volume, the ambient growth factor and traffic from other development projects for study year 2012. Future cumulative “without project” peak hour traffic volume estimates are shown in Figure 11 for the morning.

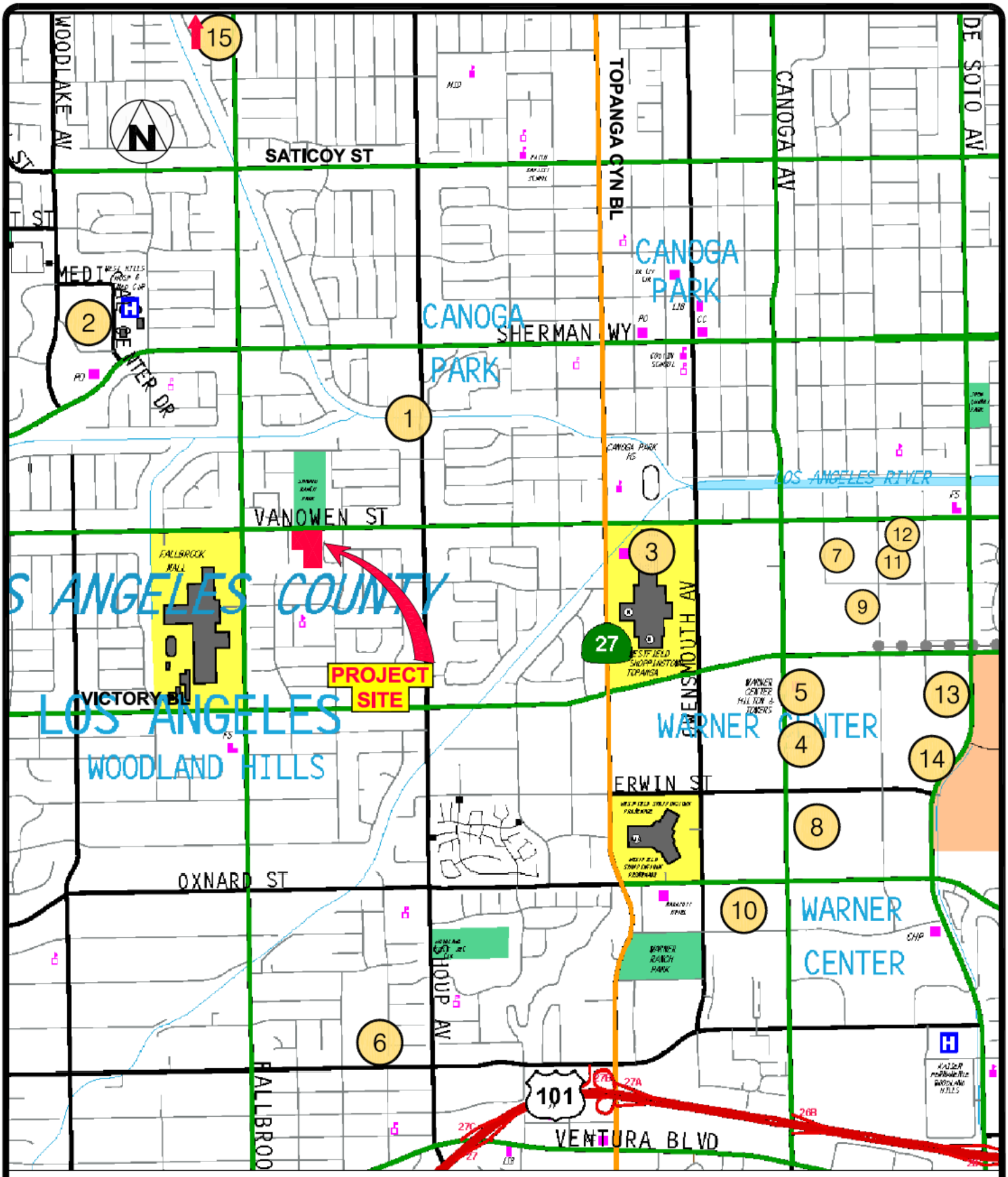

FIGURE 9

3/2011

RELATED PROECT LOCATIONS

Overland Traffic Consultants, Inc.
27201 Tourney Road #206, Santa Clarita, CA 91355
(661)799-8423 v, (661)799-8456 f, OTCINC@attbi.com

Table 7
Related Projects Descriptions

No	Location	Planning or DOT Case #			Description
1	7011 Shoup Avenue	SFV 2003-091	20	unit	Single Family Homes
			135	students	Pre-School
			360	students	K-8 Private School
2	23135 Sherman Place	SFV 2006-300	160	unit	Apartments
3	6600 N Topanga Cyn Bl	SFV 2002-003	1,650,000	sf	Westfield Plaza Expansion
					appx. 60% Complete
4	6410 Canoga Avenue	WC-2009-040	(47,000)	sf	Remove Electronics SS
			47,000	sf	Health Club
5	6464 Canoga Avenue	WC-2005-0417	154,565	sf	Office
			16,117	sf	Restaurant
			(65,903)	sf	Remove Office
6	5607 Capistrano Ave	SFV 2004-001	1,600	students	Hughes Magnet School
7	6700 Eton Avenue	WC-2005-007	441	unit	Apartments
8	6250 Canoga Avenue	WC-2003-008	10,000	sf	Retail
			601	unit	Apartments
9	6625 Variel Avenue	WC-2002-006	522	unit	Convert Apt to Condo
10	21530 Oxnard St	WC-2006-026	30,000	sf	Aquatic Health Club
11	6710 Variel Avenue	WC-2006-033	242	unit	Apartments
12	21050 Vanowen Street	WC-2004-023	210	unit	Apartments
13	6355 DeSoto Avenue	WC-2004-043	421	unit	Apartments
14	6219 DeSoto Avenue	WC-2003-022	(76,242)	sf	Remove Industrial
			(76,242)	sf	Remove Office
			394	unit	Senior Apartments
			574	unit	Apartments
15	8401 Fallbrook Avenue	SFV 2007-021	210,000	sf	Mixed Use

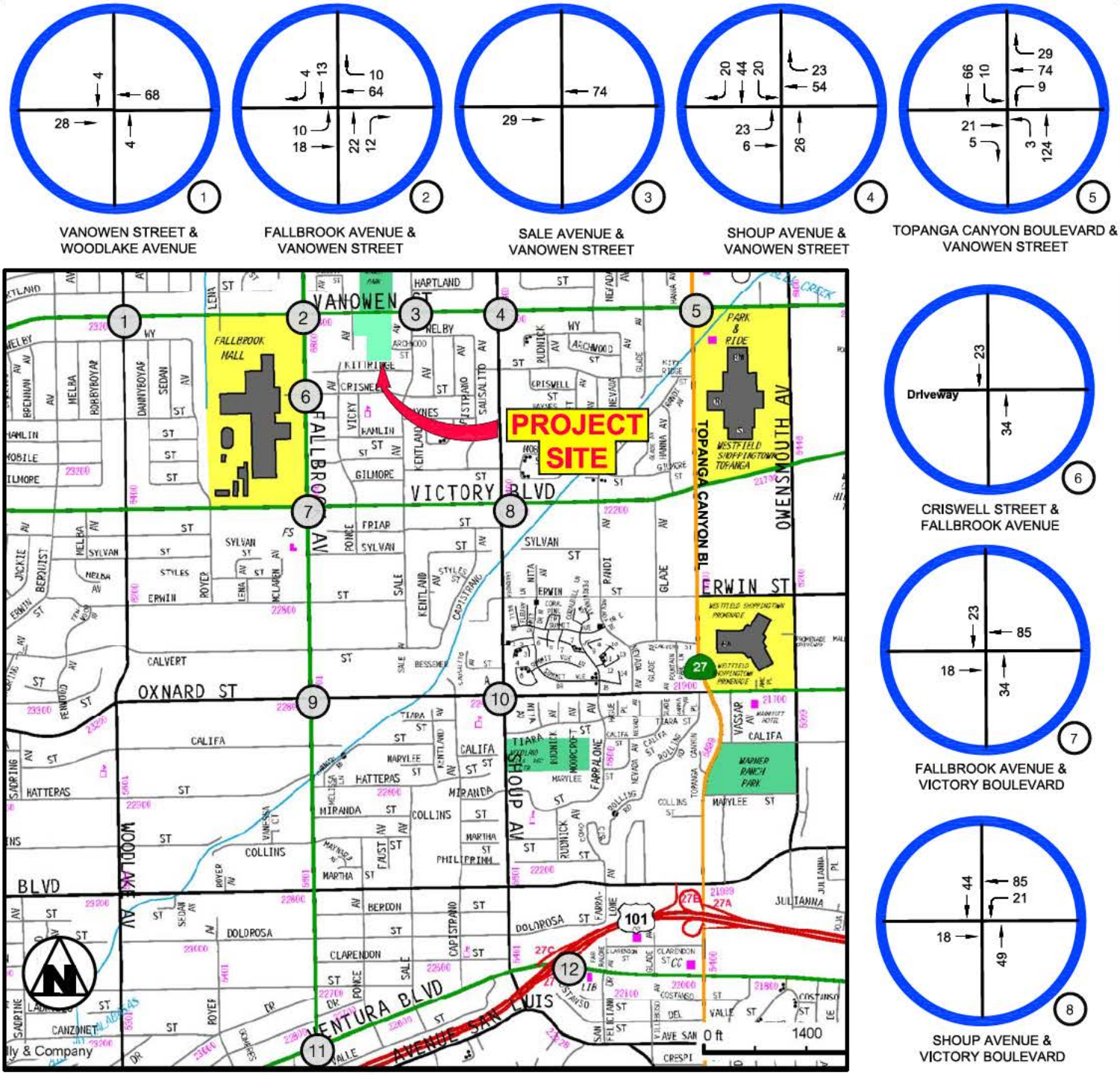

FIGURE 10

3/2011

RELATED PROJECT ONLY VOLUMES

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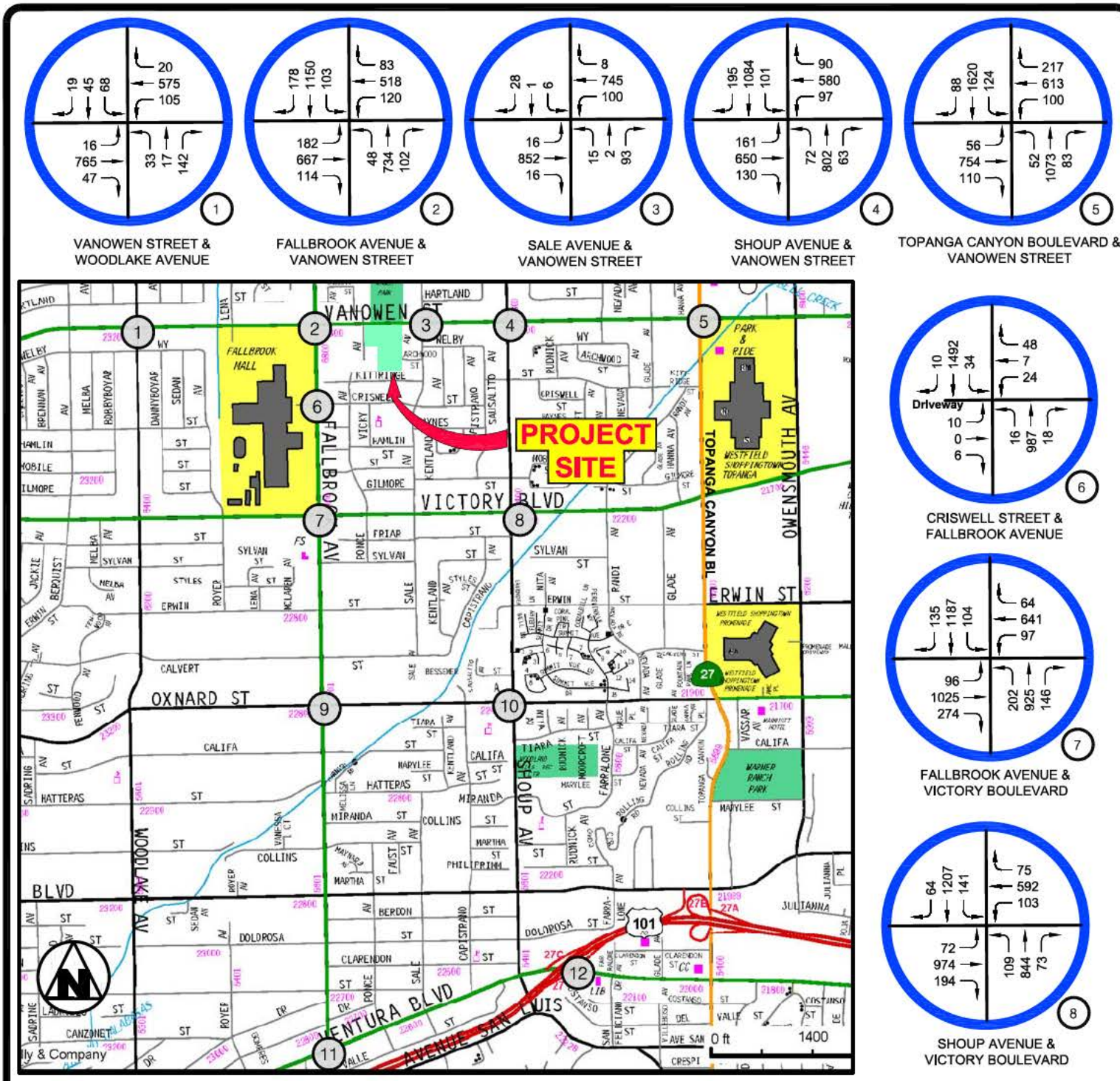


FIGURE 11

3/2011

FUTURE 2012 TRAFFIC VOLUMES
WITHOUT PROJECT
AM PEAK HOUR

Overland Traffic Consultants, Inc.
27201 Tourney Road #206, Santa Clarita, CA 91355
(661)799-8423 v, (661)799-8456 f, OTC@overlandtraffic.com

The impact of a development project is determined by comparing the changes in the traffic conditions between the different growth scenarios at each study intersection. According to the standards adopted by the City of Los Angeles, a traffic impact is considered significant if the related increase in the V/C value equals or exceeds the thresholds shown in Table 8 below and are marked in the following tables as significant, if applicable. Table 9 shows the impact of the ambient traffic growth and traffic from the related projects at the study intersections.

Table 8
Significant Impact Criteria
City of Los Angeles

LOS	Final V/C Value	Increase in V/C Value
C	0.701 - 0.800	+ 0.040
D	0.801 - 0.900	+ 0.020
E, F	> 0.900	+ 0.010 or more

Table 9
Future Traffic Conditions Without Project

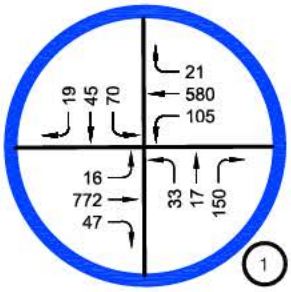
No.	Intersection	Peak Hour	Existing CMA	Existing LOS	Future (2012) Without Project CMA	Future (2012) Without Project LOS		Growth
1	Vanowen Street & Woodlake Avenue	AM	0.328	A	0.346	A	+	0.018
2	Fallbrook Avenue & Vanowen Street	AM	0.631	B	0.656	B	+	0.025
3	Sale Avenue & Vanowen Street	AM	0.316	A	0.334	A	+	0.018
4	Shoup Avenue & Vanowen Street	AM	0.661	B	0.706	C	+	0.045
5	Topanga Cyn Blvd. & Vanowen Street	AM	0.828	D	0.905	E	+	0.077
6	Criswell Street & Fallbrook Avenue	AM	0.292	A	0.311	A	+	0.019
7	Fallbrook Avenue & Victory Boulevard	AM	0.726	C	0.753	C	+	0.027
8	Shoup Avenue & Victory Boulevard	AM	0.738	C	0.789	C	+	0.051
9	Fallbrook Avenue & Oxnard Street	AM	0.613	B	0.641	B	+	0.028
10	Oxnard Street & Shoup Avenue	AM	0.541	A	0.590	A	+	0.049
11	Fallbrook Avenue & Ventura Boulevard	AM	0.687	B	0.747	C	+	0.060
12	EB (SB) 101 Fwy On & Ventura Boulevard	AM	0.678	B	0.734	C	+	0.056

The traffic impact of project's traffic volume has been calculated by adding the project volume to the non-project traffic growth. Table 10 contains the project impact values at the study intersections. As shown, one of the study intersections is expected to be significantly impacted by project traffic volume using the significant impact criteria established by the City of Los Angeles Department of Transportation. This impact can be reduced to a level of insignificance through project mitigation as detailed in Chapter 6. It should be noted that the impact analysis does not consider any changes to the existing intersection configuration (i.e., future roadway improvements). Future cumulative "with project" peak hour traffic volumes are shown in Figure 11.

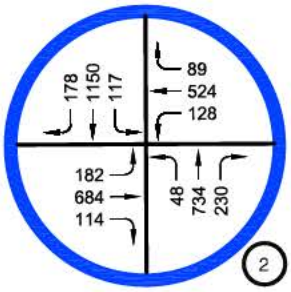
Table 10

Future Traffic Conditions Without and With Project

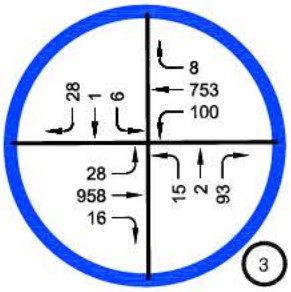
No.	Intersection	Peak Hour	Future (2012) Without Project CMA	LOS	Future (2012) With Project CMA	LOS	IMPACT	Significant Impact
1	Vanowen Street & Woodlake Avenue	AM	0.346	A	0.355	A	+ 0.009	No
2	Fallbrook Avenue & Vanowen Street	AM	0.656	B	0.667	B	+ 0.011	No
3	Sale Avenue & Vanowen Street	AM	0.334	A	0.369	A	+ 0.035	No
4	Shoup Avenue & Vanowen Street	AM	0.706	C	0.739	C	+ 0.033	No
5	Topanga Cyn Blvd. & Vanowen Street	AM	0.905	E	0.906	E	+ 0.001	No
6	Criswell Street & Fallbrook Avenue	AM	0.311	A	0.354	A	+ 0.043	No
7	Fallbrook Avenue & Victory Boulevard	AM	0.753	C	0.775	C	+ 0.022	No
8	Shoup Avenue & Victory Boulevard	AM	0.789	C	0.844	D	+ 0.055	**YES**
9	Fallbrook Avenue & Oxnard Street	AM	0.641	B	0.653	B	+ 0.012	No
10	Oxnard Street & Shoup Avenue	AM	0.590	A	0.628	B	+ 0.038	No
11	Fallbrook Avenue & Ventura Boulevard	AM	0.747	C	0.772	C	+ 0.025	No
12	EB (SB) 101 Fwy On & Ventura Boulevard	AM	0.734	C	0.753	C	+ 0.019	No



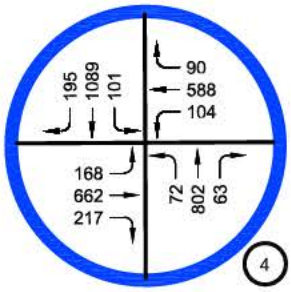
VANOWEN STREET &
WOODLAKE AVENUE



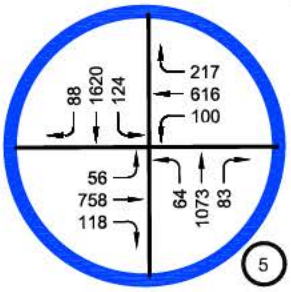
FALLBROOK AVENUE &
VANOWEN STREET



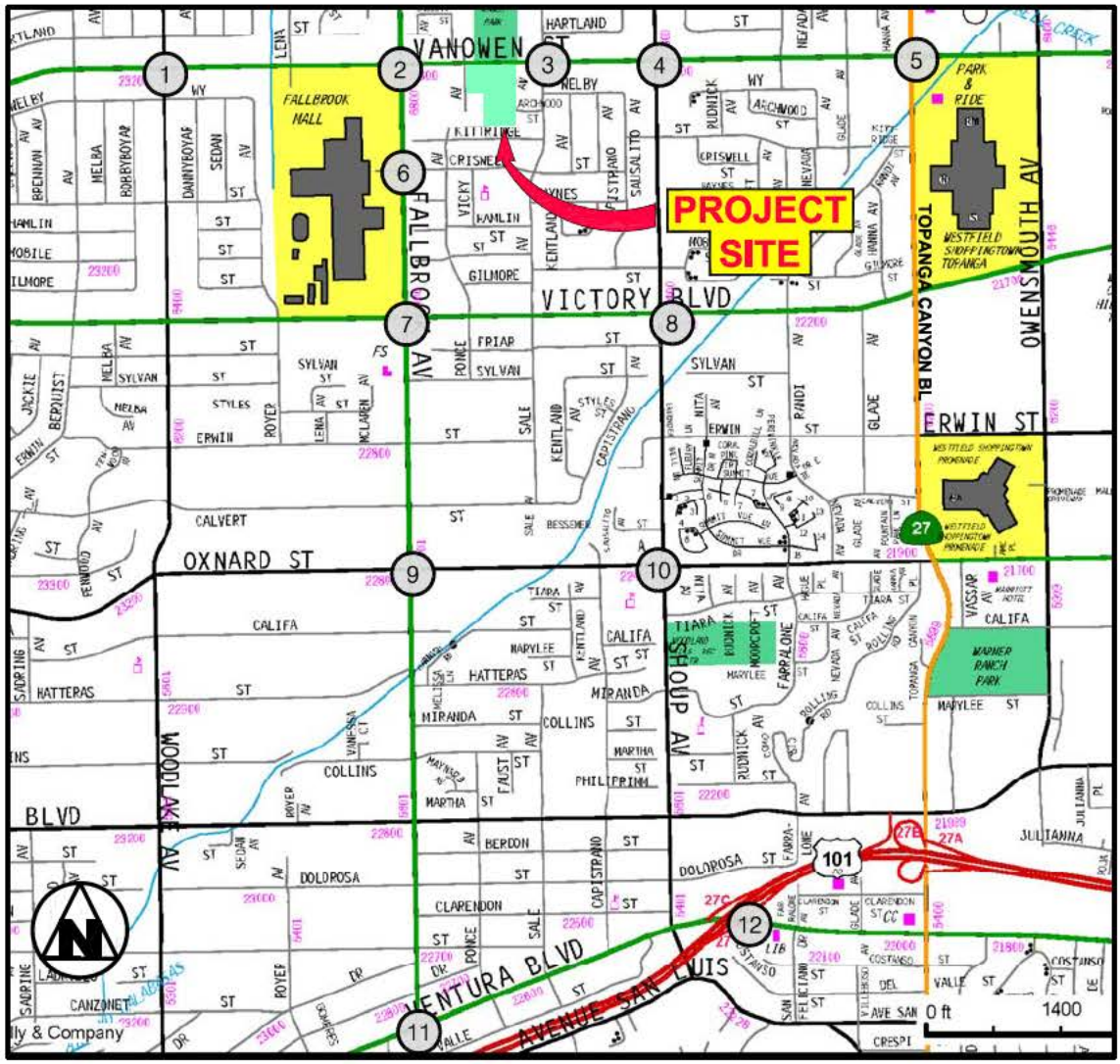
SALE AVENUE &
VANOWEN STREET

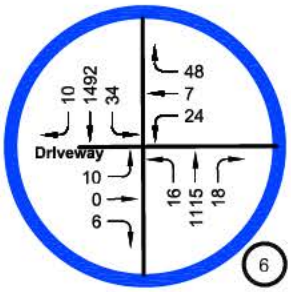


SHOUP AVENUE &
VANOWEN STREET

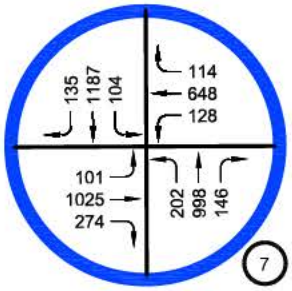


TOPANGA CANYON BOULEVARD &
VANOWEN STREET

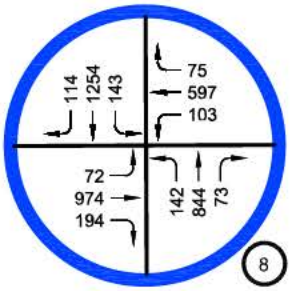




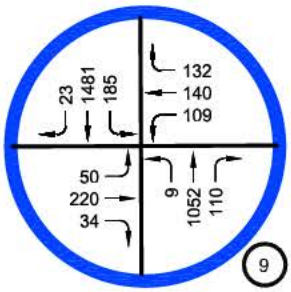
CRISWELL STREET &
FALLBROOK AVENUE



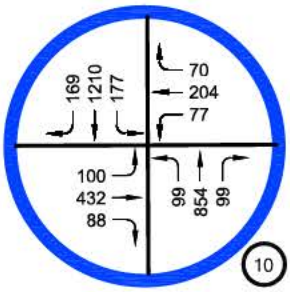
FALLBROOK AVENUE &
VICTORY BOULEVARD



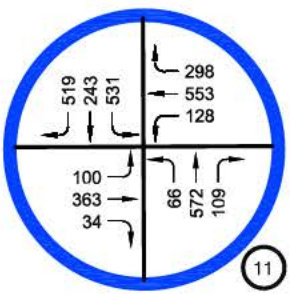
SHOUP AVENUE &
VICTORY BOULEVARD



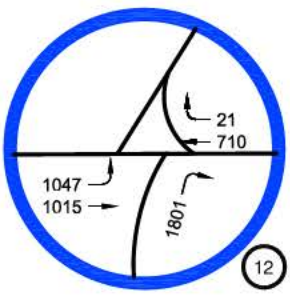
FALLBROOK AVENUE &
OXNARD STREET



OXNARD STREET &
SHOUP AVENUE



FALLBROOK AVENUE &
VENTURA BOULEVARD



EB-101 (SB) VENTURA FWY ONRAMP
VENTURA BOULEVARD

FIGURE 12

4/2011

FUTURE 2012 TRAFFIC VOLUMES
WITH PROJECT
AM PEAK HOUR

Overland Traffic Consultants, Inc.
27201 Tourney Road #206, Santa Clarita, CA 91355
(661)799-8423 v, (661)799-8456 f, OTC@overlandtraffic.com

Transit Analysis

The proposed project is forecast to generate a net of approximately 164 weekday daily trips with 285 trips during the AM Peak Hour and 3 trips during the PM Peak Hour. As per Congestion Management Program (CMP) 2008 guidelines person trips can be estimated by multiplying the total trips generated by 1.4. The trips assigned to transit may be calculated by multiplying the person trips generated by 3.5%. The CMP Transit trip generation calculation is displayed below in Table 11.

Table 11
Transit Trips

	DAILY	AM PEAK HOUR	PM PEAK HOUR
PROJECT TRIPS (from Table 2)	164	285	3
PERSON TRIPS (trips x 1.4)	230	399	4
TRANSIT TRIPS (person trips x 3.5%)	**8**	**14**	**0**

This level of transit increase is not expected to adversely affect the current ridership of the transit services in the area.

Impacts on Regional Transportation System

The Congestion Management Program (CMP) was adopted to track regional traffic growth, building permits and transportation improvements. The CMP designated a transportation network including all state highways and some arterials within the County to be monitored by local jurisdictions. If the LOS standard deteriorates on the CMP network, then local jurisdictions must prepare a deficiency plan to be in conformance with the CMP program. Current changes to the CMP program being considered by local officials include adding a countywide trip fee to mitigate regional cumulative impacts.

For purposes of the CMP LOS analysis, a substantial change in freeway segments are defined as an increase or decrease of 0.10 in the demand to capacity ratio and a change in LOS. A CMP traffic impact analysis is required if a project will add 150 or more trips to a freeway segment in either direction and where the project will add 50 or more trips to any CMP monitoring intersection during either the AM or PM weekday peak hour.

The nearest CMP monitoring location is at Topanga Canyon Boulevard and Victory Boulevard. The traffic study shows that the project distribution would not add significant traffic to this location and impacts would not be created at this location. As shown in Figure 6, the proposed project does not exceed the CMP traffic limits. Therefore, no additional CMP analysis is necessary.

CHAPTER 6 MITIGATION MEASURES

Based on the analysis in this study, it has been determined that the added traffic generated by the proposed private high school will significantly impact one of the study intersections using criteria established by the City of Los Angeles. Mitigation is proposed to reduce the impacts to a level of insignificance. This will be done through Transportation Demand Management and signal system improvements.

Existing + Project

Shoup Avenue & Victory Boulevard

Implement a project specific Transportation Demand Management (TDM) Plan to encourage students, teachers and administrators to use mass transit, rideshare, walk and cycle to and from the school site. The goal of the TDM plan would be a 30% reduction in vehicle trips to and from the site. The TDM plan will include items such as school specific bus transport, reduced price bus passes, rideshare matching, limited approval of parking passes for students, off-site parking observations with penalties, bicycle racks, showers for those that walk and cycle and incentives for participating.

This improvement will reduce the impact to a level of insignificance as indicated in table 12a below.

Table 12a
Existing + Project + Mitigation

			Existing		Existing + Project				Existing with Mitigation With Project				
No.	Intersection	Peak Hour	CMA	LOS	CMA	LOS		Impact	CMA	LOS		IMPACT	Significant Impact
8	Shoup Ave & Victory Blvd	AM	0.738	C	0.792	C	+	0.054	0.776	C	+	0.038	No

Future With Project

Shoup Avenue & Victory Boulevard

Implement a project specific Transportation Demand Management (TDM) Plan to encourage students, teachers and administrators to use mass transit, rideshare, walk and cycle to and from the school site. The goal of the TDM plan would be a reduction in vehicle trips to and from the site by half. In addition, a traffic signal improvement is proposed. This improvement would include the design and installation of a safety improvement for an east and westbound left turn phase, and upgrade to loop detectors, pedestrian indicators, and traffic controller as needed. The improvement adding another phase to the traffic signal will reduce the overall capacity at the intersection. It is anticipated that some of the traffic currently using Shoup Avenue and Victory Boulevard will shift to alternative routes due this reduction in capacity.

Table 12b
With Project + Mitigation

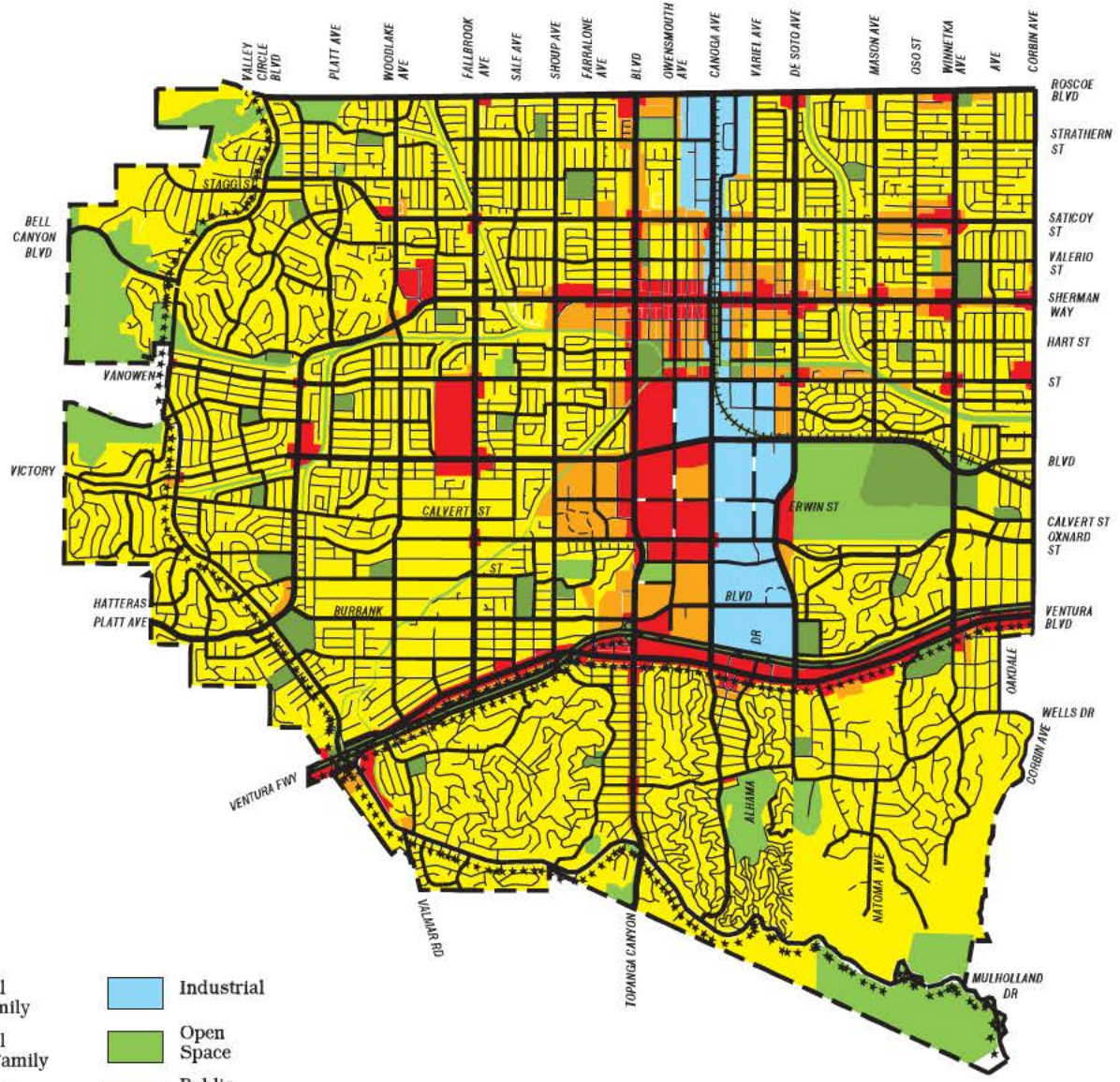
No.	Intersection	Peak Hour	Future (2012) Without Project CMA	LOS	Future (2012) With Project CMA	LOS	IMPACT	Future with Mitigation With Project CMA	LOS	IMPACT	Significant Impact
8	Shoup Ave & Victory Blvd	AM	0.789	C	0.844	D	+ 0.055	0.806	D	+ 0.017	No

APPENDIX A

COMMUNITY PLAN LAND USE

SUMMARY OF LAND USE

CATEGORY	LAND USE	CORRESPONDING ZONES	NET ACRES	% AREA	TOTAL NET ACRES	TOTAL % AREA
RESIDENTIAL						
Single Family					**9,860**	**55.1**
	Minimum	OS, A1, A2, RE40	1,012	5.7		
	Very Low	RE20, RA, RE15, RE11	3,424	19.1		
	Low	RE9, RS, R1, RU, RD6, RD5	5,424	30.3		
Multiple					**826**	**4.6**
	Low Medium I	R2, RD3, RD4, RZ3, RZ4, RU, RW1	162	0.9		
	Low Medium II	RD1.5, RD2 , RW2, RZ2.5	156	0.9		
	Medium	R3	469	2.6		
	High Medium	R4	39	0.2		
COMMERCIAL					**972**	**5.4**
	Neighborhood	C1, C1.5, C2, C4	167	0.9		
	Limited	CR, C1, C1.5, P	52	0.3		
	General	CR, C1.5, C2, C4	186	1.0		
	Community	CR, C2, C4	347	2.0		
	Regional	CR, C1.5, C2, C4, R3, R4, R5	220	1.2		
INDUSTRIAL					**677**	**3.8**
	Limited	CM, MR1, M1	292	1.6		
	Light	MR2, M2	385	2.2		
PARKING					**0**	**0.0**
	Parking	P, PB	0	0.0		
OPEN SPACE/PUBLIC FACILITIES					**2,117**	**11.8**
	Open Space	OS, A1	1,404	7.8		
	Public Facilities	PF	713	4.0		
STREETS						
	Private Streets	-	21	0.1	**3,442**	**19.3**
	Public Streets	-	3,421	19.2		
TOTAL					**17,894**	**100.0**



LEGEND

- Residential Single Family
- Residential Multiple Family
- Commercial
- Industrial
- Open Space
- Public Facilities

GENERALIZED LAND USE
CANOGA PARK - WINNETKA - WOODLAND HILLS - WEST HILLS

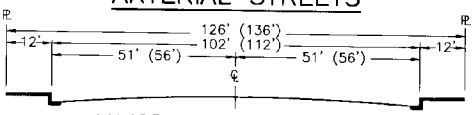
NORTH

APPENDIX B

CIRCULATION MAPS, STREET STANDARDS & STREET PLANS

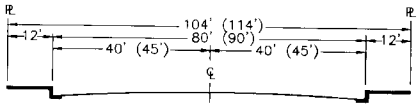
B-4428

ARTERIAL STREETS



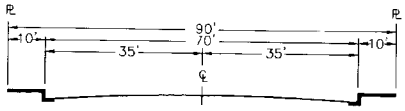
MAJOR HIGHWAY—CLASS I

At intersections with other Major Highways, the larger widths shown in parentheses should be provided, as determined by LADOT, utilizing a Standard Flare Section.



MAJOR HIGHWAY—CLASS II

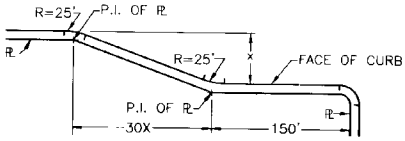
At intersections where LADOT has determined that dual left turn lanes are required, the larger widths shown in parentheses shall be provided, utilizing a Standard Flare Section.



SECONDARY HIGHWAY

TRANSITIONAL EXTENSIONS

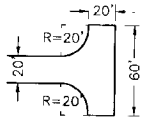
Where a designated Major Highway (Class I or II) or a Secondary Highway crosses another designated arterial street and then changes in designation to a street of lesser standard width, the street of lesser standard width shall be widened on both sides from the intersection to the width of the higher designotian and tapered in a Standard Flare Sectian, as shown below, to provide on orderly transition.



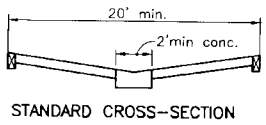
Dimensions shall be measured angle point to angle point.

STANDARD FLARE SECTION
(Plan View)

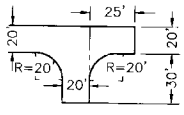
ALLEYS



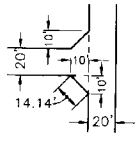
STANDARD TURNING AREA
(Plan View)



STANDARD CROSS-SECTION



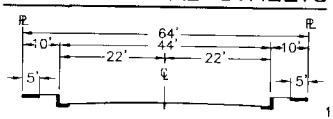
MINIMUM TURNING AREA
(Plan View)



STANDARD CUT-CORNERS
FOR 90° INTERSECTION
(Plan View)

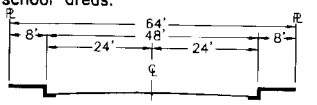
NOTE: Dimensions shown hereon are not to scale.

NON-ARTERIAL STREETS



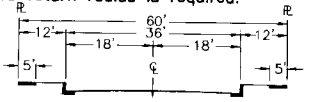
COLLECTOR STREET

For use in quarter mile streets and school areas.



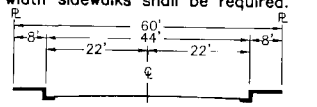
INDUSTRIAL COLLECTOR STREET

For use in industrial areas to assist the flow of local truck traffic within those areas to adjacent arterial streets. A 35' curb return radius is required.



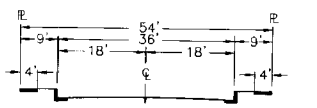
LOCAL STREET

In commercial and multiple residential areas, a 40-foot roadway with 10-foot parkways, and full-width sidewalks shall be required.



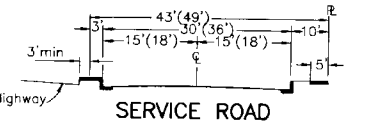
INDUSTRIAL LOCAL STREET

For use in industrial areas. A 35' curb return radius is required.



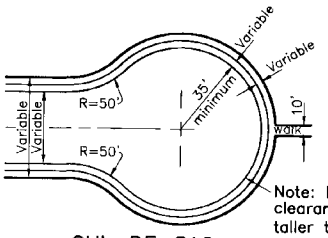
NONCONTINUOUS LOCAL STREET

May include cul-de-sac, loop streets and short connector streets. Where an approved internal pedestrian system is provided the parkway on one side may be reduced to 3-feet.



SERVICE ROAD

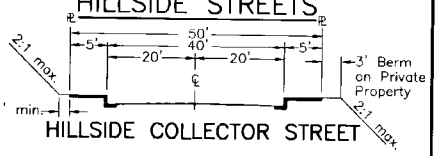
For use on adjoining major or secondary highways, except that the larger widths shown in parentheses shall be provided in multiple residential zones.



CUL-DE-SAC
(Plan View)
MAY BE UNSYMMETRICAL

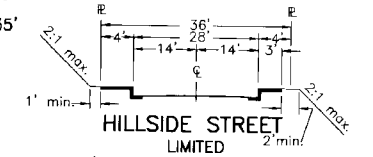
Note: For fire truck clearance, no obstruction taller than 6" shall be permitted within 3 ft. of the curb. On-street parking shall be prohibited.

HILLSIDE STREETS

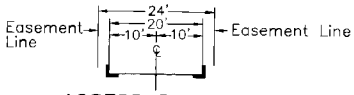


HILLSIDE COLLECTOR STREET

HILLSIDE STREET
LOCAL

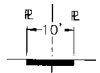


HILLSIDE STREET
LIMITED
(Porking an one side only)



ACCESS ROADWAY
CONDITIONAL

(Limited to 4 dwelling units, and a maximum length of 300 feet. Private Street only)



STANDARD WALKWAY
CROSS - SECTION

BUREAU OF ENGINEERING
CITY OF LOS ANGELES
RECORDED
OFFICIAL RECORD

PREPARED IN COOPERATION WITH THE DEPARTMENTS OF TRANSPORTATION AND CITY PLANNING

BUREAU OF ENGINEERING — DEPARTMENT OF PUBLIC WORKS — CITY OF LOS ANGELES

STANDARD STREET DIMENSIONS

STANDARD PLAN S-470-0

SUPERSEDES	REFERENCES
D-22549	

VAULT INDEX NUMBER B-4428

SHEET 1 OF 2 SHEETS

SUBMITTED March 25, 1999
Clark W. Robins
ENGINEER OF DESIGN
Rodney Hasan
DEPUTY ENGINEER

APPROVED March 31, 1999
Thomas Conner
CITY ENGINEER

DESIGNED BY	DRAWN BY	CHECKED BY
M.F.D., D.L.F., J.E.F., A.D.R.	R. TANABE	L. GANAJA

REGISTERED PROFESSIONAL ENGINEER — THOMAS K. CONNER — NO. 23788 — EXP. 12/31/2001 — CIVIL — STATE OF CALIFORNIA

APPROVED Frances Benavidez 4-6-99
GENERAL MANAGER, DEPT. OF TRANSPORTATION — DATE

Constowe 4/6/99
DIRECTOR OF PLANNING — DATE

ADOPTED MAY 13, 1999
CITY PLANNING COMISSION — DATE

THIS STANDARD PLAN BECOMES EFFECTIVE ON NOVEMBER 10, 1999

B-4428

B-4428

STANDARD STREET CONDITIONS

1. City Council may, by ordinance, adopt specific standards for individual streets which differ from these official standard street dimensions. Community Plans should be reviewed for designation of Pedestrian Priority Street Segments of arterial streets which would require wider sidewalks than those indicated on this Standard Plan.

2. Sidewalk widths for non-arterial streets shall be the minimum shown hereon. Greater widths, up to full width between curb and property line, with tree wells, shall be required where commercial and multiple residential frontage, schools, areas of heavy pedestrian traffic or other special circumstances indicate the need.

3. Except for special conditions or as otherwise provided, sidewalk shall be placed as close to the property line as possible.

4. Where sidewalk is constructed adjacent to the curb it shall have a minimum width of 10 feet inclusive of curb thickness except for hillside streets, noncontinuous local streets and industrial streets.

5. Where sidewalk is constructed on the fill or low side of a hillside street, a berm may be required on private property.

6. Easements may be required in addition to the widths shown hereon, where necessary for the installation of public utilities or for widened sidewalks (minimum 15-foot width) adjacent to transit stations.

7. Fifty-foot curb radii (instead of the standard 35' curb radii) shall be provided for cul-de-sacs in industrial areas.

8. Private street development should conform to the standard public street dimensions shown on this sheet, where appropriate. Variations may be approved on a case-by-case basis.

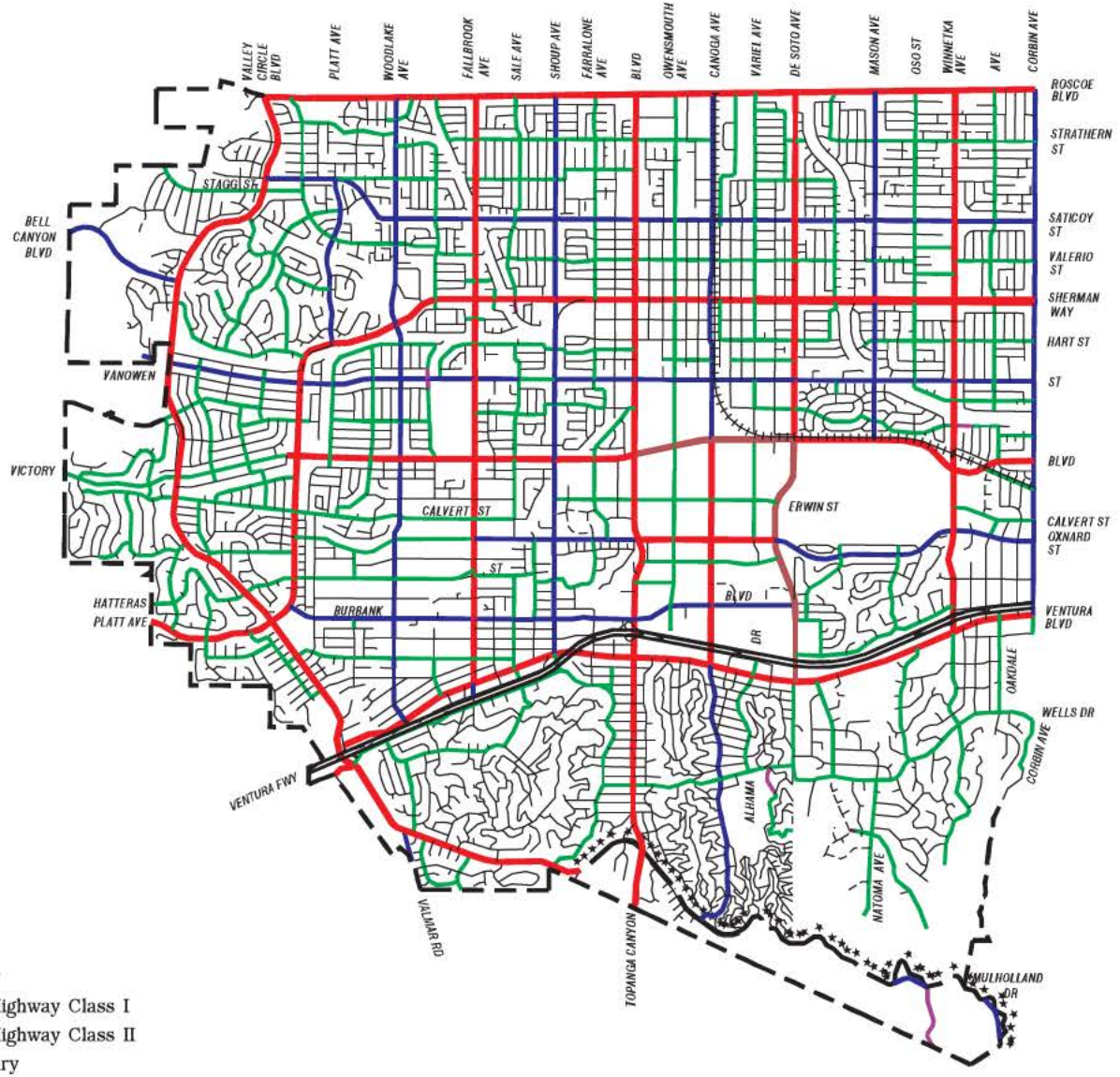
9. For intersections of streets the following dedications shall apply:
   a. Intersections of arterial streets with any other street: 15'x15' cut corner OR 20' curved corner radius.
   b. Intersections of non-arterial and/or hillside streets: 10'x10' cut corner OR 15' curved corner radius.

10. Hillside Collector Streets. In hillside areas where topography or other environmental considerations, documented to the satisfaction of the City Engineer, would render full street improvements infeasible, the roadway width of the hillside collector street may be reduced to no less than 32 feet, provided that parking is limited to one side only.

BUREAU OF ENGINEERING
CITY OF LOS ANGELES
FOUNDED 1781
OFFICIAL RECORD

STANDARD PLAN NO. S-470-0	VAULT INDEX NUMBER B-4428	SHEET 2 OF 2 SHEETS

B-4428



LEGEND

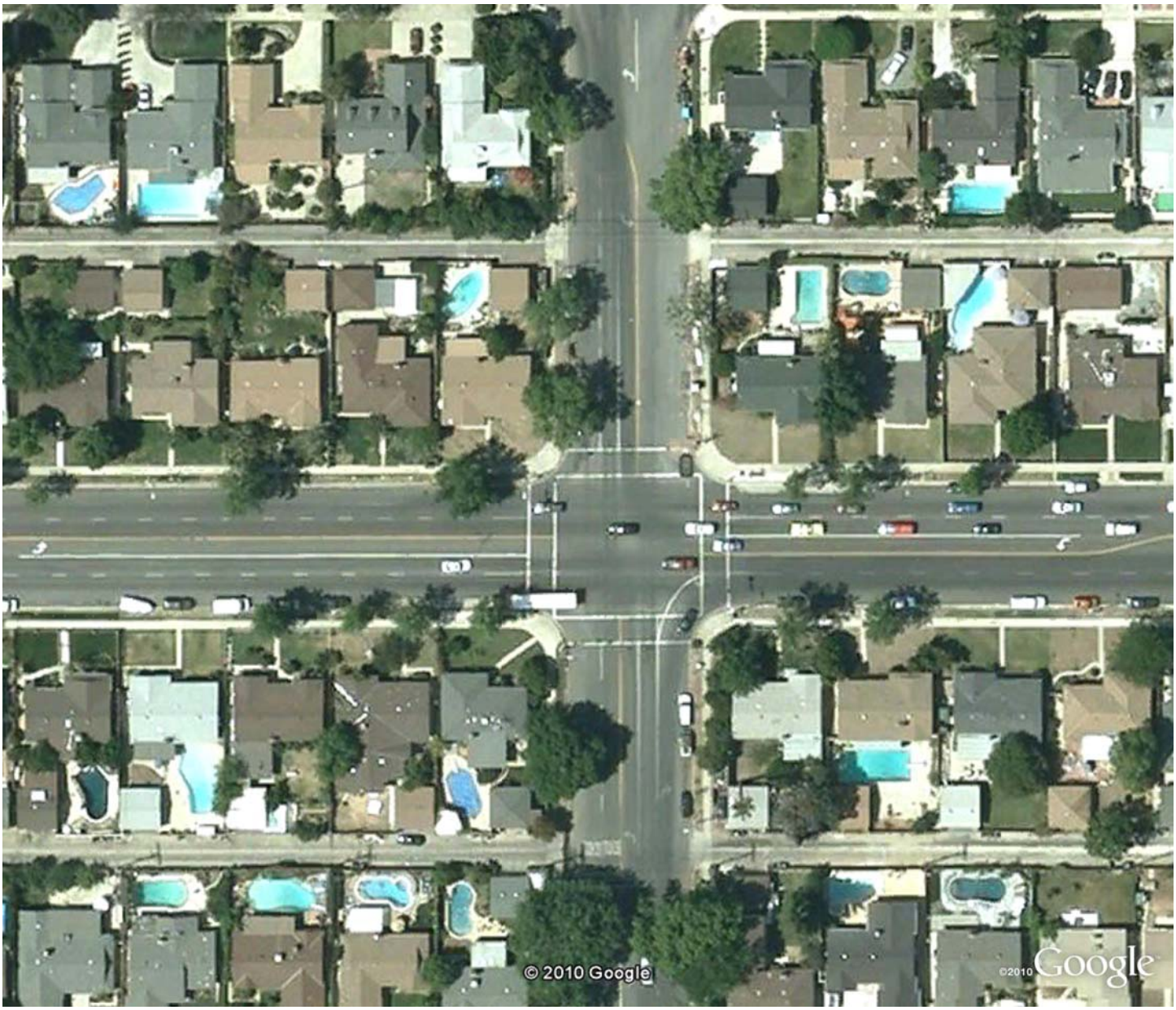
- Freeway
- Major Highway Class I
- Major Highway Class II
- Secondary
- Collector
- Proposed
- Local

GENERALIZED CIRCULATION

CANOGA PARK - WINNETKA - WOODLAND HILLS - WEST HILLS

NORTH

as of:April 15 2008-CPC06-5598GPAZC PLT:09/09/08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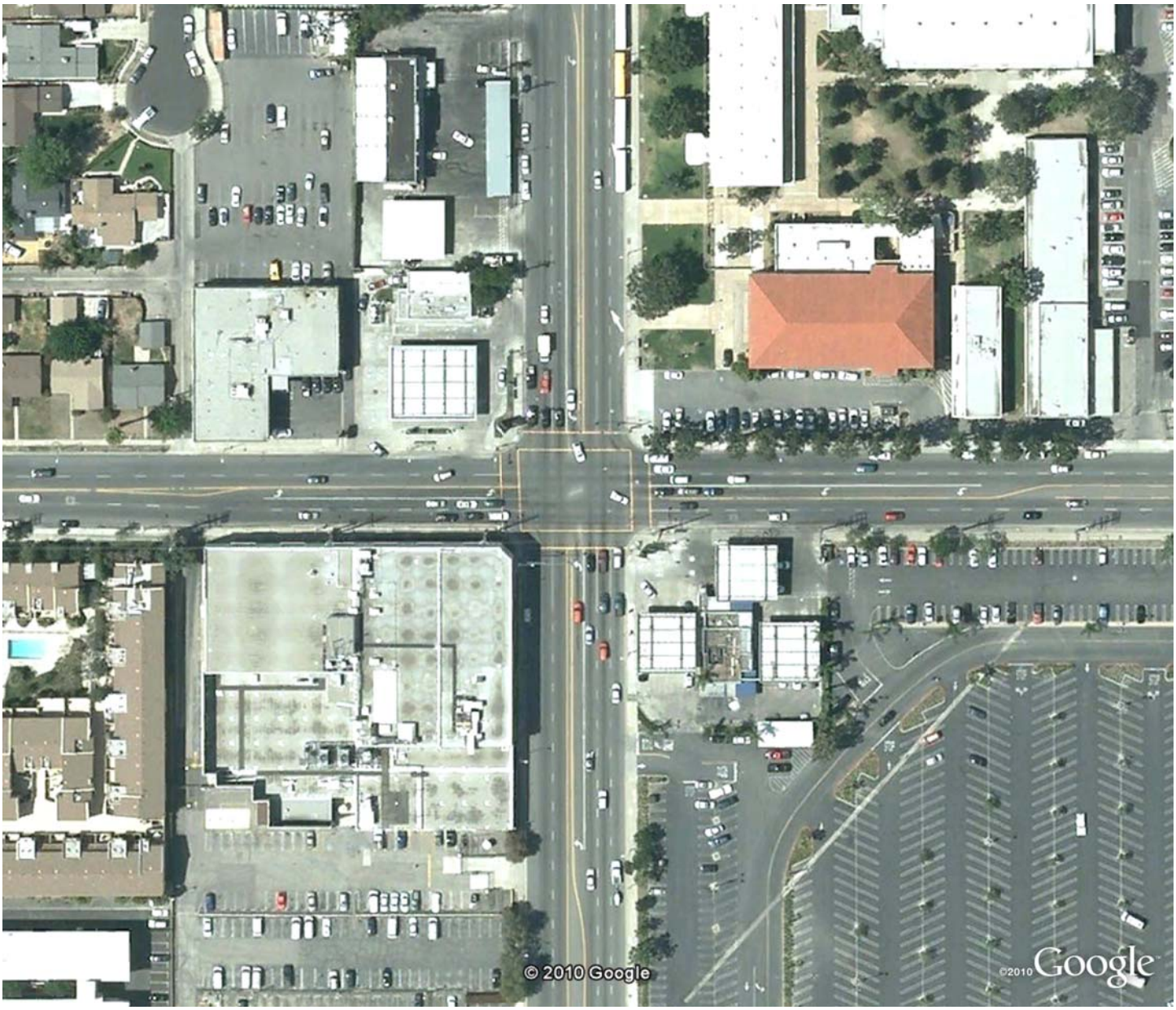
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© 2011 Google
Imagery Date: Oct 23, 2007
34°10'45.12" N 118°37'23.87" W elev 0 ft
Eye alt 751 ft
Google

© 2011 Google
Imagery Date: Oct 23, 2007
34°10'45.27" N
118°36'52.59" W
elev 0 ft
Eye alt 529 ft

©2011 Google
Imagery Date: Oct 23, 2007
34°09'58.08" N
118°37'24.38" W
elev 0 ft
Eye alt 823 ft
Google

© 2011 Google
Imagery Date: Oct 23, 2007
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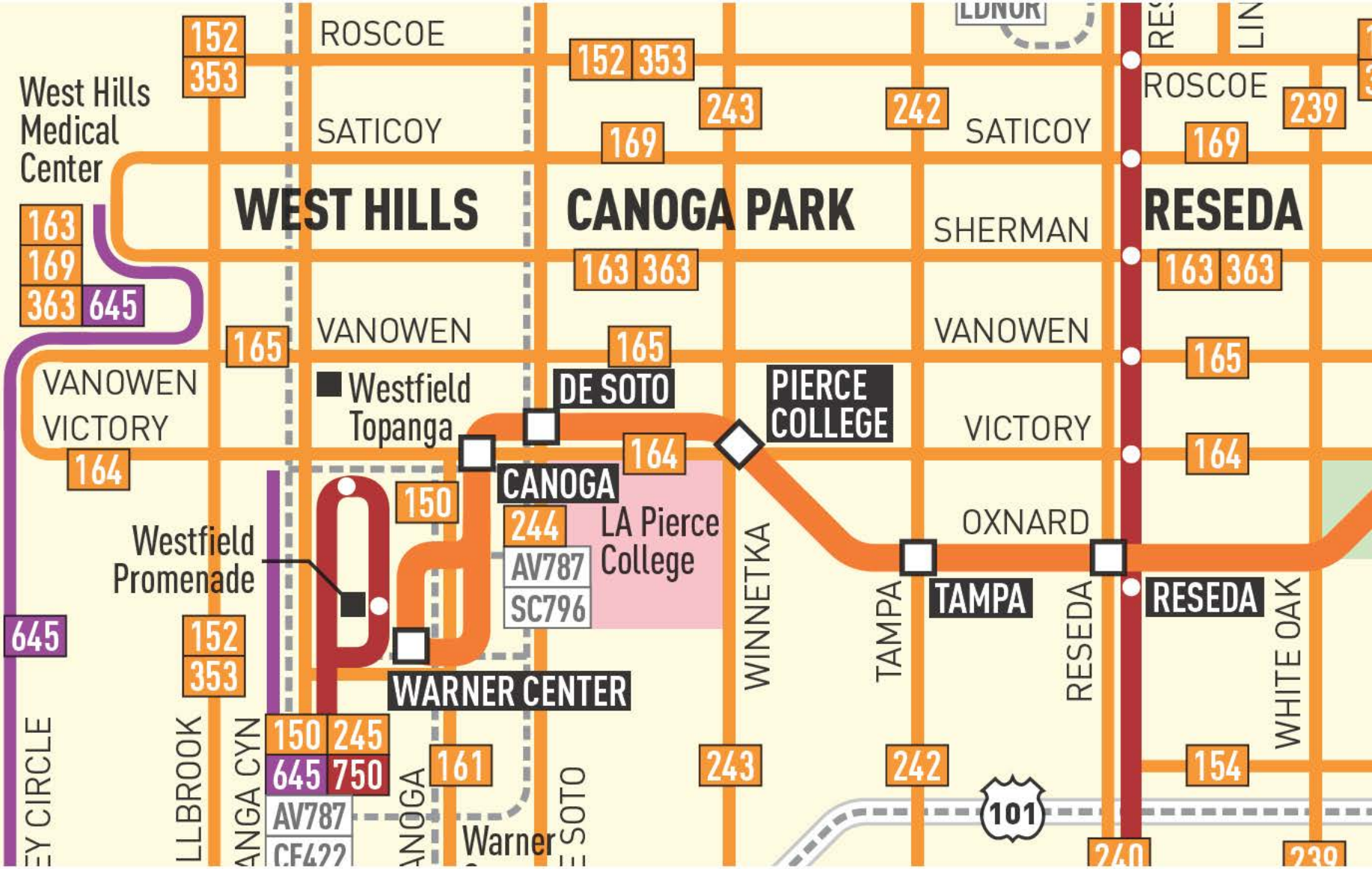
118°36'45.41" W
elev 0 ft
Eye alt 590 ft
Google

APPENDIX C

TRANSIT ROUTES


West Hills Medical Center
ROSCOE
SATICOY
VANOWEN
VICTORY
WEST HILLS
CANOGA PARK
SHERMAN
RESEDA
OXNARD
Westfield Topanga
Westfield Promenade
DE SOTO
CANOGA
PIERCE COLLEGE
LA Pierce College
WARNER CENTER
WINNETKA
TAMPA
RESEDA
WHITE OAK
Warner
101
152 353
163 169 363 645
165
164
150
244
AV787
SC796
645
150 245 645 750
AV787
161
243
242
154
239
240

Monday through Friday

165

Eastbound (Approximate Times)

WEST HILLS	CANOGA PARK	RESEDA	LAKE BALBOA	VAN NUYS	NORTH HOLLYWOOD	BURBANK	
Valley Circle & Valley Circle Terrace	Vanowen & Topanga Canyon	Vanowen & Reseda	Vanowen & Balboa	Vanowen & Van Nuys	Vanowen & Laurel Canyon	Burbank Airport & Empire	Burbank Station
B4:37A	4:48A	5:00A	5:04A	5:16A	5:27A	5:34A	5:49A
B4:58	5:09	5:21	5:27	5:37	5:48	5:57	6:10
B5:18	5:29	5:42	5:48	5:58	6:09	6:19	6:33
B5:38	5:49	6:02	6:08	6:18	6:30	6:40	6:54
5:57	6:08	6:22	6:28	6:38	6:50	7:00	7:15
6:13	6:24	6:38	6:44	6:54	7:06	7:17	7:32
6:29	6:40	6:54	7:00	7:13	7:25	7:36	7:51
—	—	7:09	7:17	7:30	7:42	7:53	8:08
6:56	7:08	7:24	7:32	7:47	7:59	8:10	8:25
7:11	7:23	7:39	7:48	8:03	8:15	8:26	8:42
7:26	7:39	7:55	8:04	8:19	8:32	8:43	8:59
7:42	7:55	8:11	8:20	8:35	8:48	8:59	9:15
7:59	8:12	8:28	8:36	8:51	9:04	9:15	9:31
8:18	8:31	8:46	8:54	9:09	9:22	9:33	9:49
8:36	8:49	9:04	9:12	9:27	9:40	9:51	10:07
9:06	9:19	9:34	9:42	9:57	10:10	10:21	10:37
9:36	9:49	10:04	10:12	10:27	10:40	10:51	11:07
10:06	10:19	10:34	10:42	10:57	11:10	11:21	11:37
10:36	10:49	11:04	11:12	11:27	11:40	11:51	12:07P
11:06	11:19	11:34	11:42	11:57	12:10P	12:21P	12:37
11:36	11:49	12:04P	12:12P	12:28P	12:41	12:52	1:08
12:06P	12:19P	12:34	12:42	12:58	1:11	1:22	1:38
12:36	12:49	1:04	1:12	1:28	1:41	1:52	2:08
—	—	—	B1:44	2:00	2:13	2:24	2:40
—	—	—	B1:47	2:03	2:16	2:27	2:43
—	—	—	B1:50	2:06	2:19	2:30	2:46
1:17	1:30	1:45	1:53	2:09	2:22	2:33	2:49
—	—	—	B2:04	2:20	2:33	2:44	3:00
1:38	1:51	2:06	2:14	2:30	2:43	2:54	3:10
2:08	2:21	2:36	2:44	3:00	3:13	3:24	3:40
—	—	—	B3:00	3:16	3:29	3:40	3:56
2:36	2:49	3:04	3:12	3:28	3:41	3:52	4:08
—	—	—	B3:16	3:32	3:45	—	—
—	—	—	B3:19	3:35	3:48	—	—
—	—	—	B3:24	3:40	3:53	—	—
2:51	3:04	3:19	3:27	3:43	3:56	4:07	4:23
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3:09	3:22	3:37	3:45	4:01	4:13	4:24	4:40
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6:25	6:38	6:53	7:00	7:14	7:26	7:37	7:53
6:56	7:09	7:23	7:30	7:43	7:54	8:04	8:20
7:29	7:40	7:53	8:00	8:12	8:23	8:33	8:49
8:01	8:10	8:23	8:30	8:42	8:53	9:03	9:19

Monday through Friday

165

Westbound (Approximate Times)

BURBANK		NORTH HOLLYWOOD	VAN NUYS	LAKE BALBOA	RESEDA	CANOGA PARK	WOODLAND HILLS	WEST HILLS
Burbank Station	Burbank Airport & Empire	Vanowen & Laurel Canyon	Vanowen & Van Nuys	Vanowen & Balboa	Vanowen & Reseda	Vanowen & Topanga Canyon	Warner Center Transit Hub	Valley Circle & Valley Circle Terrace
4:38A	4:49A	4:59A	5:09A	5:21A	5:27A	5:40A	—	5:51A
5:05	5:19	5:29	5:39	5:51	5:57	6:10	—	6:21
5:24	5:38	5:48	5:59	6:11	6:17	6:30	—	6:41
5:38	5:52	6:03	6:14	6:26	6:32	6:45	—	6:56
—	—	6:13	6:24	6:36	6:42	6:55	—	7:07
5:56	6:10	6:21	6:32	6:44	6:50	7:04	7:13A	—
—	—	6:29	6:40	6:52	6:59	7:13	—	7:25
6:12	6:26	6:37	6:48	7:00	7:07	7:21	—	7:33
—	—	6:45	6:56	7:08	7:16	7:30	—	7:42
6:26	6:40	6:51	7:02	7:15	7:23	7:37	—	7:49
—	—	6:54	7:05	7:19	7:27	7:41	7:50	—
6:32	6:46	6:57	7:08	7:23	7:31	7:45	7:54	—
—	—	7:00	7:12	7:27	7:35	7:49	—	8:01
—	—	7:04	7:16	7:31	7:39	7:53	—	—
6:41	6:56	7:07	7:20	7:35	7:43	7:57	—	8:09
—	—	7:11	7:24	7:39	7:47	8:01	8:10	—
—	—	7:15	7:28	7:43	7:51	8:05	8:14	—
6:53	7:08	7:19	7:32	7:47	7:55	8:09	—	8:21
—	—	7:23	7:36	7:51	7:59	8:13	8:22	—
—	—	7:27	7:40	7:55	8:03	8:17	8:26	—
7:06	7:22	7:33	7:46	8:01	8:08	8:22	8:31	—
—	—	7:41	7:54	8:07	8:14	8:28	—	8:40
7:27	7:43	7:54	8:07	8:19	8:26	8:40	—	8:52
7:41	7:57	8:09	8:22	8:34	8:41	8:55	—	9:07
8:00	8:17	8:29	8:42	8:54	9:01	9:15	—	9:27
8:25	8:42	8:54	9:07	9:19	9:26	9:40	—	9:52
8:55	9:12	9:24	9:37	9:49	9:56	10:10	—	10:22
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10:55	11:12	11:24	11:37	11:49	11:56	12:10P	—	12:22P
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11:55	12:12P	12:24P	12:37	12:49	12:56	1:10	—	1:22
12:25P	12:42	12:54	1:07	1:19	1:26	1:40	—	1:52
—	—	—	—	—	B1:49	2:03	2:12P	—
12:55	1:12	1:24	1:37	1:49	1:56	2:10	—	2:22
1:25	1:43	1:54	2:07	2:19	2:26	2:40	—	2:52
1:55	2:13	2:24	2:37	2:49	2:57	3:12	—	3:24
2:18	2:36	2:47	3:01	3:14	3:22	3:37	—	3:49
—	—	—	—	—	B3:22	3:37	—	3:49
2:32	2:50	3:02	3:16	3:29	3:37	3:52	—	4:04
2:48	3:06	3:18	3:32	3:45	3:53	4:08	—	4:20
2:57	3:15	3:27	3:41	3:54	4:02	4:17	—	4:29
3:07	3:25	3:37	3:51	4:04	4:11	4:26	—	4:38
3:17	3:35	3:47	4:01	4:14	4:21	4:36	—	4:48
3:27	3:45	3:57	4:11	4:24	4:31	4:46	—	4:58
3:42	4:00	4:12	4:26	4:39	4:46	5:01	—	5:13
3:57	4:15	4:27	4:41	4:54	5:01	5:16	—	5:28
4:17	4:35	4:47	5:01	5:14	5:21	5:36	—	5:47
4:37	4:55	5:07	5:21	5:34	5:41	5:56	—	6:08
5:02	5:20	5:32	5:46	5:59	6:06	6:19	—	6:31
5:28	5:46	5:58	6:11	6:24	6:31	6:43	—	6:55
5:55	6:13	6:25	6:37	6:49	6:56	7:08	—	7:20
6:21	6:39	6:50	7:02	7:14	7:21	7:33	—	7:45
6:51	7:09	7:20	7:32	7:44	7:51	8:03	—	8:14
7:30	7:48	7:58	8:09	8:20	8:26	8:38	—	8:49
8:30	8:47	8:57	9:08	9:19	9:25	9:37	—	—
9:30	9:47	9:57	10:08	10:19	10:25	10:37	—	—

Holiday Schedule

Sunday & Holiday schedule will operate on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.

Horarios en los días feriados

Los horarios de domingos y días festivos serán en New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day y Christmas Day.

Special Notes

- A Starts at Vanowen & Amestoy school days only.
- B Starts at Vanowen & Balboa school days only.
- C Starts at Vanowen & Amestoy. Tuesday school days only.
- D Starts at Vanowen & Balboa. Tuesday school days only.
- E Trips begin westbound at Vanowen St. & Platt Ave. 3 minutes before time shown.
- F Starts at Vanowen & Amestoy school days except Tuesday.

Avisos especiales

- A *Comienza en Vanowen y Amestoy días de escuela solamente.*
- B *Comienza en Vanowen y Balboa días de escuela solamente.*
- C *Comienza en Vanowen y Amestoy. Martes días de escuela solamente.*
- D *Comienza en Vanowen y Balboa. Martes días de escuela solamente.*
- E *Viaje se origina en Vanowen y Platt tres minutos des pues de la hora mostrada.*
- F *Comienza en Vanowen y Amestoy los días de escuela solamente menos los martes.*

Saturday Schedule

Effective Dec 12 2010

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Eastbound (Approx mate Times)

Valley Circle & Valley Circle Terrace	Vanowen & Topanga Canyon	Vanowen & Reseda	Vanowen & Balboa	Vanowen & Van Nuys	Vanowen & Laurel Canyon	Burbank Airport & Empire	Burbank Station
E5:15A	5:26A	5:38A	5:44A	5:54A	6:04A	6:14A	6:28A
6:22	6:34	6:48	6:54	7:05	7:15	7:25	7:39
7:26	7:38	7:52	7:58	8:09	8:19	8:29	8:44
8:25	8:37	8:51	8:57	9:09	9:19	9:29	9:45
9:25	9:37	9:51	9:57	10:09	10:20	10:30	10:47
10:24	10:36	10:50	10:56	11:09	11:20	11:30	11:47
11:23	11:35	11:50	11:56	12:09P	12:21P	12:33	12:51
12:22P	12:35	12:50	12:56	1:09	1:21	1:33	1:51
1:22	1:35	1:50	1:56	2:09	2:21	2:34	2:52
2:22	2:35	2:50	2:56	3:09	3:21	3:34	3:52
3:22	3:35	3:50	3:56	4:09	4:21	4:34	4:52
4:23	4:36	4:51	4:57	5:09	5:20	5:33	5:51
5:23	5:36	5:51	5:57	6:09	6:20	6:30	6:48
6:24	6:37	6:51	6:57	7:09	7:20	7:30	7:46
7:25	7:37	7:50	7:57	8:09	8:20	8:30	8:46

Saturday Schedule

165

Westbound (Approximate Times)

BURBANK		NORTH HOLLYWOOD	VAN NUYS	LAKE BALBOA	RESEDA	CANOGA PARK	WEST HILLS
Burbank Station	Burbank Airport & Empire	Vanowen & Laurel Canyon	Vanowen & Van Nuys	Vanowen & Balboa	Vanowen & Reseda	Vanowen & Topanga Canyon	Valley Circle & Valley Circle Terrace
4:54A	5:07A	5:16A	5:26A	5:37A	5:43A	5:56A	6:06A
5:24	5:37	5:46	5:56	6:07	6:13	6:26	6:36
5:53	6:06	6:15	6:25	6:36	6:42	6:55	7:05
6:20	6:34	6:44	6:55	7:06	7:12	7:25	7:35
6:50	7:04	7:14	7:25	7:36	7:42	7:55	8:05
7:19	7:33	7:43	7:55	8:06	8:12	8:25	8:35
7:47	8:02	8:12	8:25	8:36	8:42	8:55	9:06
8:16	8:31	8:42	8:55	9:06	9:12	9:25	9:36
8:45	9:01	9:12	9:25	9:36	9:43	9:56	10:07
9:15	9:31	9:42	9:55	10:06	10:13	10:27	10:38
9:45	10:01	10:12	10:25	10:36	10:43	10:57	11:08
10:14	10:31	10:42	10:55	11:06	11:13	11:27	11:38
10:43	11:00	11:11	11:25	11:36	11:43	11:57	12:08P
11:12	11:30	11:41	11:55	12:06P	12:13P	12:28P	12:39
11:42	11:59	12:11P	12:25P	12:36	12:43	12:58	1:09
12:12P	12:30P	12:41	12:55	1:06	1:13	1:28	1:39
12:41	1:00	1:11	1:25	1:36	1:43	1:58	2:09
1:11	1:30	1:41	1:55	2:06	2:12	2:27	2:38
1:41	2:00	2:11	2:25	2:36	2:42	2:56	3:07
2:12	2:31	2:42	2:55	3:06	3:12	3:26	3:37
2:40	3:01	3:12	3:25	3:36	3:42	3:56	4:07
3:10	3:31	3:42	3:55	4:06	4:12	4:26	4:37
3:41	4:01	4:12	4:25	4:36	4:42	4:56	5:07
4:11	4:31	4:42	4:55	5:06	5:12	5:26	5:37
4:41	5:01	5:12	5:25	5:36	5:42	5:56	6:07
5:12	5:31	5:42	5:55	6:06	6:12	6:26	6:36
5:42	6:01	6:12	6:25	6:36	6:42	6:55	7:05
6:16	6:35	6:45	6:58	7:08	7:14	7:27	7:36
6:54	7:12	7:22	7:33	7:43	7:49	8:01	8:12
7:30	7:47	7:57	8:08	8:19	8:25	8:37	8:48
8:30	8:47	8:57	9:08	9:19	9:25	9:37	
9:30	9:47	9:57	10:08	10:19	10:25	10:37	

Sunday and Holiday Schedule

165

Eastbound (Approx mate Times)

WEST HILLS	CANOGA PARK	RESEDA	LAKE BALBOA	VAN NUYS	NORTH HOLLYWOOD	BURBANK	
Valley Circle & Valley Circle Terrace	Vanowen & Topanga Canyon	Vanowen & Reseda	Vanowen & Balboa	Vanowen & Van Nuys	Vanowen & Laurel Canyon	Burbank Airport & Empire	Burbank Station
E6:45A	6:56A	7:09A	7:15A	7:26A	7:36A	7:44A	7:58A
E7:15	7:26	7:39	7:45	7:56	8:06	8:15	8:29
7:40	7:51	8:04	8:10	8:21	8:31	8:40	8:54
8:10	8:21	8:34	8:40	8:51	9:01	9:10	9:24
8:40	8:51	9:04	9:10	9:22	9:32	9:41	9:56
9:09	9:21	9:34	9:40	9:52	10:02	10:11	10:26
9:39	9:51	10:04	10:10	10:22	10:33	10:43	10:59
10:09	10:21	10:34	10:40	10:52	11:03	11:13	11:29
10:39	10:51	11:04	11:10	11:22	11:33	11:42	11:58
11:09	11:21	11:34	11:40	11:52	12:04P	12:14P	12:30P
11:39	11:51	12:05P	12:11P	12:24P	12:36	12:46	1:03
12:10P	12:23P	12:37	12:43	12:56	1:08	1:18	1:35
12:42	12:55	1:09	1:15	1:28	1:40	1:50	2:07
1:14	1:27	1:41	1:47	2:00	2:12	2:22	2:39
1:46	1:59	2:13	2:19	2:32	2:44	2:54	3:12
2:18	2:31	2:45	2:51	3:04	3:16	3:26	3:44
2:51	3:04	3:18	3:24	3:37	3:49	3:59	4:17
3:24	3:37	3:51	3:57	4:10	4:22	4:32	4:50
3:57	4:10	4:24	4:30	4:42	4:54	5:04	5:22
4:31	4:43	4:57	5:03	5:15	5:27	5:37	5:55
5:04	5:16	5:30	5:36	5:48	6:00	6:09	6:25
5:37	5:49	6:03	6:09	6:21	6:33	6:42	6:58
6:11	6:23	6:36	6:42	6:54	7:05	7:14	7:30
6:49	7:01	7:14	7:20	7:31	7:42	7:51	8:07
7:32	7:43	7:56	8:02	8:13	8:24	8:33	8:49

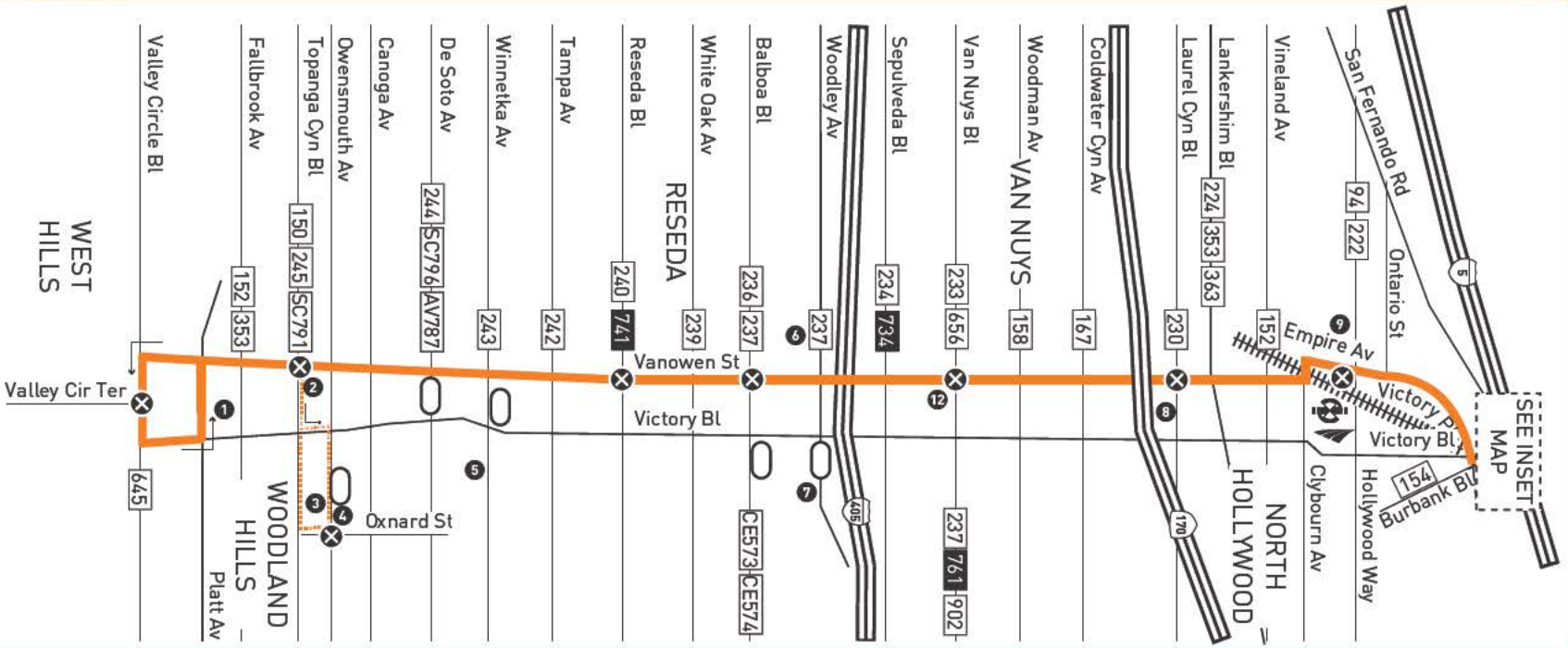
Sunday and Holiday Schedule

165

Westbound (Approximate Times)

BURBANK		NORTH HOLLYWOOD	VAN NUYS	LAKE BALBOA	RESEDA	CANOGA PARK	WEST HILLS
Burbank Station	Burbank Airport & Empire	Vanowen & Laurel Canyon	Vanowen & Van Nuys	Vanowen & Balboa	Vanowen & Reseda	Vanowen & Topanga Canyon	Valley Circle & Valley Circle Terrace
6:15A	6:29A	6:38A	6:47A	6:57A	7:03A	7:15A	7:24A
6:45	6:59	7:08	7:17	7:27	7:33	7:45	7:54
7:15	7:29	7:38	7:47	7:57	8:03	8:15	8:24
7:45	7:59	8:08	8:17	8:27	8:33	8:45	8:54
8:15	8:29	8:38	8:47	8:57	9:03	9:15	9:24
8:45	8:59	9:08	9:17	9:27	9:33	9:46	9:55
9:13	9:27	9:37	9:47	9:57	10:03	10:16	10:25
9:41	9:56	10:06	10:17	10:27	10:33	10:46	10:57
10:09	10:24	10:34	10:46	10:57	11:04	11:17	11:28
10:37	10:54	11:04	11:16	11:27	11:34	11:47	11:58
11:07	11:24	11:34	11:46	11:57	12:04P	12:18P	12:29P
11:39	11:56	12:06P	12:18P	12:29P	12:36	12:50	1:01
12:11P	12:29P	12:39	12:51	1:02	1:09	1:23	1:34
12:44	1:02	1:12	1:24	1:35	1:41	1:55	2:06
1:17	1:35	1:45	1:57	2:08	2:14	2:28	2:40
1:50	2:08	2:18	2:30	2:41	2:47	3:00	3:12
2:22	2:41	2:51	3:03	3:14	3:20	3:33	3:44
2:55	3:14	3:24	3:36	3:47	3:53	4:06	4:17
3:28	3:47	3:57	4:09	4:20	4:26	4:39	4:50
4:01	4:20	4:30	4:42	4:53	4:59	5:12	5:23
4:34	4:53	5:03	5:15	5:26	5:32	5:45	5:56
5:07	5:26	5:36	5:48	5:59	6:05	6:18	6:29
5:40	5:59	6:09	6:21	6:32	6:38	6:51	7:02
6:14	6:32	6:42	6:54	7:05	7:11	7:24	7:35
6:48	7:06	7:16	7:27	7:38	7:44	7:57	8:09
7:30	7:47	7:57	8:08	8:19	8:26	8:38	
8:30	8:47	8:57	9:08	9:19	9:25	9:37	
9:30	9:47	9:57	10:08	10:19	10:25	10:37	

ROUTE MAP



INSET MAP

MAP NOTES

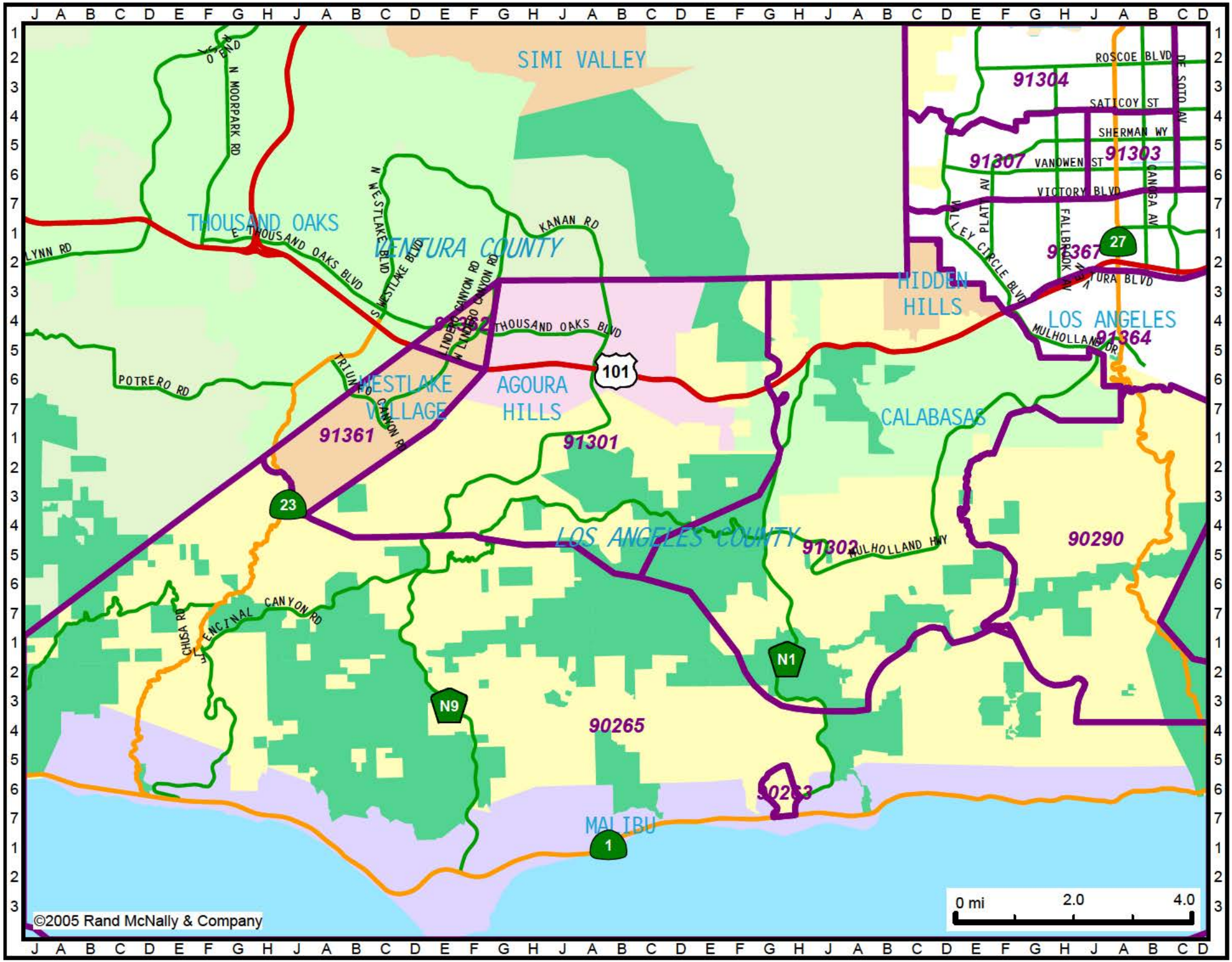
1. **Fallbrook Center**
2. **Westfield Topanga**
3. **Westfield Promenade**
4. **Warner Center Transit Hub**
   Metro 161, 164, 245, 645, 750, Metro Orange Line
5. **Pierce College**
6. **Van Nuys Airport**
7. **Sepulveda Dam Recreation**
8. **Valley Plaza**
9. **Bob Hope Airport**
10. **Burbank High School**
11. **Burbank Station**
12. **Van Nuys High School**

LEGEND

- Line 165
- Line 165 Shortline
- Timepoint
- Metro Orange Line Station
- Transit Center
- Metrolink Station
- Amtrak Station
- AV Antelope Valley Transit Authority
- BB Burbank Bus
- CE LADOT Commuter Express
- SC Santa Clarita Transit

APPENDIX D

ZIP CODE ANALYSIS


SIMI VALLEY
THOUSAND OAKS
VENTURA COUNTY
HIDDEN HILLS
LOS ANGELES
91364
WESTLAKE VILLAGE
91361
AGOURA HILLS
91301
CALABASAS
LOS ANGELES COUNTY
91302
90290
90265
90263
MALIBU
91304
91307
91303
91367
ROSCOE BLVD
SATICOY ST
SHERMAN WY
VANOWEN ST
VICTORY BLVD
DE SOTO AV
CANOGA AV
PLATT AV
VALLEY CIRCLE BLVD
FALLBROOK AVE
VENTURA BLVD
MULHOLLAND DR
MULHOLLAND HWY
KANAN RD
N WESTLAKE BLVD
S WESTLAKE BLVD
E THOUSAND OAKS BLVD
THOUSAND OAKS BLVD
LINDERO CANYON RD
TRIUNFO CANYON RD
POTRERO RD
LYNN RD
N MOORPARK RD
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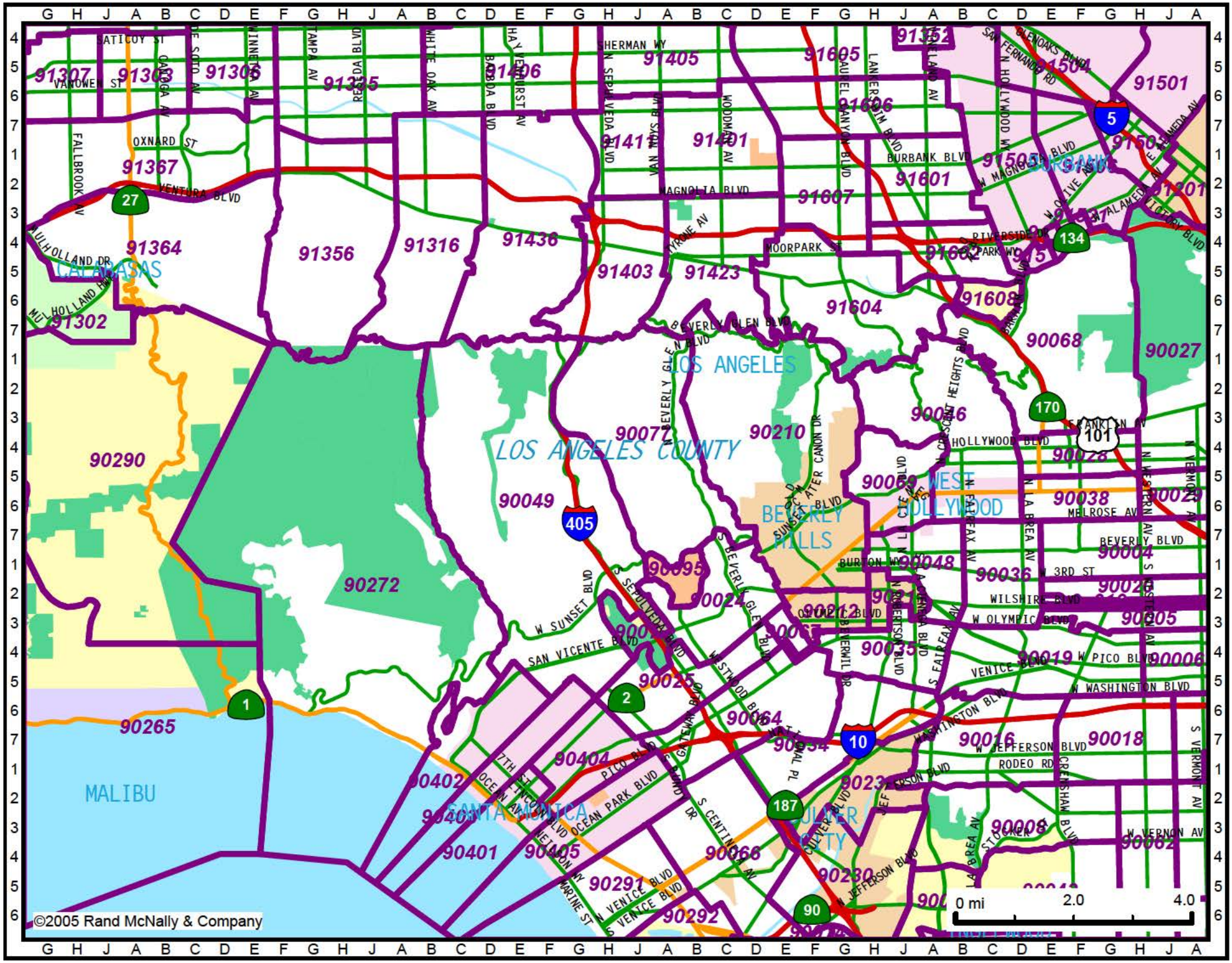
LOS ANGELES COUNTY
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CALABASAS
MALIBU
SANTA MONICA
BEVERLY HILLS
WEST HOLLYWOOD
CULVER CITY
BURBANK
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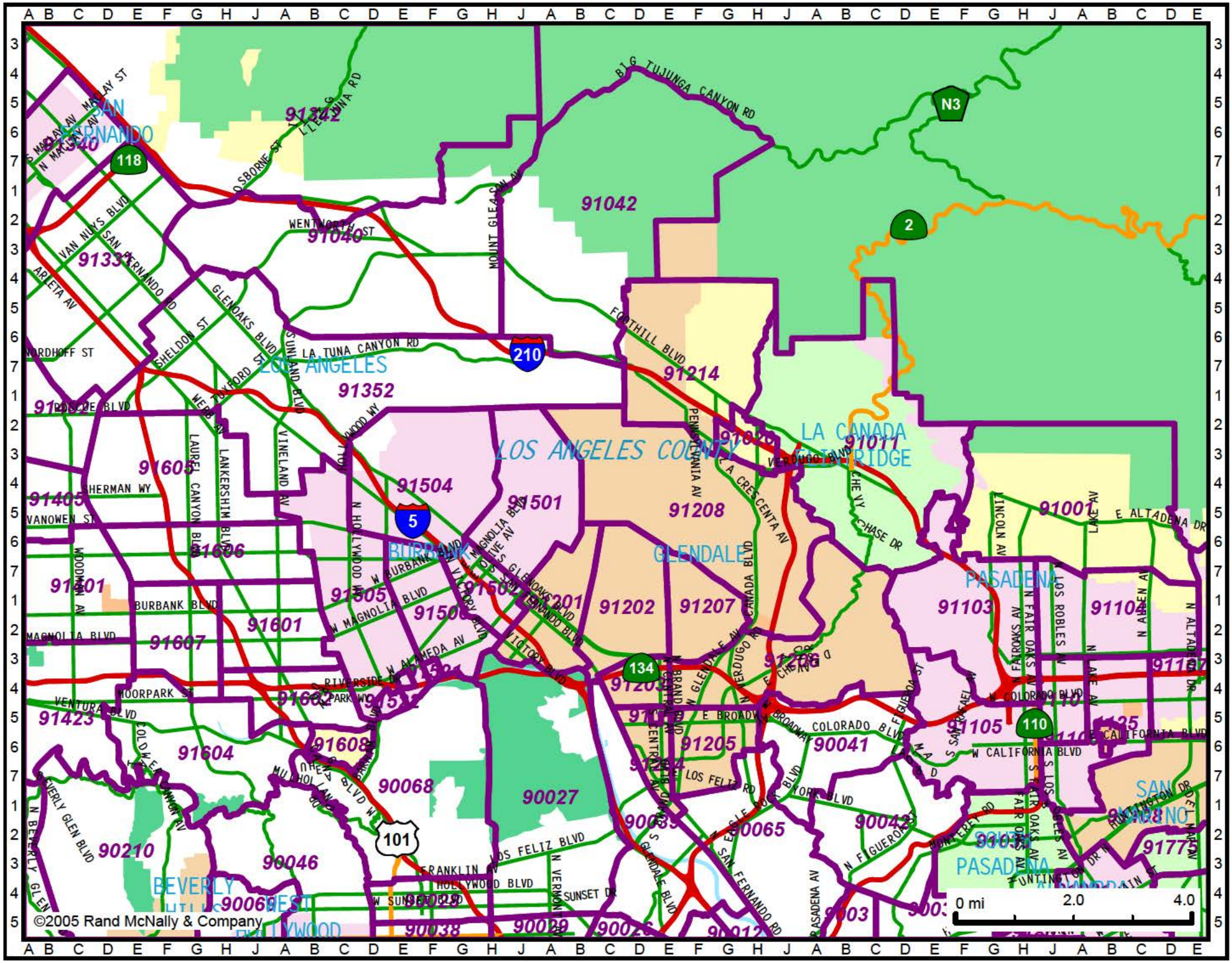
SAN FERNANDO
LOS ANGELES
LOS ANGELES COUNTY
BURBANK
GLENDALE
LA CANADA FLINTRIDGE
PASADENA
BEVERLY HILLS
HOLLYWOOD
SAN MARINO
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5
210
134
101
110
2
N3
BIG TUJUNGA CANYON RD
LA TUNA CANYON RD
FOOTHILL BLVD
VAN NUYS BLVD
SAN FERNANDO RD
GLENOAKS BLVD
SHELDON ST
NORDHOFF ST
ROSCOE BLVD
SHERMAN WY
VANOWEN ST
BURBANK BLVD
MAGNOLIA BLVD
VENTURA BLVD
MOORPARK ST
RIVERSIDE DR
W ALAMEDA AVE
VICTORY BLVD
W BROADWAY
E BROADWAY
COLORADO BLVD
W CALIFORNIA BLVD
E CALIFORNIA BLVD
LOS FELIZ BLVD
FRANKLIN AV
HOLLYWOOD BLVD
SUNSET DR
W SUNSET BLVD
MULHOLLAND DR
BEVERLY GLEN BLVD
LAUREL CANYON BLVD
LANKERSHIM BLVD
VINELAND AV
WOODMAN AV
HOLLYWOOD WY
VICTORY PL
MOUNT GLEASON AV
PENNSYLVANIA AV
LA CRESCENTA AV
VERDUGO RD
THE VY
CHASE DR
LINCOLN AV
LAKE AV
E ALTADENA DR
N FAIR OAKS AV
S FAIR OAKS AV
LOS ROBLES AV
N ARDEN AV
S ARROYO BLVD
HUNTINGTON DR
MONTEREY RD
FUNTINGTON DR N
N BRAND BLVD
S BRAND BLVD
N GLENDALE AV
S GLENDALE AV
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YORK BLVD
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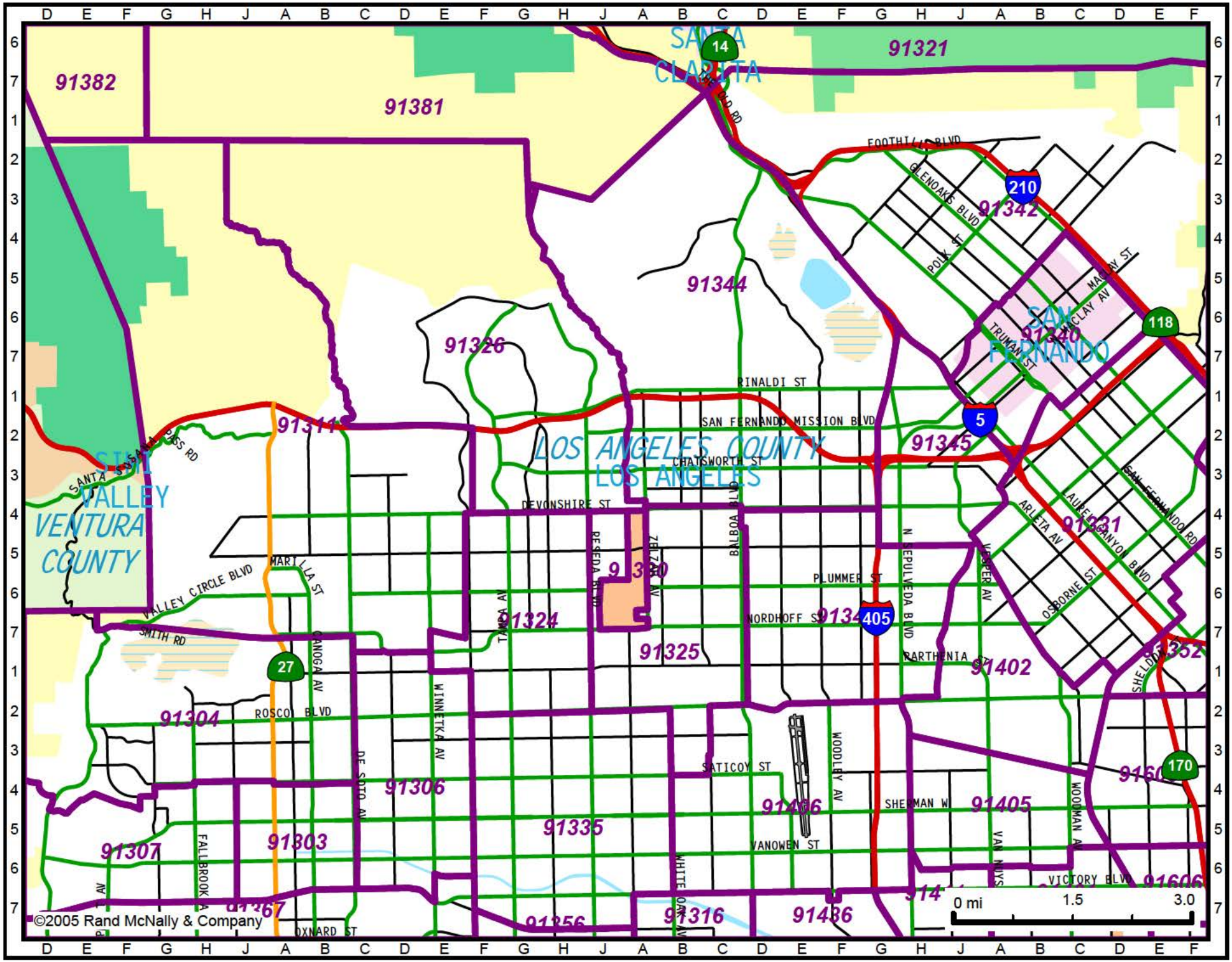
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SANTA CLARITA
14
SOLEDAD CANYON RD
FOOTHILL BLVD
GLENOAKS BLVD
POLK ST
210
91342
MACLAY ST
MACLAY AV
91344
SAN FERNANDO
91340
TRUMAN ST
118
91326
RINALDI ST
91311
SAN FERNANDO MISSION BLVD
5
91345
LOS ANGELES COUNTY
LOS ANGELES
CHATSWORTH ST
SIMI VALLEY
VENTURA COUNTY
SANTA SUSANA PASS RD
DEVONSHIRE ST
RESEDA BLVD
ZELZAH AV
BALBOA BLVD
N SEPULVEDA BLVD
VESPER AV
ARLETA AV
AURELIO CANYON BLVD
OSBORNE ST
SAN FERNANDO RD
91331
91330
PLUMMER ST
VALLEY CIRCLE BLVD
MARILLA ST
TAMPA AV
91324
NORDHOFF ST
405
91325
PARTHENIA ST
91402
SHELDON
91352
SMITH RD
27
CANOGA AV
WINNETKA AV
91304
ROSCOE BLVD
WOODLEY AV
SATICOY ST
170
91306
DE SOTO AV
91406
SHERMAN W
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91303
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FALLBROOK AV
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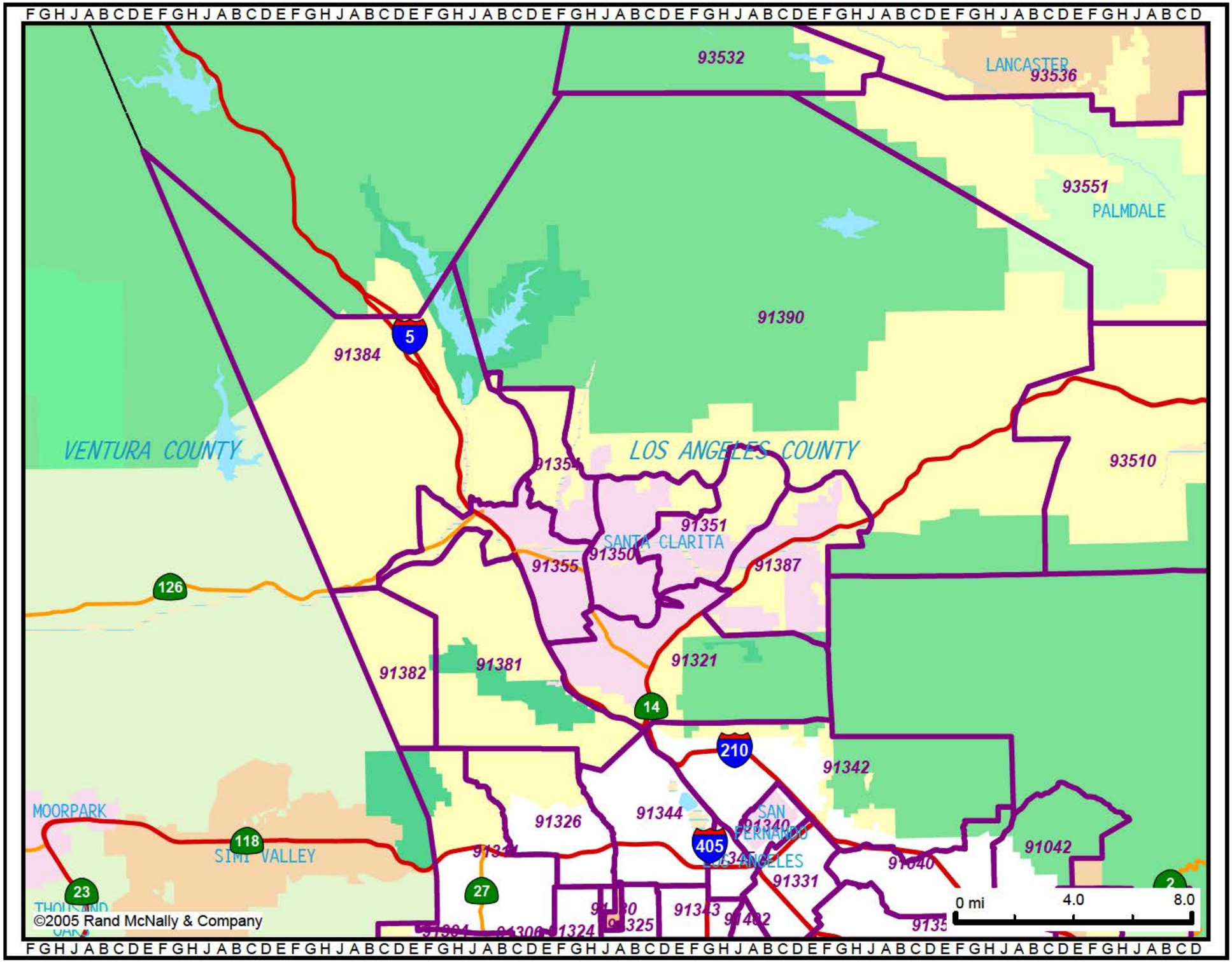
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LANCASTER
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PALMDALE
91390
5
91384
VENTURA COUNTY
LOS ANGELES COUNTY
91354
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91351
SANTA CLARITA
91350
91355
91387
126
91382
91381
91321
14
210
91342
MOORPARK
91326
91344
SAN
FERNANDO
91340
118
SIMI VALLEY
405
91042
91040
91331
23
27
91343
91402
91325
91324
©2005 Rand McNally & Company
0 mi
4.0
8.0
F G H J A B C D E F G H J A B C D E F G H J A B C D E F G H J A B C D E F G H J A B C D E F G H J A B C D E F G H J A B C D E F G H J A B C D

APPENDIX E

QUEUE ANALYSIS

Overland Traffic Consultants, Inc.

Overland Traffic Consultants
27201 Tourney Road, # 206
Santa Clarita, CA 91355
Phone (661) 799 - 8423
Fax: (661) 799 – 8456
E-mail:liz@overlandtraffic.com
www.overlandtraffic.com

Drop-off/Pick-Up Queue Evaluation
New Community Jewish High School Campus – 22622 Vanowen Street

The objective of the queue analysis is to determine potential queues associated with thee school operation and development of a school arrival/pick-up program with sufficient capacity to serve the needs of the school and at the same time provide for a safe and efficient loading/unloading procedure.

The trips to the school are typically dispersed across a broader time range during the morning drop-off event than at the afternoon pick-up event at schools. The afternoon pick-up event attracts parents trying to "get in line first" in order to leave the queue as soon as possible upon release of the students from school. This effort can create lengthy queues during the pick up activities. A relief is provided when there are after school activities such as sports, arts and academic clubs.

A conservative rough estimate of the number of vehicles, based upon the April site plan, indicates that over 32 vehicles can queue while 4 are in the process of dropping off or picking up and up to six vehicles are exiting. The number of vehicles in each of the conditions can increase or decrease based upon size of the vehicles, spacing between them, how long it takes to exit onto Vanowen Street and how long it takes to conduct the dropping up or picking up.

There are several options available for our use to consider the queue lengths. These options include a "rule of thumb" by North Carolina Department of Transportation (DOT) and a General Purpose Queuing Model by New Alternatives, Inc. These options provide varying results and shown below.

OPTION 1 – Rule of Thumb

The State of North Carolina DOT indicates a rule of thumb of 6% of the student population for the AM Peak demand and 10% for the PM Peak demand. The trip generation for the site is the necessary input. Trip generation for 450 private school students and 100 nursery school students is 445 AM Peak Hour trips and 300 PM Peak Hour trips. The results of option 1 indicate a maximum queue length of the following:

AM Peak Hour: 445 * 6% = 27 vehicles
PM Peak Hour: 300 * 10% = 30 vehicles

Option 2 - General Purpose Queuing Model by New Alternatives

The queuing model requires inputs for the arrival rate (how many cars are arriving during a specific time period), the service rate (once a vehicle reaches the front of the queue, how long does it take for the student to get in or out and for the vehicle to exit), and the number of stations being serviced (how many cars are actively discharging or have a student entering a vehicle at one time). The model is limited in that the overall arrival rate cannot exceed the service rate with the number of stations. A 15 second and 20 second service rate per vehicle were considered with 2 vehicles being serviced at one time. The results are as follows:

15 seconds for student to get in or out :

Arrivals broken down into 110 vehicles every 15 minutes

Turnover of 2 vehicles every 20 seconds

Queue length - 12 vehicles

Three Minutes wait time in queue

20 seconds for student to get in our out:

Arrivals broken down into 88 vehicles every 15 minutes

Turnover of 2 vehicles every 20 seconds

Queue length - 16 vehicles

One and one-half Minutes wait time in queue

Worksheets for this queue analysis are attached.

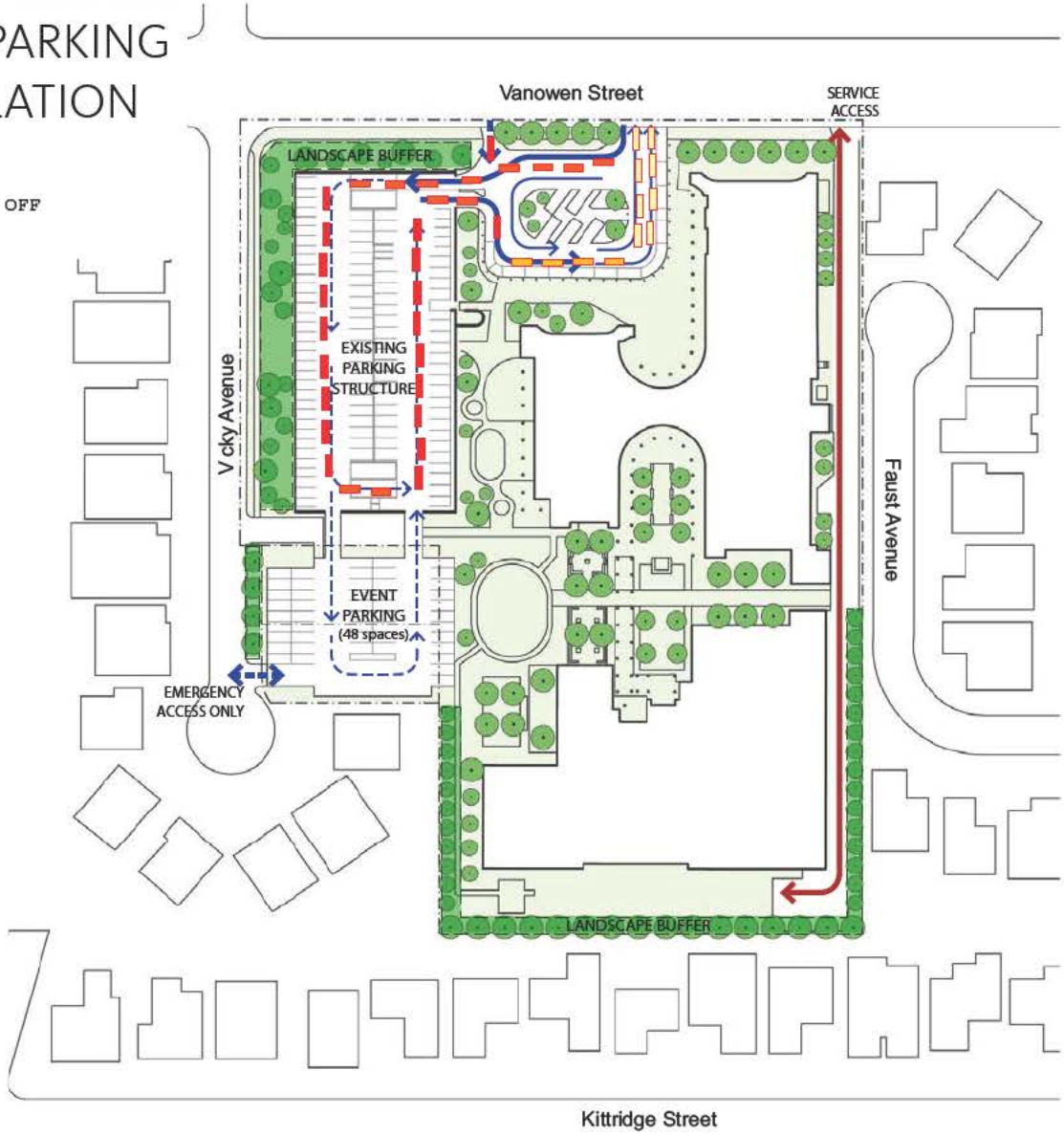
Queues can be managed through Transportation Demand Management Programs

PROPOSED PARKING AND CIRCULATION

QUEUE VEHICLES

VEHICLES DROPPING OFF

EXITING VEHICLES



EXISTING PARKING

Provided in existing parking structure			**269**
Standard	179	67%	
Compact	74	28%	
HC	16		
Additional Parking at Driveway			**6**
Curb	6		
Total Existing Parking			**275**

REQUIRED PARKING

	Program SF	*Area Ratio space/sf*	*No of Spaces*
Preschool(1/class)	6731	1/5	5
JCC Offices	3900	1/500	8
Auditorium	3712	1/35	106
HS Admin	7550	1/500	15
Total Required			**134**

PROVIDED PARKING

Provided in existing parking structure			**269**
Standard	179	67%	
Compact	74	28%	
HC	16		
Additional Parking at Driveway			**18**
Curb	13		
HC at Drive	5		
Total Proposed Parking			**287**

* Parking provided in structure may increase due to increase percentage of compact spaces and restriping.

DRAFT

GENERAL PURPOSE QUEUEING MODEL

INPUTS

NCJHS - Vanowen
West Hills, Ca
Wednesday, April 6, 2011
Test 2 - 20 second service rate

PROBLEM TYPE 7
MULTIPLE-CHANNELS, SINGLE-PHASE
Poisson Arrivals, Exponential Service Times

Mean Arrival & Mean Service Rates are Cars per Peak 15 Minutes
Mean Arrival Rate = 85.
Mean Service Rate = 45.

Number of Servers (S) = 2

OUTPUTS

PROBABILITY STATISTICS

Probability of Exactly N Units in the System for N <= S

Number of Units (N)	Percent
0	2.857
1	5.397
2	5.097

Probability of Exactly N Units in the System for N >= S

Number of Units (N)	Percent
2	5.097
3	4.814
4	4.546
5	4.294
6	4.055
7	3.830
8	3.617
9	3.416
10	3.226
11	3.047
12	2.878

UNIT STATISTICS (Cars)

Mean Number of Units in the System = 17.500
Mean Number of Units in Queue = 15.600

TIME STATISTICS (Peak 15 Minutes)

Mean Time in the System = .210
= 3.1 minutes
Mean Wait Time = .180
= 2.7 minutes

SERVICE FACILITY USE/IDLE STATISTICS

Use Percent =	97.1%
Idle Percent =	2.9%

GENERAL PURPOSE QUEUEING MODEL

INPUTS

NCJHS - Vanowen
West Hills, Ca
Wednesday, April 6, 2011
Test 1 - 15 second service rate

PROBLEM TYPE 7
MULTIPLE-CHANNELS, SINGLE-PHASE
Poisson Arrivals, Exponential Service Times

Mean Arrival & Mean Service Rates are Cars per Peak 15 Minutes
Mean Arrival Rate = 110.
Mean Service Rate = 60.

Number of Servers (S) = 2

OUTPUTS

PROBABILITY STATISTICS

Probability of Exactly N Units in the System for N <= S

Number of Units (N)	Percent
0	4.348
1	7.971
2	7.307

Probability of Exactly N Units in the System for N >= S

Number of Units (N)	Percent
2	7.307
3	6.698
4	6.140
5	5.628
6	5.159
7	4.729
8	4.335
9	3.974
10	3.643
11	3.339
12	3.061

UNIT STATISTICS (Cars)

Mean Number of Units in the System = 11.500
Mean Number of Units in Queue = 9.640

TIME STATISTICS (Peak 15 Minutes)

Mean Time in the System = .100
= 1.5 minutes
Mean Wait Time = .088
= 1.3 minutes

SERVICE FACILITY USE/IDLE STATISTICS

Use Percent =	95.7%
Idle Percent =	4.3%

APPENDIX F

TRAFFIC VOLUME DATA

City Of Los Angeles

Department Of Transportation

MANUAL TRAFFIC COUNT SUMMARY

STREET:

North/South Woodlake Ave

East/West Vanowen St

Day: Thursday Date: February 17, 2011 Weather: SUNNY

Hours: 7-10AM 3-6PM Chekrs: 0

School Day: YES District: 0 I/S CODE 0

	N/B	S/B	E/B	W/B
DUAL-WHEELED	15	4	26	55
BIKES	0	0	1	0
BUSES	2	2	23	22

	N/B	TIME	S/B	TIME	E/B	TIME	W/B	TIME
AM PK 15 MIN	57	7.45	60	7.30	259	7.45	239	7.45
PM PK 15 MIN	0	3.00	0	3.00	0	3.00	0	3.00
AM PK HOUR	191	7.15	136	7.15	816	7.30	663	7.30
PM PK HOUR	0	3.00	0	3.00	0	3.00	0	3.00

NORTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	29	12	123	164
8-9	27	5	103	135
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	56	17	226	299

SOUTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	60	47	24	131
8-9	46	13	12	71
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	106	60	36	202

TOTAL	**XING S/L**		**XING N/L**	
N-S	Ped	Sch	Ped	Sch
295	1	0	2	0
206	1	2	3	3
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
501	2	2	5	3

EASTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	17	562	48	627
8-9	6	586	16	608
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	23	1148	64	1235

WESTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	103	451	12	566
8-9	54	336	23	413
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	157	787	35	979

TOTAL	**XING W/L**		**XING E/L**	
E-W	Ped	Sch	Ped	Sch
1193	1	0	2	2
1021	3	0	5	2
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
2214	4	0	7	4

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_001 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Woodlake Ave			Woodlake Ave			Vanowen St			Vanowen St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	1	1	2	0	1	2	0	1	2	0	
7:00 AM	6	0	21	9	3	4	3	78	6	8	38	3	179
7:15 AM	2	2	22	12	6	4	2	110	4	10	59	2	235
7:30 AM	6	2	40	21	27	9	3	132	18	42	137	2	439
7:45 AM	12	7	34	16	8	6	8	226	17	36	184	3	557
8:00 AM	9	3	45	18	3	1	4	222	9	13	91	7	425
8:15 AM	5	1	20	12	2	3	1	143	2	12	85	8	294
8:30 AM	5	0	15	7	6	3	1	90	2	13	64	1	207
8:45 AM	7	1	17	9	2	5	0	102	3	13	64	7	230
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	52	16	214	104	57	35	22	1103	61	147	722	33	2566
APPROACH %'s :	18.44%	5.67%	75.89%	53.06%	29.08%	17.86%	1.85%	93.00%	5.14%	16.30%	80.04%	3.66%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	32	13	139	67	40	19	16	723	46	103	497	20	1715
PEAK HR FACTOR :		0.807			0.553			0.782			0.695		0.770

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_001 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Woodlake Ave			Woodlake Ave			Vanowen St			Vanowen St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	1	1	2	0	1	2	0	1	2	0	
7:00 AM			0	1			0	1			2	1	5
7:15 AM			0	0			1	3			2	0	6
7:30 AM			0	1			0	2			6	0	9
7:45 AM			2	0			0	4			3	0	9
8:00 AM			0	0			0	7			3	0	10
8:15 AM			0	0			0	2			2	0	4
8:30 AM			0	0			0	0			2	0	2
8:45 AM			0	0			0	3			1	0	4
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	2	2	0	0	1	22	0	0	21	1	49
APPROACH %'s :	0.00%	0.00%	100.00%	100.00%	0.00%	0.00%	4.35%	95.65%	0.00%	0.00%	95.45%	4.55%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	0	0	2	1	0	0	1	16	0	0	14	0	34
PEAK HR FACTOR :		0.250			0.250			0.607			0.583		0.850

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_001 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Woodlake Ave			Woodlake Ave			Vanowen St			Vanowen St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	1	1	2	0	1	2	0	1	2	0	
7:00 AM	2	0	1		0	0		1	0	0	5	0	9
7:15 AM	0	0	1		0	0		1	1	2	3	1	9
7:30 AM	1	1	0		1	1		1	1	1	3	0	10
7:45 AM	0	0	2		2	0		3	1	4	9	0	21
8:00 AM	0	0	0		0	0		3	0	2	4	0	9
8:15 AM	0	0	1		0	0		7	0	0	6	0	14
8:30 AM	0	0	3		0	0		3	0	0	7	0	13
8:45 AM	1	0	2		0	0		4	0	1	7	0	15
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4	1	10	0	3	1	0	23	3	10	44	1	100
APPROACH %'s :	26.67%	6.67%	66.67%	0.00%	75.00%	25.00%	0.00%	88.46%	11.54%	18.18%	80.00%	1.82%	
PEAK HR START TIME :	745 AM												TOTAL
PEAK HR VOL :	0	0	6	0	2	0	0	16	1	6	26	0	57
PEAK HR FACTOR :		0.500			0.250			0.607			0.615		0.679

CONTROL : Signalized

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-001
N/S Street: Woodlake Ave
E/W Street: Vanowen St
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

Adult Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	2	0	0	0	0	1	0	1
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	1	0	1	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	1	1	0	0
8:15 AM	0	0	0	0	0	1	1	2
8:30 AM	1	2	0	1	0	1	0	0
8:45 AM	0	0	0	0	0	1	0	0
TOTALS	**3**	**2**	**1**	**1**	**2**	**5**	**1**	**3**

School-Aged Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	2	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	2	0	0	0	1	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	1	0	0
8:45 AM	0	1	0	2	0	0	0	0
TOTALS	**0**	**3**	**0**	**2**	**2**	**2**	**0**	**0**

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-001
N/S Street: Woodlake Ave
E/W Street: Vanowen St
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

BIKES

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**

City Of Los Angeles

Department Of Transportation

MANUAL TRAFFIC COUNT SUMMARY

STREET:

North/South Fallbrook Ave

East/West Vanowen St

Day: Thursday Date: February 17, 2011 Weather: SUNNY

Hours: 7-10AM 3-6PM Chekrs: 0

School Day: YES District: 0 I/S CODE 0

	N/B	S/B	E/B	W/B
DUAL-WHEELED	30	48	17	17
BIKES	3	8	3	7
BUSES	14	18	26	14

	N/B	TIME	S/B	TIME	E/B	TIME	W/B	TIME
AM PK 15 MIN	256	7.45	421	7.30	280	8.00	212	7.45
PM PK 15 MIN	0	3.00	0	3.00	0	3.00	0	3.00
AM PK HOUR	869	7.45	1440	7.15	946	7.30	653	7.30
PM PK HOUR	0	3.00	0	3.00	0	3.00	0	3.00

NORTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	50	556	63	669
8-9	44	671	103	818
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	94	1227	166	1487

SOUTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	89	1057	144	1290
8-9	90	974	133	1197
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	179	2031	277	2487

TOTAL	**XING S/L**		**XING N/L**	
N-S	Ped	Sch	Ped	Sch
1959	6	3	6	1
2015	8	1	2	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
3974	14	4	8	2

EASTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	148	524	80	752
8-9	142	558	94	794
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	290	1082	174	1546

WESTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	110	427	48	585
8-9	132	324	59	515
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	242	751	107	1100

TOTAL	**XING W/L**		**XING E/L**	
E-W	Ped	Sch	Ped	Sch
1337	12	6	2	2
1309	17	7	8	2
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
2646	29	13	10	4

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_002 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Fallbrook Ave			Fallbrook Ave			Vanowen St			Vanowen St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	1	2	0	1	2	0	
7:00 AM	10	64	9	19	151	5	27	94	11	20	45	7	462
7:15 AM	11	123	10	20	257	22	25	94	9	30	75	6	682
7:30 AM	7	145	14	24	333	51	33	138	30	25	147	7	954
7:45 AM	16	208	29	23	292	59	55	181	28	32	146	28	1097
8:00 AM	13	204	23	33	257	34	50	186	38	29	67	15	949
8:15 AM	11	141	22	21	233	27	31	131	16	32	85	22	772
8:30 AM	9	148	27	13	227	35	34	111	21	30	78	9	742
8:45 AM	9	161	29	16	241	28	24	118	18	38	84	12	778
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	86	1194	163	169	1991	261	279	1053	171	236	727	106	6436
APPROACH %'s :	#NAME?	82.74%	11.30%	6.98%	82.24%	10.78%	18.56%	70.06%	11.38%	22.08%	68.01%	9.92%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	47	698	88	101	1115	171	169	636	112	118	445	72	3772
PEAK HR FACTOR :		0.823			0.850			0.837			0.771		0.860

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_002 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Fallbrook Ave			Fallbrook Ave			Vanowen St			Vanowen St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	1	2	0	1	2	0	
7:00 AM	1	1		0	2	1	1	2	0	0	1		9
7:15 AM	0	3		1	2	0	1	1	0	0	2		10
7:30 AM	2	2		0	3	2	1	3	1	0	3		17
7:45 AM	0	1		0	1	1	0	7	0	0	2		12
8:00 AM	0	2		0	1	0	2	2	0	0	2		9
8:15 AM	0	1		0	1	1	0	1	0	0	0		4
8:30 AM	0	1		0	1	0	0	0	0	1	1		4
8:45 AM	0	0		1	0	0	1	3	0	0	2		7
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	11	0	2	11	5	6	19	1	1	13	0	72
APPROACH %'s :	21.43%	78.57%	0.00%	11.11%	61.11%	27.78%	23.08%	73.08%	3.85%	7.14%	92.86%	0.00%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	2	8	0	1	7	3	4	13	1	0	9	0	48
PEAK HR FACTOR :		0.625			0.550			0.643			0.750		0.706

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_002 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Fallbrook Ave			Fallbrook Ave			Vanowen St			Vanowen St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	1	2	0	1	2	0	
7:00 AM	1	3	0	0	2	0	0	0	0	0	0	0	6
7:15 AM	0	1	1	0	3	0	1	2	0	2	1	0	11
7:30 AM	2	3	0	1	6	1	2	0	1	0	2	0	18
7:45 AM	0	2	0	1	5	2	2	2	0	1	3	0	18
8:00 AM	0	3	2	1	4	0	0	1	1	1	2	0	15
8:15 AM	0	2	0	1	5	2	0	3	0	0	1	1	15
8:30 AM	0	4	0	0	1	2	0	2	0	0	0	0	9
8:45 AM	2	4	0	4	3	4	0	0	0	1	2	0	20
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	5	22	3	8	29	11	5	10	2	5	11	1	112
APPROACH %'s :	16.67%	73.33%	10.00%	16.67%	60.42%	22.92%	29.41%	58.82%	11.76%	29.41%	64.71%	5.88%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	2	10	2	4	20	5	4	6	2	2	8	1	66
PEAK HR FACTOR :		0.700			0.906			0.750			0.688		0.917

CONTROL : Signalized

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-002
N/S Street: Fallbrook Ave
E/W Street: Vanowen St
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

Adult Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	2	1	0	1	0	0	0	0
7:15 AM	0	1	1	1	0	1	0	2
7:30 AM	0	1	2	0	1	0	3	3
7:45 AM	0	1	1	0	0	0	0	4
8:00 AM	0	0	0	1	0	1	1	2
8:15 AM	0	0	2	1	0	0	1	0
8:30 AM	0	0	2	1	3	2	0	3
8:45 AM	1	1	1	0	2	0	2	8
TOTALS	**3**	**5**	**9**	**5**	**6**	**4**	**7**	**22**

School-Aged Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	1	2	0	2	0	1	0
7:15 AM	0	0	0	1	0	0	0	1
7:30 AM	0	0	0	0	0	0	3	1
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	2
8:15 AM	1	0	1	0	0	1	2	1
8:30 AM	0	0	0	0	0	1	0	0
8:45 AM	0	0	0	0	0	0	0	2
TOTALS	**1**	**1**	**3**	**1**	**2**	**2**	**6**	**7**

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-002
N/S Street: Fallbrook Ave
E/W Street: Vanowen St
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

BIKES

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	1	0	0	0
7:15 AM	0	0	0	0	1	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	1	0	1	0	1	0	1
8:00 AM	0	0	0	1	0	1	0	0
8:15 AM	0	0	2	1	1	0	0	1
8:30 AM	0	0	1	1	0	1	0	1
8:45 AM	0	0	0	2	0	1	0	1
TOTALS	**0**	**1**	**3**	**6**	**3**	**4**	**0**	**4**

City Of Los Angeles

Department Of Transportation

MANUAL TRAFFIC COUNT SUMMARY

STREET:

North/South Sale Ave

East/West Vanowen St

Day: Thursday Date: February 17, 2011 Weather: SUNNY

Hours: 7-10AM 3-6PM Chekrs: 0

School Day: YES District: 0 I/S CODE 0

	N/B	S/B	E/B	W/B
DUAL-WHEELED	5	2	32	68
BIKES	0	0	3	2
BUSES	1	0	22	23

	N/B	TIME	S/B	TIME	E/B	TIME	W/B	TIME
AM PK 15 MIN	40	8.00	11	7.15	268	8.00	270	7.45
PM PK 15 MIN	0	3.00	0	3.00	0	3.00	0	3.00
AM PK HOUR	119	7.45	40	7.15	870	7 30	816	7.30
PM PK HOUR	0	3.00	0	3.00	0	3.00	0	3.00

NORTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	8	2	59	69
8-9	16	2	89	107
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	24	4	148	176

SOUTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	5	0	32	37
8-9	9	2	16	27
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	14	2	48	64

TOTAL	**XING S/L**		**XING N/L**	
N-S	Ped	Sch	Ped	Sch
106	3	0	4	0
134	5	0	2	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
240	8	0	6	0

EASTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	10	641	6	657
8-9	12	706	15	733
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	22	1347	21	1390

WESTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	60	574	5	639
8-9	68	542	6	616
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	128	1116	11	1255

TOTAL	**XING W/L**		**XING E/L**	
E-W	Ped	Sch	Ped	Sch
1296	0	0	0	0
1349	1	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
2645	1	0	0	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_003 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Sale Ave			Sale Ave			Vanowen St			Vanowen St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
7:00 AM	1	0	15	2	0	5	1	100	0	4	62	0	190
7:15 AM	0	1	11	1	0	10	2	130	1	2	89	1	248
7:30 AM	1	0	7	0	0	9	4	169	3	13	166	3	375
7:45 AM	5	0	24	2	0	8	3	216	2	33	221	1	515
8:00 AM	8	2	30	1	1	7	5	249	7	40	139	2	491
8:15 AM	1	0	30	3	0	3	4	173	4	12	132	2	364
8:30 AM	1	0	16	3	0	4	1	125	2	7	102	1	262
8:45 AM	5	0	12	1	0	2	1	133	1	5	126	1	287
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	22	3	145	13	1	48	21	1295	20	116	1037	11	2732
APPROACH %'s :	12.94%	1.76%	85.29%	20.97%	1.61%	77.42%	1.57%	96.93%	1.50%	9.97%	89.09%	0.95%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	15	2	91	6	1	27	16	807	16	98	658	8	1745
PEAK HR FACTOR :		0.675			0.850			0.804			0.749		0.847

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_003 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Sale Ave			Sale Ave			Vanowen St			Vanowen St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
7:00 AM	0							2		2	2		6
7:15 AM	0							3		0	2		5
7:30 AM	0							2		0	3		5
7:45 AM	0							6		1	2		9
8:00 AM	0							4		2	4		10
8:15 AM	1							2		1	0		4
8:30 AM	0							0		0	2		2
8:45 AM	0							3		1	1		5
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	0	0	0	0	0	0	22	0	7	16	0	46
APPROACH %'s :	100.00%	0.00%	0.00%				0.00%	100.00%	0.00%	30.43%	69.57%	0.00%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	15	0	3	11	0	29
PEAK HR FACTOR :		0.000			0.000			0.625			0.583		0.725

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_003 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Sale Ave			Sale Ave			Vanowen St			Vanowen St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
7:00 AM	0	0	0	0	0		0	2	0	0	3		5
7:15 AM	1	1	0	0	0		0	2	0	1	7		12
7:30 AM	0	0	2	0	0		0	5	0	2	7		16
7:45 AM	0	0	0	0	0		0	4	0	2	10		16
8:00 AM	0	0	0	0	1		0	3	0	0	9		13
8:15 AM	0	0	1	0	0		1	4	0	0	9		15
8:30 AM	0	0	0	1	0		0	3	0	0	8		12
8:45 AM	0	0	0	0	0		0	7	1	0	10		18
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	1	3	1	1	0	1	30	1	5	63	0	107
APPROACH %'s :	20.00%	20.00%	60.00%	50.00%	50.00%	0.00%	3.13%	93.75%	3.13%	7.35%	92.65%	0.00%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	0	3	0	1	0	1	16	0	4	35	0	60
PEAK HR FACTOR :		0.375			0.250			0.850			0.813		0.938

CONTROL : Signalized

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-003
N/S Street: Sale Ave
E/W Street: Vanowen St
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

Adult Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	1	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	1	1	1	0	0	0	0
7:45 AM	1	1	0	1	0	0	0	0
8:00 AM	0	1	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	1	2	0	0	0	0	0
8:45 AM	0	0	0	3	0	0	1	0
TOTALS	**1**	**5**	**3**	**5**	**0**	**0**	**1**	**0**

School-Aged Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-003
N/S Street: Sale Ave
E/W Street: Vanowen St
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

BIKES

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	0	0	0	0	0
7:30 AM	0	0	1	0	0	0	0	0
7:45 AM	0	1	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	1	0	0	0	0	0	0
8:30 AM	0	0	1	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**2**	**3**	**0**	**0**	**0**	**0**	**0**

City Of Los Angeles

Department Of Transportation

MANUAL TRAFFIC COUNT SUMMARY

STREET:

North/South Shoup Ave

East/West Vanowen St

Day: Thursday Date: February 17, 2011 Weather: SUNNY

Hours: 7-10AM 3-6PM Chekrs: 0

School Day: YES District: 0 I/S CODE 0

	N/B	S/B	E/B	W/B
DUAL-WHEELED	19	40	50	60
BIKES	1	3	2	2
BUSES	3	4	27	21

	N/B	TIME	S/B	TIME	E/B	TIME	W/B	TIME
AM PK 15 MIN	253	7.45	413	7.45	282	8.00	216	7.45
PM PK 15 MIN	0	3.00	0	3.00	0	3.00	0	3.00
AM PK HOUR	906	7.30	1308	7.15	946	7.30	721	7.30
PM PK HOUR	0	3.00	0	3.00	0	3.00	0	3.00

NORTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	40	642	48	730
8-9	77	630	50	757
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	117	1272	98	1487

SOUTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	83	985	153	1221
8-9	62	822	88	972
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	145	1807	241	2193

TOTAL	**XING S/L**		**XING N/L**	
N-S	Ped	Sch	Ped	Sch
1951	1	2	2	0
1729	1	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
3680	2	2	2	0

EASTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	104	511	108	723
8-9	116	578	104	798
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	220	1089	212	1521

WESTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	77	455	55	587
8-9	84	446	54	584
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	161	901	109	1171

TOTAL	**XING W/L**		**XING E/L**	
E-W	Ped	Sch	Ped	Sch
1310	1	0	0	0
1382	1	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
2692	2	0	0	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_004 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Shoup Ave			Shoup Ave			Vanowen St			Vanowen St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	2	0	1	2	0	
7:00 AM	7	80	11	24	164	13	18	84	15	11	46	9	482
7:15 AM	7	134	5	15	206	17	21	96	27	10	83	8	629
7:30 AM	8	206	9	22	284	48	29	123	25	27	131	17	929
7:45 AM	18	209	21	21	312	73	34	176	40	27	156	16	1103
8:00 AM	28	183	18	18	235	30	42	185	37	19	128	13	936
8:15 AM	17	163	14	18	189	21	30	147	25	22	101	20	767
8:30 AM	11	136	11	12	203	19	18	112	16	26	86	8	658
8:45 AM	20	144	5	12	179	14	24	97	23	16	97	13	644
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	116	1255	94	142	1772	235	216	1020	208	158	828	104	6148
APPROACH %'s :	7.92%	85.67%	6.42%	6.61%	82.46%	10.94%	14.96%	70.64%	14.40%	14.50%	75.96%	9.54%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	71	761	62	79	1020	172	135	631	127	95	516	66	3735
PEAK HR FACTOR :		0.901			0.783			0.846			0.851		0.847

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_004 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Shoup Ave			Shoup Ave			Vanowen St			Vanowen St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	2	0	1	2	0	
7:00 AM		0	0	0	0	0		2	0		3	0	5
7:15 AM		0	0	0	0	0		3	0		2	1	6
7:30 AM		1	0	0	0	0		3	0		2	0	6
7:45 AM		0	1	0	1	0		5	0		5	0	12
8:00 AM		0	0	1	1	1		6	0		3	0	12
8:15 AM		1	0	0	0	0		5	0		2	0	8
8:30 AM		0	0	0	0	0		0	0		1	0	1
8:45 AM		0	0	0	0	0		2	1		2	0	5
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	2	1	1	2	1	0	26	1	0	20	1	55
APPROACH %'s :	0.00%	66.67%	33.33%	25.00%	50.00%	25.00%	0.00%	96.30%	3.70%	0.00%	95.24%	4.76%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	2	1	1	2	1	0	19	0	0	12	0	38
PEAK HR FACTOR :		0.750			0.333			0.792			0.600		0.792

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_004 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Shoup Ave			Shoup Ave			Vanowen St			Vanowen St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	2	0	1	2	0	
7:00 AM	0	0	0	0	4	0	0	2	0	1	4	1	12
7:15 AM	0	5	0	0	6	0	1	4	0	0	8	1	25
7:30 AM	0	4	0	0	5	0	0	6	1	0	5	1	22
7:45 AM	0	3	1	1	3	2	1	7	0	1	10	1	30
8:00 AM	0	0	0	1	4	1	0	12	0	1	6	0	25
8:15 AM	0	1	0	0	4	0	0	7	0	0	7	0	19
8:30 AM	0	0	2	0	3	0	1	1	1	0	6	0	14
8:45 AM	1	2	0	0	4	2	1	4	1	0	7	0	22
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	15	3	2	33	5	4	43	3	3	53	4	169
APPROACH %'s :	5.26%	78.95%	15.79%	5.00%	82.50%	12.50%	8.00%	86.00%	6.00%	5.00%	88.33%	6.67%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	0	12	1	2	18	3	2	29	1	2	29	3	102
PEAK HR FACTOR :		0.650			0.958			0.667			0.708		0.850

CONTROL : Signalized

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-004
N/S Street: Shoup Ave
E/W Street: Vanowen St
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

Adult Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	1	1	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	1	0	0	0	0	0
8:00 AM	0	0	0	1	0	0	1	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**1**	**1**	**1**	**1**	**0**	**0**	**2**	**0**

School-Aged Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	2	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-004
N/S Street: Shoup Ave
E/W Street: Vanowen St
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

BIKES

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	1	0	0
7:15 AM	0	0	1	0	1	0	0	0
7:30 AM	0	0	1	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	1	0	1	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	1	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**1**	**2**	**1**	**1**	**2**	**0**	**1**

City Of Los Angeles

Department Of Transportation

MANUAL TRAFFIC COUNT SUMMARY

STREET:

North/South Topanga Canyon Blvd

East/West Vanowen St

Day: Thursday Date: February 17, 2011 Weather: SUNNY

Hours: 7-10AM 3-6PM Chekrs: 0

School Day: YES District: 0 I/S CODE 0

	N/B	S/B	E/B	W/B
DUAL-WHEELED	71	162	35	66
BIKES	1	2	1	0
BUSES	54	14	28	41

	N/B	TIME	S/B	TIME	E/B	TIME	W/B	TIME
AM PK 15 MIN	306	7.45	514	7.45	292	8.00	261	7.30
PM PK 15 MIN	0	3.00	0	3.00	0	3.00	0	3.00
AM PK HOUR	1123	7.30	1808	7.30	916	7.30	857	7.15
PM PK HOUR	0	3.00	0	3.00	0	3.00	0	3.00

NORTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	40	906	82	1028
8-9	42	958	96	1096
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	82	1864	178	2124

SOUTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	93	1557	69	1719
8-9	106	1538	80	1724
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	199	3095	149	3443

TOTAL	**XING S/L**		**XING N/L**	
N-S	Ped	Sch	Ped	Sch
2747	3	2	13	94
2820	5	0	10	3
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
5567	8	2	23	97

EASTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	58	568	85	711
8-9	73	644	101	818
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	131	1212	186	1529

WESTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	101	458	225	784
8-9	83	487	80	650
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	184	945	305	1434

TOTAL	**XING W/L**		**XING E/L**	
E-W	Ped	Sch	Ped	Sch
1495	5	5	20	43
1468	5	0	22	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
2963	10	5	42	44

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_005 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Topanga Canyon Blvd			Topanga Canyon Blvd			Vanowen St			Vanowen St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	1	2	0	1	2	0	
7:00 AM	2	149	16	15	318	11	15	97	18	11	64	23	739
7:15 AM	8	210	21	18	378	11	10	117	15	20	86	39	933
7:30 AM	18	237	23	25	355	16	18	168	28	30	134	85	1137
7:45 AM	7	263	18	33	427	26	8	168	22	29	144	64	1209
8:00 AM	12	178	24	31	378	22	21	225	33	19	136	17	1096
8:15 AM	11	252	16	23	364	22	8	158	20	11	114	18	1017
8:30 AM	10	223	29	22	325	16	17	136	21	21	104	25	949
8:45 AM	8	240	24	28	385	18	13	104	26	20	97	16	979
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	76	1752	171	195	2930	142	110	1173	183	161	879	287	8059
APPROACH %'s :	3.80%	87.64%	8.55%	5.97%	89.68%	4.35%	7.50%	80.01%	12.48%	12.13%	66.24%	21.63%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	48	930	81	112	1524	86	55	719	103	89	528	184	4459
PEAK HR FACTOR :		0.919			0.886			0.786			0.804		0.922

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_005 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Topanga Canyon Blvd			Topanga Canyon Blvd			Vanowen St			Vanowen St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	1	2	0	1	2	0	
7:00 AM		3	1	2	1		0	3		1	3	0	14
7:15 AM		5	0	0	2		1	2		0	4	2	16
7:30 AM		5	0	0	3		0	1		0	1	5	15
7:45 AM		6	0	0	0		5	2		2	5	1	21
8:00 AM		10	0	0	1		6	2		2	4	0	25
8:15 AM		10	0	0	3		3	1		3	2	2	24
8:30 AM		10	0	0	0		0	0		0	1	1	12
8:45 AM		4	0	0	2		1	1		0	2	0	10
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	53	1	2	12	0	16	12	0	8	22	11	137
APPROACH %'s :	0.00%	98.15%	1.85%	14.29%	85.71%	0.00%	57.14%	42.86%	0.00%	19.51%	53.66%	26.83%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	31	0	0	7	0	14	6	0	7	12	8	85
PEAK HR FACTOR :		0.775			0.583			0.625			0.844		0.850

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_005 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Topanga Canyon Blvd			Topanga Canyon Blvd			Vanowen St			Vanowen St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	1	2	0	1	2	0	
7:00 AM	2	4	0	0	18	1	0	0	0	2	4	6	37
7:15 AM	1	9	0	0	21	1	0	2	0	1	5	0	40
7:30 AM	0	6	2	0	8	1	0	5	1	2	4	0	29
7:45 AM	2	9	1	0	26	2	1	3	1	3	4	0	52
8:00 AM	0	7	1	1	18	1	1	4	0	2	7	0	42
8:15 AM	0	5	0	0	22	0	0	3	0	1	5	0	36
8:30 AM	0	9	2	1	16	1	2	6	1	2	5	1	46
8:45 AM	1	10	0	0	24	0	1	4	0	2	10	0	52
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	6	59	6	2	153	7	5	27	3	15	44	7	334
APPROACH %'s :	8.45%	83.10%	8.45%	1.23%	94.44%	4.32%	14.29%	77.14%	8.57%	22.73%	66.67%	10.61%	
PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	1	31	3	2	80	2	4	17	1	7	27	1	176
PEAK HR FACTOR :		0.795			0.875			0.611			0.729		0.846

CONTROL : Signalized

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-005
N/S Street: Topanga Canyon Blvd
E/W Street: Vanowen St
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

Adult Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	2	1	2	0	5	0	1	1
7:15 AM	0	2	1	0	1	3	1	0
7:30 AM	1	2	0	0	4	1	0	0
7:45 AM	2	3	0	0	5	1	0	2
8:00 AM	1	1	1	0	6	2	0	2
8:15 AM	2	3	1	0	5	2	1	1
8:30 AM	2	0	0	1	3	0	0	0
8:45 AM	1	0	0	2	1	3	1	0
TOTALS	**11**	**12**	**5**	**3**	**30**	**12**	**4**	**6**

School-Aged Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	3	3	0	1	1	1	0	0
7:15 AM	21	13	1	0	1	0	0	0
7:30 AM	32	14	0	0	29	2	5	0
7:45 AM	6	2	0	0	9	0	0	0
8:00 AM	1	1	0	0	0	0	0	0
8:15 AM	1	0	0	0	1	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**64**	**33**	**1**	**1**	**41**	**3**	**5**	**0**

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-005
N/S Street: Topanga Canyon Blvd
E/W Street: Vanowen St
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

BIKES

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	1	0	0	0
7:15 AM	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	1	0	0	1	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**1**	**0**	**1**	**1**	**0**	**1**

City Of Los Angeles

Department Of Transportation

MANUAL TRAFFIC COUNT SUMMARY

STREET:

North/South Fallbrook Ave

East/West Criswell St

Day: Thursday Date: February 17, 2011 Weather: SUNNY

Hours: 7-10AM 3-6PM Chekrs: 0

School Day: YES District: 0 I/S CODE 0

	N/B	S/B	E/B	W/B
DUAL-WHEELED	41	101	0	4
BIKES	0	10	0	0
BUSES	13	13	0	2

	N/B	TIME	S/B	TIME	E/B	TIME	W/B	TIME
AM PK 15 MIN	279	8.00	442	7.45	10	8.45	30	8.15
PM PK 15 MIN	0	3.00	0	3.00	0	3.00	0	3.00
AM PK HOUR	996	7.30	1541	7.30	30	8.00	83	7.45
PM PK HOUR	0	3.00	0	3.00	0	3.00	0	3.00

NORTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	10	789	8	807
8-9	29	832	16	877
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	39	1621	24	1684

SOUTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	20	1361	8	1389
8-9	25	1206	21	1252
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	45	2567	29	2641

TOTAL	**XING S/L**		**XING N/L**	
N-S	Ped	Sch	Ped	Sch
2196	1	1	0	2
2129	4	3	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
4325	5	4	0	3

EASTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	7	1	2	10
8-9	16	3	11	30
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	23	4	13	40

WESTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	16	2	25	43
8-9	22	7	49	78
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	38	9	74	121

TOTAL	**XING W/L**		**XING E/L**	
E-W	Ped	Sch	Ped	Sch
53	6	0	2	1
108	13	2	2	3
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
161	19	2	4	4

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_006 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Fallbrook Ave			Fallbrook Ave			Criswell St			Criswell St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	4	0	0	1	1	0	1	0	
7:00 AM	1	131	0	1	207	3	2	0	1	1	0	2	349
7:15 AM	2	162	1	3	294	2	2	1	0	2	1	4	474
7:30 AM	2	224	3	4	394	2	1	0	1	6	0	7	644
7:45 AM	5	242	4	10	419	1	2	0	0	6	1	8	698
8:00 AM	4	262	8	15	334	3	4	0	2	0	3	17	652
8:15 AM	5	206	3	4	293	4	3	0	3	12	3	15	551
8:30 AM	10	160	3	3	265	3	6	1	1	7	0	10	469
8:45 AM	10	180	2	1	251	11	3	2	5	3	1	6	475
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	39	1567	24	41	2457	29	23	4	13	37	9	69	4312
APPROACH %'s :	2.39%	96.13%	1.47%	1.62%	97.23%	1.15%	57.50%	10.00%	32.50%	32.17%	7.83%	60.00%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	16	934	18	33	1440	10	10	0	6	24	7	47	2545
PEAK HR FACTOR :		0.883			0.862			0.667			0.650		0.912

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_006 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Fallbrook Ave			Fallbrook Ave			Criswell St			Criswell St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	4	0	0	1	1	0	1	0	
7:00 AM		1		1	2					1		1	6
7:15 AM		2		0	2					0		0	4
7:30 AM		5		0	2					0		0	7
7:45 AM		1		0	2					0		0	3
8:00 AM		2		0	0					0		0	2
8:15 AM		0		0	1					0		0	1
8:30 AM		1		0	3					0		0	4
8:45 AM		1		0	0					0		0	1
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	13	0	1	12	0	0	0	0	1	0	1	28
APPROACH %'s :	0.00%	100.00%	0.00%	7.69%	92.31%	0.00%				50.00%	0.00%	50.00%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	9	0	1	8	0	0	0	0	1	0	1	20
PEAK HR FACTOR :		0.450			0.750			0.000			0.250		0.714

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_006 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Fallbrook Ave			Fallbrook Ave			Criswell St			Criswell St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	4	0	0	1	1	0	1	0	
7:00 AM		3		1	10							1	15
7:15 AM		5		0	10							0	15
7:30 AM		9		0	9							1	19
7:45 AM		4		0	10							1	15
8:00 AM		3		0	20							0	23
8:15 AM		4		1	13							0	18
8:30 AM		7		1	9							0	17
8:45 AM		6		0	17							1	24
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	41	0	3	98	0	0	0	0	0	0	4	146
APPROACH %'s :	0.00%	100.00%	0.00%	2.97%	97.03%	0.00%				0.00%	0.00%	100.00%	
PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	0	20	0	2	59	0	0	0	0	0	0	1	82
PEAK HR FACTOR :		0.714			0.763			0.000			0.250		0.854

CONTROL : Signalized

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-006
N/S Street: Fallbrook Ave
E/W Street: Criswell St
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

Adult Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	1	1	0	0	0
7:30 AM	0	0	0	0	0	1	0	3
7:45 AM	0	0	0	0	0	0	1	1
8:00 AM	0	0	0	2	1	0	3	1
8:15 AM	0	0	0	0	0	0	3	0
8:30 AM	0	0	0	1	0	0	3	2
8:45 AM	0	0	0	1	0	1	1	0
TOTALS	**0**	**0**	**0**	**5**	**2**	**2**	**11**	**8**

School-Aged Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	2	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	1	0	0
7:45 AM	0	0	0	1	0	0	0	0
8:00 AM	0	0	0	1	0	2	0	1
8:15 AM	1	0	0	0	0	0	1	0
8:30 AM	0	0	0	1	0	1	0	0
8:45 AM	0	0	1	0	0	0	0	0
TOTALS	**1**	**2**	**1**	**3**	**0**	**4**	**1**	**1**

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-006
N/S Street: Fallbrook Ave
E/W Street: Criswell St
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

BIKES

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	1	0	2
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	1	0	2
TOTALS	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**8**

City Of Los Angeles

Department Of Transportation

MANUAL TRAFFIC COUNT SUMMARY

STREET:

North/South Fallbrook Ave

East/West Victory Blvd

Day: Thursday Date: February 17, 2011 Weather: SUNNY

Hours: 7-10AM 3-6PM Chekrs: 0

School Day: YES District: 0 I/S CODE 0

	N/B	S/B	E/B	W/B
DUAL-WHEELED	30	39	45	37
BIKES	1	4	2	1
BUSES	14	13	17	13

	N/B	TIME	S/B	TIME	E/B	TIME	W/B	TIME
AM PK 15 MIN	339	7.45	413	7.30	425	7.45	229	7.45
PM PK 15 MIN	0	3.00	0	3.00	0	3.00	0	3.00
AM PK HOUR	1237	7.30	1406	7.30	1385	7.30	731	7.30
PM PK HOUR	0	3.00	0	3.00	0	3.00	0	3.00

NORTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	148	735	104	987
8-9	191	749	122	1062
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	339	1484	226	2049

SOUTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	85	1048	119	1252
8-9	125	929	111	1165
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	210	1977	230	2417

TOTAL	**XING S/L**		**XING N/L**	
N-S	Ped	Sch	Ped	Sch
2239	5	2	8	1
2227	2	0	7	6
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
4466	7	2	15	7

EASTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	73	770	212	1055
8-9	88	837	251	1176
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	161	1607	463	2231

WESTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	83	489	49	621
8-9	105	486	85	676
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	188	975	134	1297

TOTAL	**XING W/L**		**XING E/L**	
E-W	Ped	Sch	Ped	Sch
1676	5	3	7	0
1852	7	4	3	4
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
3528	12	7	10	4

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_007 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Fallbrook Ave			Fallbrook Ave			Victory Blvd			Victory Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	3	0	1	3	0	1	3	0	
7:00 AM	21	119	16	13	171	18	5	101	31	18	55	11	579
7:15 AM	19	145	14	23	209	23	19	148	29	13	88	10	740
7:30 AM	46	217	33	29	340	39	20	200	57	26	147	10	1164
7:45 AM	56	237	41	18	312	38	27	302	84	23	182	18	1338
8:00 AM	51	240	43	29	275	26	30	291	66	22	105	16	1194
8:15 AM	45	180	26	26	214	29	17	194	62	24	111	19	947
8:30 AM	42	154	20	39	220	17	17	133	62	26	107	15	852
8:45 AM	49	162	29	29	195	33	22	193	59	24	144	33	972
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	329	1454	222	206	1936	223	157	1562	450	176	939	132	7786
APPROACH %'s :	16.41%	72.52%	11.07%	8.71%	81.86%	9.43%	7.24%	72.01%	20.75%	14.11%	75.30%	10.59%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	198	874	143	102	1141	132	94	987	269	95	545	63	4643
PEAK HR FACTOR :		0.909			0.843			0.817			0.788		0.868

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_007 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Fallbrook Ave			Fallbrook Ave			Victory Blvd			Victory Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	3	0	1	3	0	1	3	0	
7:00 AM		2		1	1	1		2			0	0	7
7:15 AM		2		0	2	0		1			3	0	8
7:30 AM		5		0	1	0		3			2	0	11
7:45 AM		1		0	2	0		4			2	0	9
8:00 AM		2		0	0	0		4			1	0	7
8:15 AM		0		0	2	0		0			2	0	4
8:30 AM		2		0	3	0		2			1	0	8
8:45 AM		0		0	0	0		1			1	1	3
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	14	0	1	11	1	0	17	0	0	12	1	57
APPROACH %'s :	0.00%	100.00%	0.00%	7.69%	84.62%	7.69%	0.00%	100.00%	0.00%	0.00%	92.31%	7.69%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	0	10	0	0	5	0	0	12	0	0	8	0	35
PEAK HR FACTOR :		0.500			0.625			0.750			0.667		0.795

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_007 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Fallbrook Ave			Fallbrook Ave			Victory Blvd			Victory Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	3	0	1	3	0	1	3	0	
7:00 AM	1	2	0	0	1	0	0	0	2	1	0	0	7
7:15 AM	1	1	0	0	4	0	0	4	1	0	4	0	15
7:30 AM	2	2	0	0	4	0	1	2	4	1	3	0	19
7:45 AM	2	2	0	1	1	0	1	3	4	1	3	0	18
8:00 AM	1	2	0	1	6	3	0	5	0	3	3	0	24
8:15 AM	0	2	1	0	9	1	0	4	0	1	6	0	24
8:30 AM	3	2	2	1	3	0	1	4	1	3	3	1	24
8:45 AM	0	3	1	0	2	2	1	6	1	2	2	0	20
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	10	16	4	3	30	6	4	28	13	12	24	1	151
APPROACH %'s :	33.33%	53.33%	13.33%	7.69%	76.92%	15.38%	8.89%	62.22%	28.89%	32.43%	64.86%	2.70%	
PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	4	9	4	2	20	6	2	19	2	9	14	1	92
PEAK HR FACTOR :		0.607			0.700			0.719			0.857		0.958

CONTROL : Signalized

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-007
N/S Street: Fallbrook Ave
E/W Street: Victory Blvd
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

Adult Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	1	0	0	0	3	0	0
7:15 AM	1	1	2	1	0	0	1	1
7:30 AM	2	1	0	1	1	1	1	0
7:45 AM	1	1	0	1	0	2	0	2
8:00 AM	0	1	0	0	0	1	2	0
8:15 AM	2	1	0	0	1	0	0	1
8:30 AM	1	1	0	0	0	1	0	0
8:45 AM	0	1	1	1	0	0	3	1
TOTALS	**7**	**8**	**3**	**4**	**2**	**8**	**7**	**5**

School-Aged Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	1	2	0	0	0	0	3
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	1
8:15 AM	3	0	0	0	0	2	0	3
8:30 AM	2	1	0	0	1	1	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**5**	**2**	**2**	**0**	**1**	**3**	**0**	**7**

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-007
N/S Street: Fallbrook Ave
E/W Street: Victory Blvd
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

BIKES

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	1	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	1	0	0	0	1	0	0	1
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	1	0	0	0	0	0	0	0
TOTALS	**2**	**1**	**0**	**0**	**1**	**0**	**0**	**4**

City Of Los Angeles

Department Of Transportation

MANUAL TRAFFIC COUNT SUMMARY

STREET:

North/South Shoup Ave

East/West Victory Blvd

Day: Thursday Date: February 17, 2011 Weather: SUNNY

Hours: 7-10AM 3-6PM Chekrs: 0

School Day: YES District: 0 I/S CODE 0

	N/B	S/B	E/B	W/B
DUAL-WHEELED	17	29	31	54
BIKES	1	1	6	2
BUSES	4	3	16	7

	N/B	TIME	S/B	TIME	E/B	TIME	W/B	TIME
AM PK 15 MIN	265	8.00	402	7.45	338	7.45	200	7.45
PM PK 15 MIN	0	3.00	0	3.00	0	3.00	0	3.00
AM PK HOUR	969	7.30	1356	7.30	1222	7.30	687	7.30
PM PK HOUR	0	3.00	0	3.00	0	3.00	0	3.00

NORTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	85	618	52	755
8-9	97	661	80	838
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	182	1279	132	1593

SOUTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	126	1031	67	1224
8-9	113	971	51	1135
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	239	2002	118	2359

TOTAL	**XING S/L**		**XING N/L**	
N-S	Ped	Sch	Ped	Sch
1979	0	0	5	2
1973	3	0	1	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
3952	3	0	6	2

EASTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	58	711	136	905
8-9	76	835	190	1101
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	134	1546	326	2006

WESTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	73	429	68	570
8-9	79	468	53	600
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	152	897	121	1170

TOTAL	**XING W/L**		**XING E/L**	
E-W	Ped	Sch	Ped	Sch
1475	2	2	1	0
1701	3	0	1	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
3176	5	2	2	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_008 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Shoup Ave			Shoup Ave			Victory Blvd			Victory Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	2	0	1	2	0	
7:00 AM	10	78	6	20	181	9	8	100	22	11	53	6	504
7:15 AM	19	131	11	29	208	10	12	142	25	17	67	13	684
7:30 AM	25	189	16	33	294	24	15	200	31	20	133	25	1005
7:45 AM	28	213	19	44	337	19	21	254	56	23	152	20	1186
8:00 AM	26	212	24	32	291	12	22	254	52	21	125	17	1088
8:15 AM	28	165	13	29	218	8	13	229	51	16	87	12	869
8:30 AM	20	136	13	31	239	17	13	161	31	19	100	11	791
8:45 AM	20	144	26	19	210	13	26	168	53	17	136	8	840
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	176	1268	128	237	1978	112	130	1508	321	144	853	112	6967
APPROACH %'s :	11.20%	80.66%	8.14%	10.18%	85.00%	4.81%	6.64%	76.98%	16.39%	12.98%	76.92%	10.10%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	107	779	72	138	1140	63	71	937	190	80	497	74	4148
PEAK HR FACTOR :		0.914			0.838			0.905			0.835		0.874

CONTROL :

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_008 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Shoup Ave			Shoup Ave			Victory Blvd			Victory Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	2	0	1	2	0	
7:00 AM	1	0			0	0	0	3	1		1		6
7:15 AM	0	1			0	0	0	1	0		0		2
7:30 AM	0	1			0	1	0	2	0		1		5
7:45 AM	0	0			0	1	1	2	0		0		4
8:00 AM	0	0			0	0	0	2	0		1		3
8:15 AM	0	1			0	0	0	2	1		3		7
8:30 AM	0	0			0	0	0	1	0		0		1
8:45 AM	0	0			1	0	0	0	0		1		2

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	3	0	0	1	2	1	13	2	0	7	0	30
APPROACH %'s :	25.00%	75.00%	0.00%	0.00%	33.33%	66.67%	6.25%	81.25%	12.50%	0.00%	100.00%	0.00%	

PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	2	0	0	0	2	1	8	1	0	5	0	19
PEAK HR FACTOR :		0.500			0.500			0.833			0.417		0.679

CONTROL :

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_008 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Shoup Ave			Shoup Ave			Victory Blvd			Victory Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	2	0	1	2	0	
7:00 AM	0	0	0	0	3	1	0	0	0	0	3	0	7
7:15 AM	0	1	0	0	3	2	1	4	0	0	7	1	19
7:30 AM	1	3	0	0	4	0	0	0	0	1	9	2	20
7:45 AM	1	1	0	0	1	0	0	3	1	1	3	1	12
8:00 AM	1	1	1	1	1	0	0	4	0	1	3	0	13
8:15 AM	0	0	0	1	5	0	0	6	0	2	6	2	22
8:30 AM	2	2	0	0	1	1	0	6	1	1	4	2	20
8:45 AM	0	0	3	0	5	0	2	2	1	2	2	1	18
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	5	8	4	2	23	4	3	25	3	8	37	9	131
APPROACH %'s :	29.41%	47.06%	23.53%	6.90%	79.31%	13.79%	9.68%	80.65%	9.68%	14.81%	68.52%	16.67%	
PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	3	3	4	2	12	1	2	18	2	6	15	5	73
PEAK HR FACTOR :		0.625			0.625			0.786			0.650		0.830

CONTROL :

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-008
N/S Street: Shoup Ave
E/W Street: Victory Blvd
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

Adult Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	2	0	0	0	1	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	3	0	0	0	0	0	2	0
8:00 AM	0	0	0	0	1	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	1	0	0	1	1
8:45 AM	1	0	0	2	0	0	0	1
TOTALS	**4**	**2**	**0**	**3**	**1**	**1**	**3**	**2**

School-Aged Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	2	0	0	0	0	0	2	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**2**	**0**	**0**	**0**	**0**	**0**	**2**	**0**

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-008
N/S Street: Shoup Ave
E/W Street: Victory Blvd
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

BIKES

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	0	0	0	1
7:30 AM	0	1	1	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	1	0	0	0	1	0	0	0
8:15 AM	1	0	1	0	0	0	0	0
8:30 AM	0	0	1	0	0	0	0	0
8:45 AM	1	0	0	0	0	0	0	0
TOTALS	**3**	**2**	**3**	**0**	**1**	**0**	**0**	**1**

City Of Los Angeles

Department Of Transportation

MANUAL TRAFFIC COUNT SUMMARY

STREET:

North/South Fallbrook Ave

East/West Oxnard St

Day: Thursday Date: February 17, 2011 Weather: SUNNY

Hours: 7-10AM 3-6PM Chekrs: 0

School Day: YES District: 0 I/S CODE 0

	N/B	S/B	E/B	W/B
DUAL-WHEELED	43	85	3	7
BIKES	3	7	1	4
BUSES	13	12	0	1

	N/B	TIME	S/B	TIME	E/B	TIME	W/B	TIME
AM PK 15 MIN	297	8.00	522	7.45	101	7.45	102	7.45
PM PK 15 MIN	0	3.00	0	3.00	0	3.00	0	3.00
AM PK HOUR	1110	7.30	1659	7.30	288	7.30	323	7 30
PM PK HOUR	0	3.00	0	3.00	0	3.00	0	3.00

NORTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	7	849	70	926
8-9	14	904	122	1040
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	21	1753	192	1966

SOUTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	113	1309	21	1443
8-9	196	1139	17	1352
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	309	2448	38	2795

TOTAL	**XING S/L**		**XING N/L**	
N-S	Ped	Sch	Ped	Sch
2369	1	0	3	1
2392	1	0	3	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
4761	2	0	6	1

EASTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	30	150	21	201
8-9	29	146	25	200
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	59	296	46	401

WESTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	77	90	61	228
8-9	99	61	98	258
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	176	151	159	486

TOTAL	**XING W/L**		**XING E/L**	
E-W	Ped	Sch	Ped	Sch
429	3	1	1	0
458	2	0	1	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
887	5	1	2	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_009 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Fallbrook Ave			Fallbrook Ave			Oxnard St			Oxnard St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	1	1	0	1	1	0	
7:00 AM	0	145	5	16	199	4	0	14	3	2	4	10	402
7:15 AM	0	174	14	24	250	1	2	21	1	16	6	7	516
7:30 AM	4	253	21	25	359	7	8	43	7	31	36	13	807
7:45 AM	2	244	30	47	453	8	19	71	9	27	43	29	982
8:00 AM	1	265	28	57	319	2	13	63	12	26	22	28	836
8:15 AM	2	202	29	52	268	6	4	32	5	23	14	27	664
8:30 AM	6	219	31	46	247	4	4	22	0	17	11	18	625
8:45 AM	4	197	34	40	262	2	8	29	8	31	13	24	652
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	19	1699	192	307	2357	34	58	295	45	173	149	156	5484
APPROACH %'s :	0.99%	88.95%	10.05%	11.38%	87.36%	1.26%	14.57%	74.12%	11.31%	36.19%	31.17%	32.64%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	9	964	108	181	1399	23	44	209	33	107	115	97	3289
PEAK HR FACTOR :		0.919			0.789			0.722			0.806		0.837

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_009 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Fallbrook Ave			Fallbrook Ave			Oxnard St			Oxnard St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	1	1	0	1	1	0	
7:00 AM		2			2	0					0		4
7:15 AM		2			2	0					0		4
7:30 AM		5			1	0					0		6
7:45 AM		0			2	0					1		3
8:00 AM		2			0	0					0		2
8:15 AM		1			1	1					0		3
8:30 AM		1			3	0					0		4
8:45 AM		0			0	0					0		0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	13	0	0	11	1	0	0	0	0	1	0	26
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	91.67%	8.33%				0.00%	100.00%	0.00%	

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	9	0	0	7	0	0	0	0	0	1	0	17
PEAK HR FACTOR :		0.450			0.875			0.000			0.250		0.708

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_009 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Fallbrook Ave			Fallbrook Ave			Oxnard St			Oxnard St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	1	1	0	1	1	0	
7:00 AM	0	5		0	7	1	0	0	0	0	0	1	14
7:15 AM	1	5		0	11	0	1	0	0	0	0	0	18
7:30 AM	0	7		0	12	0	0	0	0	0	0	0	19
7:45 AM	0	7		1	11	0	0	1	1	1	0	1	23
8:00 AM	0	1		0	14	1	0	0	0	0	0	1	17
8:15 AM	1	5		0	12	0	0	0	0	0	0	0	18
8:30 AM	0	7		0	4	1	0	0	0	0	1	0	13
8:45 AM	0	4		1	9	0	0	0	0	2	0	0	16

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	2	41	0	2	80	3	1	1	1	3	1	3	138
APPROACH %'s :	4.65%	95.35%	0.00%	2.35%	94.12%	3.53%	33.33%	33.33%	33.33%	42.86%	14.29%	42.86%	

PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	1	20	0	1	49	1	0	1	1	1	0	2	77
PEAK HR FACTOR :		0.750			0.850			0.250			0.375		0.837

CONTROL : Signalized

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-009
N/S Street: Fallbrook Ave
E/W Street: Oxnard St
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

Adult Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	1	0	1	0	0
7:15 AM	1	1	0	0	0	0	2	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	1	0	0	0	0	0	1	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	1	0
8:30 AM	2	0	1	0	1	0	0	1
8:45 AM	0	1	0	0	0	0	0	0
TOTALS	**4**	**2**	**1**	**1**	**1**	**1**	**4**	**1**

School-Aged Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	1	0
7:15 AM	1	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-009
N/S Street: Fallbrook Ave
E/W Street: Oxnard St
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

BIKES

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	1	0	0	0	0
7:15 AM	0	1	0	0	0	0	0	2
7:30 AM	0	1	1	0	1	0	0	0
7:45 AM	0	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	1	0	0	1
8:15 AM	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	1	0	0	0
8:45 AM	0	0	0	1	0	1	0	0
TOTALS	**0**	**2**	**1**	**2**	**3**	**1**	**0**	**6**

City Of Los Angeles

Department Of Transportation

MANUAL TRAFFIC COUNT SUMMARY

STREET:

North/South Shoup Ave

East/West Oxnard St

Day: Thursday Date: February 17, 2011 Weather: SUNNY

Hours: 7-10AM 3-6PM Chekrs: 0

School Day: YES District: 0 I/S CODE 0

	N/B	S/B	E/B	W/B
DUAL-WHEELED	19	56	9	7
BIKES	0	3	1	2
BUSES	4	4	1	1

	N/B	TIME	S/B	TIME	E/B	TIME	W/B	TIME
AM PK 15 MIN	249	7.45	442	7.45	187	8.00	92	7.45
PM PK 15 MIN	0	3.00	0	3.00	0	3.00	0	3.00
AM PK HOUR	900	7.30	1441	7.30	638	7.45	309	7.30
PM PK HOUR	0	3.00	0	3.00	0	3.00	0	3.00

NORTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	35	582	50	667
8-9	78	631	80	789
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	113	1213	130	1456

SOUTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	120	1043	124	1287
8-9	141	913	164	1218
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	261	1956	288	2505

TOTAL	**XING S/L**		**XING N/L**	
N-S	Ped	Sch	Ped	Sch
1954	0	0	0	0
2007	9	3	5	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
3961	9	3	5	0

EASTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	71	270	46	387
8-9	102	400	107	609
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	173	670	153	996

WESTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	51	122	42	215
8-9	51	139	58	248
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	102	261	100	463

TOTAL	**XING W/L**		**XING E/L**	
E-W	Ped	Sch	Ped	Sch
602	5	1	2	0
857	1	0	12	3
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1459	6	1	14	3

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_010 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Shoup Ave			Shoup Ave			Oxnard St			Oxnard St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	2	0	1	1	1	
7:00 AM	6	64	3	14	183	16	10	25	8	8	9	12	358
7:15 AM	2	113	8	23	216	20	16	50	8	7	11	6	480
7:30 AM	10	190	13	34	278	39	13	78	14	15	43	11	738
7:45 AM	17	207	25	48	340	47	31	114	15	21	56	13	934
8:00 AM	18	195	21	38	252	43	28	124	34	15	46	24	838
8:15 AM	20	151	22	44	207	37	26	101	23	12	32	18	693
8:30 AM	13	125	18	28	207	44	22	86	27	10	24	9	613
8:45 AM	23	151	18	29	224	34	25	87	21	13	34	6	665
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	109	1196	128	258	1907	280	171	665	150	101	255	99	5319
APPROACH %'s :	7.61%	83.46%	8.93%	10.55%	78.00%	11.45%	17.34%	67.44%	15.21%	22.20%	56.04%	21.76%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	65	743	81	164	1077	166	98	417	86	63	177	66	3203
PEAK HR FACTOR :		0.893			0.809			0.808			0.850		0.857

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_010 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Shoup Ave			Shoup Ave			Oxnard St			Oxnard St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	2	0	1	1	1	
7:00 AM		0	0		0				0		0		0
7:15 AM		1	0		0				0		0		1
7:30 AM		1	0		0				1		0		2
7:45 AM		0	0		0				0		1		1
8:00 AM		0	0		1				0		0		1
8:15 AM		1	0		1				0		0		2
8:30 AM		0	1		1				0		0		2
8:45 AM		0	0		1				0		0		1
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	3	1	0	4	0	0	0	1	0	1	0	10
APPROACH %'s :	0.00%	75.00%	25.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	

PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	0	1	1	0	4	0	0	0	0	0	0	0	6
PEAK HR FACTOR :		0.500			1.000			0.000			0.000		0.750

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_010 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Shoup Ave			Shoup Ave			Oxnard St			Oxnard St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	2	0	1	1	1	
7:00 AM	0	1	0	0	6	0	0	0	0	0	1	0	8
7:15 AM	0	2	0	0	6	0	0	0	0	0	0	0	8
7:30 AM	0	3	1	0	9	1	1	1	0	0	0	0	16
7:45 AM	0	0	0	1	5	1	0	2	0	0	1	0	10
8:00 AM	0	2	0	2	6	1	1	0	0	0	1	0	13
8:15 AM	1	2	0	0	5	1	0	1	2	0	0	0	12
8:30 AM	1	2	0	0	5	2	0	1	0	1	1	0	13
8:45 AM	2	2	0	0	3	2	0	0	0	0	1	1	11
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4	14	1	3	45	8	2	5	2	1	5	1	91
APPROACH %'s :	21.05%	73.68%	5.26%	5.36%	80.36%	14.29%	22.22%	55.56%	22.22%	14.29%	71.43%	14.29%	

PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	1	7	1	3	25	4	2	4	2	0	2	0	51
PEAK HR FACTOR :		0.563			0.800			0.667			0.500		0.797

CONTROL : Signalized

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-010
N/S Street: Shoup Ave
E/W Street: Oxnard St
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

Adult Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	1	0	0	0
7:30 AM	0	0	0	0	0	0	0	2
7:45 AM	0	0	0	0	0	1	1	2
8:00 AM	0	0	1	2	0	4	0	1
8:15 AM	1	1	0	1	0	1	0	0
8:30 AM	0	3	2	1	3	2	0	0
8:45 AM	0	0	2	0	2	0	0	0
TOTALS	**1**	**4**	**5**	**4**	**6**	**8**	**1**	**5**

School-Aged Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	1
8:00 AM	0	0	1	0	0	0	0	0
8:15 AM	0	0	0	1	0	2	0	0
8:30 AM	0	0	0	1	0	1	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**1**	**2**	**0**	**3**	**0**	**1**

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-010
N/S Street: Shoup Ave
E/W Street: Oxnard St
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

BIKES

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	1	0	0
7:30 AM	0	1	0	0	0	0	0	1
7:45 AM	0	1	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	1	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**2**	**1**	**0**	**0**	**1**	**0**	**2**

City Of Los Angeles

Department Of Transportation

MANUAL TRAFFIC COUNT SUMMARY

STREET:

North/South Fallbrook Ave

East/West Ventura Blvd

Day: Thursday Date: February 17, 2011 Weather: SUNNY

Hours: 7-10AM 3-6PM Chekrs: 0

School Day: YES District: 0 I/S CODE 0

	N/B	S/B	E/B	W/B
DUAL-WHEELED	22	36	15	50
BIKES	4	3	0	3
BUSES	9	9	11	18

	N/B	TIME	S/B	TIME	E/B	TIME	W/B	TIME
AM PK 15 MIN	201	7.30	343	7.45	133	7.45	254	7.45
PM PK 15 MIN	0	3.00	0	3.00	0	3.00	0	3.00
AM PK HOUR	733	7.30	1257	7.30	413	7.30	922	7.30
PM PK HOUR	0	3.00	0	3.00	0	3.00	0	3.00

NORTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	59	459	86	604
8-9	45	525	126	696
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	104	984	212	1300

SOUTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	498	189	404	1091
8-9	444	197	443	1084
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	942	386	847	2175

TOTAL	**XING S/L**		**XING N/L**	
N-S	Ped	Sch	Ped	Sch
1695	29	0	5	0
1780	24	0	6	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
3475	53	0	11	0

EASTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	66	268	25	359
8-9	64	256	14	334
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	130	524	39	693

WESTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	104	403	259	766
8-9	131	499	276	906
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	235	902	535	1672

TOTAL	**XING W/L**		**XING E/L**	
E-W	Ped	Sch	Ped	Sch
1125	14	0	0	0
1240	11	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
2365	25	0	0	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_011 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Fallbrook Ave			Fallbrook Ave			Ventura Blvd			Ventura Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1.5	0.5	1	1	3	0	1	2	1	
7:00 AM	9	71	22	108	27	65	10	45	2	16	61	44	480
7:15 AM	10	106	12	107	30	80	12	51	2	18	86	52	566
7:30 AM	25	151	20	141	50	120	19	69	4	26	106	78	809
7:45 AM	15	124	24	136	72	127	14	98	16	37	132	78	873
8:00 AM	14	148	32	139	61	126	10	78	11	37	113	80	849
8:15 AM	11	123	31	105	50	105	11	67	2	25	116	56	702
8:30 AM	13	120	27	91	39	94	23	53	1	24	116	66	667
8:45 AM	7	122	32	104	43	110	15	54	0	33	136	68	724
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	104	965	200	931	372	827	114	515	38	216	866	522	5670
APPROACH %'s :	8.20%	76.04%	15.76%	43.71%	17.46%	38.83%	17.09%	77.21%	5.70%	13.47%	53.99%	32.54%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	65	546	107	521	233	478	54	312	33	125	467	292	3233
PEAK HR FACTOR :		0.916			0.919			0.779			0.895		0.926

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_011 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Fallbrook Ave			Fallbrook Ave			Ventura Blvd			Ventura Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1.5	0.5	1	1	3	0	1	2	1	
7:00 AM		1	1	0	1		3			1	2	0	9
7:15 AM		0	1	0	2		2			1	2	0	8
7:30 AM		1	1	0	1		2			2	1	2	10
7:45 AM		0	0	0	1		1			1	1	0	4
8:00 AM		1	1	0	0		1			1	1	0	5
8:15 AM		1	0	0	1		1			1	0	0	4
8:30 AM		0	1	1	2		0			1	0	0	5
8:45 AM		0	0	0	0		1			0	1	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	4	5	1	8	0	11	0	0	8	8	2	47
APPROACH %'s :	0.00%	44.44%	55.56%	11.11%	88.89%	0.00%	100.00%	0.00%	0.00%	44.44%	44.44%	11.11%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	2	3	0	5	0	8	0	0	5	6	2	31
PEAK HR FACTOR :		0.625			0.625			0.667			0.650		0.775

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_011 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	Fallbrook Ave			Fallbrook Ave			Ventura Blvd			Ventura Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1.5	0.5	1	1	3	0	1	2	1	
7:00 AM		2	1	1	1	3	2	1	0	2	2	0	15
7:15 AM		1	1	0	1	4	1	1	0	0	5	1	15
7:30 AM		1	2	3	1	2	0	0	0	0	2	2	13
7:45 AM		1	1	2	2	3	0	3	1	0	3	2	18
8:00 AM		0	1	0	0	3	1	2	0	2	6	0	15
8:15 AM		4	0	3	1	2	1	1	0	3	6	2	23
8:30 AM		3	0	1	0	0	0	1	0	3	1	2	11
8:45 AM		3	1	0	0	3	0	0	0	1	3	2	13
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	15	7	10	6	20	5	9	1	11	28	11	123
APPROACH %'s :	0.00%	68.18%	31.82%	27.78%	16.67%	55.56%	33.33%	60.00%	6.67%	22.00%	56.00%	22.00%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	6	4	8	4	10	2	6	1	5	17	6	69
PEAK HR FACTOR :		0.625			0.786			0.563			0.636		0.750

CONTROL : Signalized

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-011
N/S Street: Fallbrook Ave
E/W Street: Ventura Blvd
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

Adult Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	1	5	5	0	0	0	1
7:15 AM	0	1	3	5	0	0	0	5
7:30 AM	0	2	2	5	0	0	0	5
7:45 AM	0	1	2	2	0	0	1	2
8:00 AM	0	2	2	7	0	0	1	3
8:15 AM	0	0	3	5	0	0	0	2
8:30 AM	0	4	2	2	0	0	0	4
8:45 AM	0	0	1	2	0	0	1	0
TOTALS	**0**	**11**	**20**	**33**	**0**	**0**	**3**	**22**

School-Aged Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-011
N/S Street: Fallbrook Ave
E/W Street: Ventura Blvd
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

BIKES

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	2	0	0	2	1
7:30 AM	0	0	0	0	0	0	1	1
7:45 AM	0	0	0	0	0	0	0	1
8:00 AM	0	1	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	1	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**1**	**0**	**2**	**1**	**0**	**3**	**3**

City Of Los Angeles

Department Of Transportation

MANUAL TRAFFIC COUNT SUMMARY

STREET:

North/South EB Fwy Ramp w/o Shoup

East/West Ventura Blvd

Day: Thursday Date: February 17, 2011 Weather: SUNNY

Hours: 7-10AM 3-6PM Chekrs: 0

School Day: YES District: 0 I/S CODE 0

	N/B	S/B	E/B	W/B
DUAL-WHEELED	22	0	37	23
BIKES	0	0	0	1
BUSES	3	0	4	12

	N/B	TIME	S/B	TIME	E/B	TIME	W/B	TIME
AM PK 15 MIN	463	7.45	0	7.00	547	8.00	189	8.00
PM PK 15 MIN	0	3.00	0	3.00	0	3.00	0	3.00
AM PK HOUR	1779	7.30	0	7.00	1956	7.15	640	7.30
PM PK HOUR	0	3.00	0	3.00	0	3.00	0	3.00

NORTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	0	0	1477	1477
8-9	0	0	1746	1746
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	0	0	3223	3223

SOUTHBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	0	0	0	0
8-9	0	0	0	0
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	0	0	0	0

TOTAL	**XING S/L**		**XING N/L**	
N-S	Ped	Sch	Ped	Sch
1477	1	0	1	2
1746	1	0	1	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
3223	2	0	2	2

EASTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	908	840	0	1748
8-9	892	787	0	1679
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	1800	1627	0	3427

WESTBOUND Approach

Hours	Lt	Th	Rt	Total
7-8	0	437	25	462
8-9	0	614	22	636
9-10	0	0	0	0
3-4	0	0	0	0
4-5	0	0	0	0
5-6	0	0	0	0
TOTAL	0	1051	47	1098

TOTAL	**XING W/L**		**XING E/L**	
E-W	Ped	Sch	Ped	Sch
2210	0	0	0	0
2315	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
4525	0	0	0	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_012 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	EB Fwy Ramp w/o Shoup			EB Fwy Ramp w/o Shoup			Ventura Blvd			Ventura Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	1	0	0	0	1	2	0	0	3	0	
7:00 AM			228				196	136			53	13	626
7:15 AM			332				223	183			83	1	822
7:30 AM			441				255	232			148	3	1079
7:45 AM			461				224	280			141	7	1113
8:00 AM			441				280	260			176	4	1161
8:15 AM			423				202	194			129	7	955
8:30 AM			424				196	162			151	3	936
8:45 AM			448				204	159			139	5	955
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	3198	0	0	0	1780	1606	0	0	1020	43	7647
APPROACH %'s :	0.00%	0.00%	100.00%				52.57%	47.43%	0.00%	0.00%	95.95%	4.05%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	0	1766	0	0	0	961	966	0	0	594	21	4308
PEAK HR FACTOR :		0.958			0.000			0.892			0.854		0.928

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_012 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	EB Fwy Ramp w/o Shoup			EB Fwy Ramp w/o Shoup			Ventura Blvd			Ventura Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	1	0	0	0	1	2	0	0	3	0	
7:00 AM			0				0	0			0	0	0
7:15 AM			0				0	0			0	0	0
7:30 AM			0				0	1			3	0	4
7:45 AM			1				0	0			1	1	3
8:00 AM			2				0	0			2	0	4
8:15 AM			0				1	0			1	2	4
8:30 AM			0				0	1			2	0	3
8:45 AM			0				1	0			0	0	1
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	3	0	0	0	2	2	0	0	9	3	19
APPROACH %'s :	0.00%	0.00%	100.00%				50.00%	50.00%	0.00%	0.00%	75.00%	25.00%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	0	3	0	0	0	1	1	0	0	7	3	15
PEAK HR FACTOR :		0.375			0.000			0.500			0.833		0.938

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA11_5049_012 **Day:** THURSDAY

City: City of West Hills **Date:** 2/17/2011

AM

NS/EW Streets:	EB Fwy Ramp w/o Shoup			EB Fwy Ramp w/o Shoup			Ventura Blvd			Ventura Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	1	0	0	0	1	2	0	0	3	0	
7:00 AM			6				5	2			3	0	16
7:15 AM			1				2	2			0	0	5
7:30 AM			6				2	2			3	0	13
7:45 AM			1				1	2			2	0	6
8:00 AM			2				3	4			7	0	16
8:15 AM			1				1	4			3	0	9
8:30 AM			5				3	1			1	0	10
8:45 AM			0				1	2			3	1	7
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	22	0	0	0	18	19	0	0	22	1	82
APPROACH %'s :	0.00%	0.00%	100.00%				48.65%	51.35%	0.00%	0.00%	95.65%	4.35%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	0	10	0	0	0	7	12	0	0	15	0	44
PEAK HR FACTOR :		0.417			0.000			0.679			0.536		0.688

CONTROL : Signalized

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-012
N/S Street: EB Fwy Ramp w/o Shoup
E/W Street: Ventura Blvd
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

Adult Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	1	1	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	1	0	0	0	0
8:30 AM	0	1	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**2**	**1**	**1**	**0**	**0**	**0**	**0**

School-Aged Pedestrians

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	2	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 11-5049-012
N/S Street: EB Fwy Ramp w/o Shoup
E/W Street: Ventura Blvd
DATE: 2/17/2011 DAY: Thursday
CITY: City of West Hills

A M

BIKES

TIME	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
7:00 AM	0	0	0	1	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
TOTALS	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**

APPENDIX G

RELATED PROJECT TRIPS

RELATED PROJECTS

No	Location	Planning or DOT Case #			Description	Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
1	7011 Shoup Avenue	SFV 2003-091	20	unit	Single Family Homes	191	4	11	15	13	7	20
			135	students	Pre-School	544	51	46	97	47	53	100
			360	students	K-8 Private School	2,196	178	146	324	103	117	220
						2,931	233	203	436	163	177	340
2	23135 Sherman Place	SFV 2006-300	160	unit	Apartments	1,064	36	70	106	78	63	141
3	6600 N Topanga Cyn Bl	SFV 2002-003	1,650,000	sf	Westfield Plaza Expansion	70,851	106	66	172	419	453	872
					appx. 60% Complete							
4	6410 Canoga Avenue	WC-2009-040	(47,000)	sf	Remove Electronics SS	(1,482)	(6)	(3)	(9)	(60)	(54)	(114)
			47,000	sf	Health Club	1,238	19	26	45	78	74	152
						(244)	13	23	36	18	20	38
5	6464 Canoga Avenue	WC-2005-0417	154,565	sf	Office	1,660	208	28	236	38	187	225
			16,117	sf	Restaurant	615	29	27	56	32	21	53
			(65,903)	sf	Remove Office	(861)	(106)	(14)	(120)	(23)	(114)	(137)
						1,414	131	41	172	47	94	141
6	5607 Capistrano Ave	SFV 2004-001	1,600	students	Hughes Magnet School	9,430	416	352	768	105	119	224
7	6700 Eton Avenue	WC-2005-007	441	unit	Apartments	2,933	44	181	225	176	97	273
8	6250 Canoga Avenue	WC-2003-008	10,000	sf	Retail	443	6	6	12	16	17	33
			601	unit	Apartments	3,997	60	246	307	227	122	349
						4,440	66	252	319	243	139	382
9	6625 Variel Avenue	WC-2002-006	522	unit	Convert Apt to Condo	3,176	(102)	65	(37)	148	(49)	99
10	21530 Oxnard St	WC-2006-026	30,000	sf	Aquatic Health Club	17	4	7	11	39	46	85
11	6710 Variel Avenue	WC-2006-033	242	unit	Apartments	1,609	24	99	123	97	53	150
12	21050 Vanowen Street	WC-2004-023	210	unit	Apartments	1,397	21	86	107	84	46	130
13	6355 DeSoto Avenue	WC-2004-043	421	unit	Apartments	2,800	42	173	215	168	93	261
14	6219 DeSoto Avenue	WC-2003-022	(76,242)	sf	Remove Industrial	(531)	(62)	(8)	(70)	(9)	(66)	(75)
			(76,242)	sf	Remove Office	(839)	(104)	(14)	(118)	(19)	(95)	(114)
			394	unit	Senior Apartments	1,371	18	33	51	38	25	63
			574	unit	Apartments	3,817	57	235	293	230	126	356
						3,818	(90)	246	156	239	(10)	230
15	8401 Fallbrook Avenue	SFV 2007-021	210,000	sf	Mixed Use	4,230	451	107	558	40	415	455

APPENDIX H

LEVEL OF SERVICE WORKSHEETS

CMA Calculation Worksheet

I/S #:	North-South Street:	WOODLAKE AVENUE	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
1	East-West Street:	VANOWEN STREET	Projection Year:	2011	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

	2011 EXISTING COND.			2011 W/ AMBIENT GROWTH				2011 W/ RELATED PROJECTS				2011 W/ PROJECT				2011 W/ TRAFFIC MITIGATION			
MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
No. of Phases			2				2				2				2				2
Opposed Ø'ing N/S-1, E/W-2 or Both-3?			0				0				0				0				0
Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB--- 0 EB--- 0 WB--- 0			NB--- 0 SB--- 0 EB--- 0 WB--- 0				NB--- SB--- 0 EB--- WB--- 0				NB--- 0 SB--- 0 EB--- 0 WB--- 0				NB--- 0 SB--- 0 EB--- 0 WB--- 0			
ATSAC-1 or ATCS-2?			2				2				2				2				2
Override Capacity			0				0				0				0				0
NORTHBOUND Left	32	1	32	0	32	1	32	0	32	1	32	0	32	1	32	0	32	1	32
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	13	1	13	0	13	1	13	0	13	1	13	0	13	1	13	0	13	1	13
Through-Right		0	0			0	0			0	0			0	0			0	0
Right	139	1	88	0	139	1	88	0	139	1	88	8	147	1	96	0	147	1	96
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND Left	67	1	67	0	67	1	67	0	67	1	67	2	69	1	69	0	69	1	69
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	40	1	30	0	40	1	30	0	40	1	30	0	40	1	30	0	40	1	30
Through-Right		1	30			1	30			1	30			1	30			1	30
Right	19	0	19	0	19	0	19	0	19	0	19	0	19	0	19	0	19	0	19
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND Left	16	1	16	0	16	1	16	0	16	1	16	0	16	1	16	0	16	1	16
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	723	1	385	0	723	1	385	0	723	1	385	7	730	1	388	0	730	1	388
Through-Right		1	385			1	385			1	385			1	388			1	388
Right	46	0	46	0	46	0	46	0	46	0	46	0	46	0	46	0	46	0	46
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND Left	103	1	103	0	103	1	103	0	103	1	103	0	103	1	103	0	103	1	103
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	497	1	259	0	497	1	259	0	497	1	259	5	502	1	262	0	502	1	262
Through-Right		1	259			1	259			1	259			1	262			1	262
Right	20	0	20	0	20	0	20	0	20	0	20	1	21	0	21	0	21	0	21
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
CRITICAL VOLUMES	North-South:		155	North-South:			155	North-South:			155	North-South:			165	North-South:			165
	East-West:		488	East-West:			488	East-West:			488	East-West:			491	East-West:			491
	SUM:		642	SUM:			642	SUM:			642	SUM:			656	SUM:			656
VOLUME/CAPACITY (V/C) RATIO			0.428				0.428				0.428				0.437				0.437
V/C LESS ATSAC/ATCS ADJUSTMENT			0.328				0.328				0.328				0.337				0.337
LEVEL OF SERVICE (LOS)			A				A				A				A				A

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.009 — Δ*v/c* after mitigation: 0.009

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	WOODLAKE AVENUE	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
1	East-West Street:	VANOWEN STREET	Projection Year:	2012	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

	2011 EXISTING COND.			2012 W/ AMBIENT GROWTH				2012 W/ RELATED PROJECTS				2012 W/ PROJECT				2012 W/ TRAFFIC MITIGATION			
MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
No. of Phases			2				2				2				2				2
Opposed Ø'ing N/S-1, E/W-2 or Both-3?			0				0				0				0				0
Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB--- 0 EB--- 0 WB--- 0			NB--- 0 SB--- 0 EB--- 0 WB--- 0				NB--- SB--- 0 EB--- WB--- 0				NB--- 0 SB--- 0 EB--- 0 WB--- 0				NB--- 0 SB--- 0 EB--- 0 WB--- 0			
ATSAC-1 or ATCS-2?			2				2				2				2				2
Override Capacity			0				0				0				0				0
NORTHBOUND Left	32	1	32	1	33	1	33	0	33	1	33	0	33	1	33	0	33	1	33
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	13	1	13	0	13	1	13	4	17	1	17	0	17	1	17	0	17	1	17
Through-Right		0	0			0	0			0	0			0	0			0	0
Right	139	1	88	3	142	1	89	0	142	1	89	8	150	1	97	0	150	1	97
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND Left	67	1	67	1	68	1	68	0	68	1	68	2	70	1	70	0	70	1	70
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	40	1	30	1	41	1	30	4	45	1	32	0	45	1	32	0	45	1	32
Through-Right		1	30			1	30			1	32			1	32			1	32
Right	19	0	19	0	19	0	19	0	19	0	19	0	19	0	19	0	19	0	19
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND Left	16	1	16	0	16	1	16	0	16	1	16	0	16	1	16	0	16	1	16
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	723	1	385	14	737	1	392	28	765	1	406	7	772	1	410	0	772	1	410
Through-Right		1	385			1	392			1	406			1	410			1	410
Right	46	0	46	1	47	0	47	0	47	0	47	0	47	0	47	0	47	0	47
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND Left	103	1	103	2	105	1	105	0	105	1	105	0	105	1	105	0	105	1	105
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	497	1	259	10	507	1	264	68	575	1	298	5	580	1	301	0	580	1	301
Through-Right		1	259			1	264			1	298			1	301			1	301
Right	20	0	20	0	20	0	20	0	20	0	20	1	21	0	21	0	21	0	21
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
CRITICAL VOLUMES	North-South:		155	North-South:			158	North-South:			158	North-South:			168	North-South:			168
	East-West:		488	East-West:			497	East-West:			511	East-West:			515	East-West:			515
	SUM:		642	SUM:			655	SUM:			669	SUM:			682	SUM:			682
VOLUME/CAPACITY (V/C) RATIO			0.428				0.437				0.446				0.455				0.455
V/C LESS ATSAC/ATCS ADJUSTMENT			0.328				0.337				0.346				0.355				0.355
LEVEL OF SERVICE (LOS)			A				A				A				A				A

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.009 — Δ*v/c* after mitigation: 0.009

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	FALLBROOK AVENUE	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
2	East-West Street:	VANOWEN STREET	Projection Year:	2011	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

		2011 EXISTING COND.			2011 W/ AMBIENT GROWTH				2011 W/ RELATED PROJECTS				2011 W/ PROJECT				2011 W/ TRAFFIC MITIGATION			
	MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
	No. of Phases			2				2				2				2				2
	Opposed Ø'ing N/S-1, E/W-2 or Both-3?			0				0				0				0				0
	Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB--- 0 EB--- 0 WB--- 0			NB--- 0 SB--- 0 EB--- 0 WB--- 0				NB--- SB--- 0 EB--- WB--- 0				NB--- 0 SB--- 0 EB--- 0 WB--- 0				NB--- 0 SB--- 0 EB--- 0 WB--- 0			
	ATSAC-1 or ATCS-2?			2				2				2				2				2
	Override Capacity			0				0				0				0				0
NORTHBOUND	Left	47	1	47	0	47	1	47	0	47	1	47	0	47	1	47	0	47	1	47
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	698	2	349	0	698	2	349	0	698	2	349	0	698	2	349	0	698	2	349
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	88	1	29	0	88	1	29	0	88	1	29	128	216	1	153	0	216	1	153
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND	Left	101	1	101	0	101	1	101	0	101	1	101	14	115	1	115	0	115	1	115
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	1115	2	558	0	1115	2	558	0	1115	2	558	0	1115	2	558	0	1115	2	558
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	171	1	87	0	171	1	87	0	171	1	87	0	171	1	87	0	171	1	87
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND	Left	169	1	169	0	169	1	169	0	169	1	169	0	169	1	169	0	169	1	169
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	636	1	374	0	636	1	374	0	636	1	374	17	653	1	383	0	653	1	383
	Through-Right		1	374			1	374			1	374			1	383			1	383
	Right	112	0	112	0	112	0	112	0	112	0	112	0	112	0	112	0	112	0	112
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND	Left	118	1	118	0	118	1	118	0	118	1	118	8	126	1	126	0	126	1	126
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	445	1	259	0	445	1	259	0	445	1	259	6	451	1	265	0	451	1	265
	Through-Right		1	259			1	259			1	259			1	265			1	265
	Right	72	0	72	0	72	0	72	0	72	0	72	6	78	0	78	0	78	0	78
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
	CRITICAL VOLUMES	North-South:		605	North-South:			605	North-South:			605	North-South:			605	North-South:			605
		East-West:		492	East-West:			492	East-West:			492	East-West:			509	East-West:			509
		SUM:		1097	SUM:			1097	SUM:			1097	SUM:			1113	SUM:			1113
	VOLUME/CAPACITY (V/C) RATIO			0.731				0.731				0.731				0.742				0.742
	V/C LESS ATSAC/ATCS ADJUSTMENT			0.631				0.631				0.631				0.642				0.642
	LEVEL OF SERVICE (LOS)			B				B				B				B				B

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.011 — Δ*v/c* after mitigation: 0.011

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	FALLBROOK AVENUE	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
2	East-West Street:	VANOWEN STREET	Projection Year:	2012	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

		2011 EXISTING COND.			2012 W/ AMBIENT GROWTH				2012 W/ RELATED PROJECTS				2012 W/ PROJECT				2012 W/ TRAFFIC MITIGATION			
	MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
	No. of Phases			2				2				2				2				2
	Opposed Ø'ing N/S-1, E/W-2 or Both-3?			0				0				0				0				0
	Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB---		0	NB--- 0 SB---			0	NB--- SB---			0	NB--- 0 SB---			0	NB--- 0 SB---			0
		EB--- 0 WB---		0	EB--- 0 WB---			0	EB--- WB---			0	EB--- 0 WB---			0	EB--- 0 WB---			0
	ATSAC-1 or ATCS-2?			2				2				2				2				2
	Override Capacity			0				0				0				0				0
NORTHBOUND	Left	47	1	47	1	48	1	48	0	48	1	48	0	48	1	48	0	48	1	48
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	698	2	349	14	712	2	356	22	734	2	367	0	734	2	367	0	734	2	367
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	88	1	29	2	90	1	30	12	102	1	42	128	230	1	166	0	230	1	166
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND	Left	101	1	101	2	103	1	103	0	103	1	103	14	117	1	117	0	117	1	117
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	1115	2	558	22	1137	2	569	13	1150	2	575	0	1150	2	575	0	1150	2	575
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	171	1	87	3	174	1	88	4	178	1	87	0	178	1	87	0	178	1	87
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND	Left	169	1	169	3	172	1	172	10	182	1	182	0	182	1	182	0	182	1	182
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	636	1	374	13	649	1	381	18	667	1	390	17	684	1	399	0	684	1	399
	Through-Right		1	374			1	381			1	390			1	399			1	399
	Right	112	0	112	2	114	0	114	0	114	0	114	0	114	0	114	0	114	0	114
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND	Left	118	1	118	2	120	1	120	0	120	1	120	8	128	1	128	0	128	1	128
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	445	1	259	9	454	1	264	64	518	1	301	6	524	1	307	0	524	1	307
	Through-Right		1	259			1	264			1	301			1	307			1	307
	Right	72	0	72	1	73	0	73	10	83	0	83	6	89	0	89	0	89	0	89
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
	CRITICAL VOLUMES	North-South:		605	North-South:			617	North-South:			623	North-South:			623	North-South:			623
		East-West:		492	East-West:			502	East-West:			511	East-West:			527	East-West:			527
		SUM:		1097	SUM:			1118	SUM:			1134	SUM:			1150	SUM:			1150
	VOLUME/CAPACITY (V/C) RATIO			0.731				0.746				0.756				0.767				0.767
	V/C LESS ATSAC/ATCS ADJUSTMENT			0.631				0.646				0.656				0.667				0.667
	LEVEL OF SERVICE (LOS)			B				B				B				B				B

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.011 — Δ*v/c* after mitigation: 0.011

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	SALE AVENUE	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
3	East-West Street:	VANOWEN STREET	Projection Year:	2011	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

		2011 EXISTING COND.			2011 W/ AMBIENT GROWTH				2011 W/ RELATED PROJECTS				2011 W/ PROJECT				2011 W/ TRAFFIC MITIGATION			
	MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
	No. of Phases			2				2				2				2				2
	Opposed Ø'ing N/S-1, E/W-2 or Both-3?			0				0				0				0				0
	Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB--- 0 EB--- 0 WB--- 0			NB--- 0 SB--- 0 EB--- 0 WB--- 0				NB--- SB--- 0 EB--- WB--- 0				NB--- 0 SB--- 0 EB--- 0 WB--- 0				NB--- 0 SB--- 0 EB--- 0 WB--- 0			
	ATSAC-1 or ATCS-2?			2				2				2				2				2
	Override Capacity			0				0				0				0				0
NORTHBOUND	Left	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	91	0	91	0	91	0	91	0	91	0	91	0	91	0	91	0	91	0	91
	Left-Through-Right		1	108			1	108			1	108			1	108			1	108
	Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND	Left	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	27	0	27	0	27	0	27	0	27	0	27	0	27	0	27	0	27	0	27
	Left-Through-Right		1	34			1	34			1	34			1	34			1	34
	Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND	Left	16	1	16	0	16	1	16	0	16	1	16	12	28	1	28	0	28	1	28
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	807	1	412	0	807	1	412	0	807	1	412	106	913	1	465	0	913	1	465
	Through-Right		1	412			1	412			1	412			1	465			1	465
	Right	16	0	16	0	16	0	16	0	16	0	16	0	16	0	16	0	16	0	16
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND	Left	98	1	98	0	98	1	98	0	98	1	98	0	98	1	98	0	98	1	98
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	658	1	333	0	658	1	333	0	658	1	333	8	666	1	337	0	666	1	337
	Through-Right		1	333			1	333			1	333			1	337			1	337
	Right	8	0	8	0	8	0	8	0	8	0	8	0	8	0	8	0	8	0	8
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
	CRITICAL VOLUMES	North-South:		114	North-South:			114	North-South:			114	North-South:			114	North-South:			114
		East-West:		510	East-West:			510	East-West:			510	East-West:			563	East-West:			563
		SUM:		624	SUM:			624	SUM:			624	SUM:			677	SUM:			677
	VOLUME/CAPACITY (V/C) RATIO			0.416				0.416				0.416				0.451				0.451
	V/C LESS ATSAC/ATCS ADJUSTMENT			0.316				0.316				0.316				0.351				0.351
	LEVEL OF SERVICE (LOS)			A				A				A				A				A

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.035 — Δ*v/c* after mitigation: 0.035

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	SALE AVENUE			Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
3	East-West Street:	VANOWEN STREET			Projection Year:	2012	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

	2011 EXISTING COND.			2012 W/ AMBIENT GROWTH				2012 W/ RELATED PROJECTS				2012 W/ PROJECT				2012 W/ TRAFFIC MITIGATION			
MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
No. of Phases			2				2				2				2				2
Opposed Ø'ing N/S-1, E/W-2 or Both-3?			0				0				0				0				0
Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB---		0	NB--- 0 SB---			0	NB--- SB---			0	NB--- 0 SB---			0	NB--- 0 SB---			0
	EB--- 0 WB---		0	EB--- 0 WB---			0	EB--- WB---			0	EB--- 0 WB---			0	EB--- 0 WB---			0
ATSAC-1 or ATCS-2?			2				2				2				2				2
Override Capacity			0				0				0				0				0
NORTHBOUND																			
Left	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0	15
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0
Through-Right		0	0			0	0			0	0			0	0			0	0
Right	91	0	91	2	93	0	93	0	93	0	93	0	93	0	93	0	93	0	93
Left-Through-Right		1	108			1	110			1	110			1	110			1	110
Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND																			
Left	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0
Through-Right		0	0			0	0			0	0			0	0			0	0
Right	27	0	27	1	28	0	28	0	28	0	28	0	28	0	28	0	28	0	28
Left-Through-Right		1	34			1	35			1	35			1	35			1	35
Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND																			
Left	16	1	16	0	16	1	16	0	16	1	16	12	28	1	28	0	28	1	28
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	807	1	412	16	823	1	420	29	852	1	434	106	958	1	487	0	958	1	487
Through-Right		1	412			1	420			1	434			1	487			1	487
Right	16	0	16	0	16	0	16	0	16	0	16	0	16	0	16	0	16	0	16
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND																			
Left	98	1	98	2	100	1	100	0	100	1	100	0	100	1	100	0	100	1	100
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	658	1	333	13	671	1	340	74	745	1	377	8	753	1	381	0	753	1	381
Through-Right		1	333			1	340			1	377			1	381			1	381
Right	8	0	8	0	8	0	8	0	8	0	8	0	8	0	8	0	8	0	8
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
CRITICAL VOLUMES	North-South:		114	North-South:			116	North-South:			116	North-South:			116	North-South:			116
	East-West:		510	East-West:			520	East-West:			534	East-West:			587	East-West:			587
	SUM:		624	SUM:			636	SUM:			650	SUM:			703	SUM:			703
VOLUME/CAPACITY (V/C) RATIO			0.416				0.424				0.434				0.469				0.469
V/C LESS ATSAC/ATCS ADJUSTMENT			0.316				0.324				0.334				0.369				0.369
LEVEL OF SERVICE (LOS)			A				A				A				A				A

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.035 — Δ*v/c* after mitigation: 0.035

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	SHOUP AVENUE				Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
4	East-West Street:	VANOWEN STREET				Projection Year:	2011	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

		2011 EXISTING COND.			2011 W/ AMBIENT GROWTH				2011 W/ RELATED PROJECTS				2011 W/ PROJECT				2011 W/ TRAFFIC MITIGATION			
	MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
	No. of Phases			2				2				2				2				2
	Opposed Ø'ing N/S-1, E/W-2 or Both-3?			0				0				0				0				0
	Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB---		0	NB--- 0 SB---			0	NB--- SB---			0	NB--- 0 SB---			0	NB--- 0 SB---			0
		EB--- 0 WB---		0	EB--- 0 WB---			0	EB--- WB---			0	EB--- 0 WB---			0	EB--- 0 WB---			0
	ATSAC-1 or ATCS-2?			2				2				2				2				2
	Override Capacity			0				0				0				0				0
NORTHBOUND	Left	71	1	71	0	71	1	71	0	71	1	71	0	71	1	71	0	71	1	71
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	761	1	412	0	761	1	412	0	761	1	412	0	761	1	412	0	761	1	412
	Through-Right		1	412			1	412			1	412			1	412			1	412
	Right	62	0	62	0	62	0	62	0	62	0	62	0	62	0	62	0	62	0	62
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND	Left	79	1	79	0	79	1	79	0	79	1	79	0	79	1	79	0	79	1	79
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	1020	1	596	0	1020	1	596	0	1020	1	596	5	1025	1	599	0	1025	1	599
	Through-Right		1	596			1	596			1	596			1	599			1	599
	Right	172	0	172	0	172	0	172	0	172	0	172	0	172	0	172	0	172	0	172
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND	Left	135	1	135	0	135	1	135	0	135	1	135	7	142	1	142	0	142	1	142
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	631	1	379	0	631	1	379	0	631	1	379	12	643	1	429	0	643	1	429
	Through-Right		1	379			1	379			1	379			1	429			1	429
	Right	127	0	127	0	127	0	127	0	127	0	127	87	214	0	214	0	214	0	214
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND	Left	95	1	95	0	95	1	95	0	95	1	95	7	102	1	102	0	102	1	102
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	516	1	291	0	516	1	291	0	516	1	291	8	524	1	295	0	524	1	295
	Through-Right		1	291			1	291			1	291			1	295			1	295
	Right	66	0	66	0	66	0	66	0	66	0	66	0	66	0	66	0	66	0	66
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
	CRITICAL VOLUMES	North-South:		667	North-South:			667	North-South:			667	North-South:			670	North-South:			670
		East-West:		474	East-West:			474	East-West:			474	East-West:			531	East-West:			531
		SUM:		1141	SUM:			1141	SUM:			1141	SUM:			1200	SUM:			1200
	VOLUME/CAPACITY (V/C) RATIO			0.761				0.761				0.761				0.800				0.800
	V/C LESS ATSAC/ATCS ADJUSTMENT			0.661				0.661				0.661				0.700				0.700
	LEVEL OF SERVICE (LOS)			B				B				B				B				B

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.039 — Δ*v/c* after mitigation: 0.039

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	SHOUP AVENUE	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
4	East-West Street:	VANOWEN STREET	Projection Year:	2012	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

	2011 EXISTING COND.			2012 W/ AMBIENT GROWTH				2012 W/ RELATED PROJECTS				2012 W/ PROJECT				2012 W/ TRAFFIC MITIGATION			
MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
No. of Phases			2				2				2				2				2
Opposed Ø'ing N/S-1, E/W-2 or Both-3?			0				0				0				0				0
Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB---		0	NB--- 0 SB---			0	NB--- SB---			0	NB--- 0 SB---			0	NB--- 0 SB---			0
	EB--- 0 WB---		0	EB--- 0 WB---			0	EB--- WB---			0	EB--- 0 WB---			0	EB--- 0 WB---			0
ATSAC-1 or ATCS-2?			2				2				2				2				2
Override Capacity			0				0				0				0				0
NORTHBOUND																			
Left	71	1	71	1	72	1	72	0	72	1	72	0	72	1	72	0	72	1	72
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	761	1	412	15	776	1	420	26	802	1	433	0	802	1	433	0	802	1	433
Through-Right		1	412			1	420			1	433			1	433			1	433
Right	62	0	62	1	63	0	63	0	63	0	63	0	63	0	63	0	63	0	63
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND																			
Left	79	1	79	2	81	1	81	20	101	1	101	0	101	1	101	0	101	1	101
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	1020	1	596	20	1040	1	608	44	1084	1	640	5	1089	1	642	0	1089	1	642
Through-Right		1	596			1	608			1	640			1	642			1	642
Right	172	0	172	3	175	0	175	20	195	0	195	0	195	0	195	0	195	0	195
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND																			
Left	135	1	135	3	138	1	138	23	161	1	161	7	168	1	168	0	168	1	168
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	631	1	379	13	644	1	387	6	650	1	390	12	662	1	439	0	662	1	439
Through-Right		1	379			1	387			1	390			1	439			1	439
Right	127	0	127	3	130	0	130	0	130	0	130	87	217	0	217	0	217	0	217
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND																			
Left	95	1	95	2	97	1	97	0	97	1	97	7	104	1	104	0	104	1	104
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	516	1	291	10	526	1	297	54	580	1	335	8	588	1	339	0	588	1	339
Through-Right		1	291			1	297			1	335			1	339			1	339
Right	66	0	66	1	67	0	67	23	90	0	90	0	90	0	90	0	90	0	90
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
CRITICAL VOLUMES	North-South:		667	North-South:			680	North-South:			712	North-South:			715	North-South:			715
	East-West:		474	East-West:			483	East-West:			496	East-West:			543	East-West:			543
	SUM:		1141	SUM:			1164	SUM:			1208	SUM:			1258	SUM:			1258
VOLUME/CAPACITY (V/C) RATIO			0.761				0.776				0.806				0.839				0.839
V/C LESS ATSAC/ATCS ADJUSTMENT			0.661				0.676				0.706				0.739				0.739
LEVEL OF SERVICE (LOS)			B				B				C				C				C

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.033 — Δ*v/c* after mitigation: 0.033

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	TOPANGA CYN BLVD				Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
5	East-West Street:	VANOWEN STREET				Projection Year:	2011	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

		2011 EXISTING COND.			2011 W/ AMBIENT GROWTH				2011 W/ RELATED PROJECTS				2011 W/ PROJECT				2011 W/ TRAFFIC MITIGATION			
	MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
	No. of Phases			3				3				3				3				3
	Opposed Ø'ing N/S-1, E/W-2 or Both-3?			1				1				1				1				1
	Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB--- 0 EB--- 3 WB--- 0			NB--- 0 SB--- 0 EB--- 3 WB--- 0				NB--- SB--- 0 EB--- 3 WB--- 0				NB--- 0 SB--- 0 EB--- 3 WB--- 0				NB--- 0 SB--- 0 EB--- 3 WB--- 0			
	ATSAC-1 or ATCS-2?			2				2				2				2				2
	Override Capacity			0				0				0				0				0
NORTHBOUND	Left	48	1	48	0	48	1	48	0	48	1	48	12	60	1	60	0	60	1	60
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	930	2	337	0	930	2	337	0	930	2	337	0	930	2	337	0	930	2	337
	Through-Right		1	337			1	337			1	337			1	337			1	337
	Right	81	0	81	0	81	0	81	0	81	0	81	0	81	0	81	0	81	0	81
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND	Left	112	1	112	0	112	1	112	0	112	1	112	0	112	1	112	0	112	1	112
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	1524	2	537	0	1524	2	537	0	1524	2	537	0	1524	2	537	0	1524	2	537
	Through-Right		1	537			1	537			1	537			1	537			1	537
	Right	86	0	86	0	86	0	86	0	86	0	86	0	86	0	86	0	86	0	86
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND	Left	55	1	55	0	55	1	55	0	55	1	55	0	55	1	55	0	55	1	55
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	719	2	360	0	719	2	360	0	719	2	360	4	723	2	362	0	723	2	362
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	103	1	55	0	103	1	55	0	103	1	55	8	111	1	51	0	111	1	51
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND	Left	89	1	89	0	89	1	89	0	89	1	89	0	89	1	89	0	89	1	89
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	528	1	356	0	528	1	356	0	528	1	356	3	531	1	358	0	531	1	358
	Through-Right		1	356			1	356			1	356			1	358			1	358
	Right	184	0	184	0	184	0	184	0	184	0	184	0	184	0	184	0	184	0	184
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
	CRITICAL VOLUMES	North-South:		874	North-South:			874	North-South:			874	North-South:			874	North-South:			874
		East-West:		449	East-West:			449	East-West:			449	East-West:			451	East-West:			451
		SUM:		1322	SUM:			1322	SUM:			1322	SUM:			1324	SUM:			1324
	VOLUME/CAPACITY (V/C) RATIO			0.928				0.928				0.928				0.929				0.929
	V/C LESS ATSAC/ATCS ADJUSTMENT			0.828				0.828				0.828				0.829				0.829
	LEVEL OF SERVICE (LOS)			D				D				D				D				D

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.001 — Δ*v/c* after mitigation: 0.001

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	TOPANGA CYN BLVD	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
5	East-West Street:	VANOWEN STREET	Projection Year:	2012	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

	2011 EXISTING COND.			2012 W/ AMBIENT GROWTH				2012 W/ RELATED PROJECTS				2012 W/ PROJECT				2012 W/ TRAFFIC MITIGATION			
MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NORTHBOUND																			
Left	48	1	48	1	49	1	49	3	52	1	52	12	64	1	64	0	64	1	64
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	930	2	337	19	949	2	344	124	1073	2	385	0	1073	2	385	0	1073	2	385
Through-Right		1	337			1	344			1	385			1	385			1	385
Right	81	0	81	2	83	0	83	0	83	0	83	0	83	0	83	0	83	0	83
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND																			
Left	112	1	112	2	114	1	114	10	124	1	124	0	124	1	124	0	124	1	124
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	1524	2	537	30	1554	2	547	66	1620	2	569	0	1620	2	569	0	1620	2	569
Through-Right		1	537			1	547			1	569			1	569			1	569
Right	86	0	86	2	88	0	88	0	88	0	88	0	88	0	88	0	88	0	88
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND																			
Left	55	1	55	1	56	1	56	0	56	1	56	0	56	1	56	0	56	1	56
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	719	2	360	14	733	2	367	21	754	2	377	4	758	2	379	0	758	2	379
Through-Right		0	0			0	0			0	0			0	0			0	0
Right	103	1	55	2	105	1	56	5	110	1	58	8	118	1	54	0	118	1	54
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND																			
Left	89	1	89	2	91	1	91	9	100	1	100	0	100	1	100	0	100	1	100
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	528	1	356	11	539	1	363	74	613	1	415	3	616	1	416	0	616	1	416
Through-Right		1	356			1	363			1	415			1	416			1	416
Right	184	0	184	4	188	0	188	29	217	0	217	0	217	0	217	0	217	0	217
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
CRITICAL VOLUMES	North-South:		874	North-South:			891	North-South:			954	North-South:			954	North-South:			954
	East-West:		449	East-West:			457	East-West:			477	East-West:			479	East-West:			479
	SUM:		1322	SUM:			1349	SUM:			1431	SUM:			1433	SUM:			1433
VOLUME/CAPACITY (V/C) RATIO			0.928				0.946				1.005				1.006				1.006
V/C LESS ATSAC/ATCS ADJUSTMENT			0.828				0.846				0.905				0.906				0.906
LEVEL OF SERVICE (LOS)			D				D				E				E				E

Right Turns FREE-1, NRTOR-2 or OLA-3?	NB---	0	SB---	0	NB---	0	SB---	0	NB---		SB---	0	NB---	0	SB---	0	NB---	0	SB---	0
	EB---	3	WB---	0	EB---	3	WB---	0	EB---	3	WB---	0	EB---	3	WB---	0	EB---	3	WB---	0
No. of Phases				3				3				3				3				3
Opposed Ø'ing N/S-1, E/W-2 or Both-3?				1				1				1				1				1
ATSAC-1 or ATCS-2?				2				2				2				2				2
Override Capacity				0				0				0				0				0

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.001 — Δ*v/c* after mitigation: 0.001

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	FALLBROOK AVENUE	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
6	East-West Street:	CRISWELL STREET	Projection Year:	2011	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

		2011 EXISTING COND.			2011 W/ AMBIENT GROWTH				2011 W/ RELATED PROJECTS				2011 W/ PROJECT				2011 W/ TRAFFIC MITIGATION			
	MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
	No. of Phases			2				2				2				2				2
	Opposed Ø'ing N/S-1, E/W-2 or Both-3?			0				0				0				0				0
	Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB---		0	NB--- 0 SB---			0	NB--- SB---			0	NB--- 0 SB---			0	NB--- 0 SB---			0
		EB--- 0 WB---		0	EB--- 0 WB---			0	EB--- WB---			0	EB--- 0 WB---			0	EB--- 0 WB---			0
	ATSAC-1 or ATCS-2?			2				2				2				2				2
	Override Capacity			0				0				0				0				0
NORTHBOUND	Left	16	1	16	0	16	1	16	0	16	1	16	0	16	1	16	0	16	1	16
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	934	2	467	0	934	2	467	0	934	2	467	128	1062	2	531	0	1062	2	531
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	18	1	6	0	18	1	6	0	18	1	6	0	18	1	6	0	18	1	6
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND	Left	33	1	33	0	33	1	33	0	33	1	33	0	33	1	33	0	33	1	33
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	1440	3	480	0	1440	3	480	0	1440	3	480	0	1440	3	480	0	1440	3	480
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	10	1	5	0	10	1	5	0	10	1	5	0	10	1	5	0	10	1	5
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND	Left	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10
	Left-Through		1	10			1	10			1	10			1	10			1	10
	Through	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	6	1	0	0	6	1	0	0	6	1	0	0	6	1	0	0	6	1	0
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND	Left	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	7	0	0	0	7	0	0	0	7	0	0	0	7	0	0	0	7	0	0
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	47	0	47	0	47	0	47	0	47	0	47	0	47	0	47	0	47	0	47
	Left-Through-Right		1	78			1	78			1	78			1	78			1	78
	Left-Right		0	0			0	0			0	0			0	0			0	0
	CRITICAL VOLUMES	North-South:		500	North-South:			500	North-South:			500	North-South:			564	North-South:			564
		East-West:		88	East-West:			88	East-West:			88	East-West:			88	East-West:			88
		SUM:		588	SUM:			588	SUM:			588	SUM:			652	SUM:			652
	VOLUME/CAPACITY (V/C) RATIO			0.392				0.392				0.392				0.435				0.435
	V/C LESS ATSAC/ATCS ADJUSTMENT			0.292				0.292				0.292				0.335				0.335
	LEVEL OF SERVICE (LOS)			A				A				A				A				A

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.043 — Δ*v/c* after mitigation: 0.043

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	FALLBROOK AVENUE	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
6	East-West Street:	CRISWELL STREET	Projection Year:	2012	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

		2011 EXISTING COND.			2012 W/ AMBIENT GROWTH				2012 W/ RELATED PROJECTS				2012 W/ PROJECT				2012 W/ TRAFFIC MITIGATION			
	MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
	No. of Phases			2				2				2				2				2
	Opposed Ø'ing N/S-1, E/W-2 or Both-3?			0				0				0				0				0
	Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB---		0	NB--- 0 SB---			0	NB--- SB---			0	NB--- 0 SB---			0	NB--- 0 SB---			0
		EB--- 0 WB---		0	EB--- 0 WB---			0	EB--- WB---			0	EB--- 0 WB---			0	EB--- 0 WB---			0
	ATSAC-1 or ATCS-2?			2				2				2				2				2
	Override Capacity			0				0				0				0				0
NORTHBOUND	Left	16	1	16	0	16	1	16	0	16	1	16	0	16	1	16	0	16	1	16
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	934	2	467	19	953	2	476	34	987	2	493	128	1115	2	557	0	1115	2	557
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	18	1	6	0	18	1	6	0	18	1	6	0	18	1	6	0	18	1	6
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND	Left	33	1	33	1	34	1	34	0	34	1	34	0	34	1	34	0	34	1	34
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	1440	3	480	29	1469	3	490	23	1492	3	497	0	1492	3	497	0	1492	3	497
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	10	1	5	0	10	1	5	0	10	1	5	0	10	1	5	0	10	1	5
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND	Left	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0	10
	Left-Through		1	10			1	10			1	10			1	10			1	10
	Through	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	6	1	0	0	6	1	0	0	6	1	0	0	6	1	0	0	6	1	0
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND	Left	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24	0	24
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	7	0	0	0	7	0	0	0	7	0	0	0	7	0	0	0	7	0	0
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	47	0	47	1	48	0	48	0	48	0	48	0	48	0	48	0	48	0	48
	Left-Through-Right		1	78			1	80			1	80			1	80			1	80
	Left-Right		0	0			0	0			0	0			0	0			0	0
	CRITICAL VOLUMES	North-South:		500	North-South:			510	North-South:			527	North-South:			591	North-South:			591
		East-West:		88	East-West:			90	East-West:			90	East-West:			90	East-West:			90
		SUM:		588	SUM:			600	SUM:			617	SUM:			681	SUM:			681
	VOLUME/CAPACITY (V/C) RATIO			0.392				0.400				0.411				0.454				0.454
	V/C LESS ATSAC/ATCS ADJUSTMENT			0.292				0.300				0.311				0.354				0.354
	LEVEL OF SERVICE (LOS)			A				A				A				A				A

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.043 — Δ*v/c* after mitigation: 0.043

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	FALLBROOK AVENUE	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
7	East-West Street:	VICTORY BOULEVARD	Projection Year:	2011	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

		2011 EXISTING COND.			2011 W/ AMBIENT GROWTH				2011 W/ RELATED PROJECTS				2011 W/ PROJECT				2011 W/ TRAFFIC MITIGATION			
	MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
	No. of Phases			4				4				4				4				4
	Opposed Ø'ing N/S-1, E/W-2 or Both-3?			0				0				0				0				0
	Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB---		0	NB--- 0 SB---			0	NB--- SB---			0	NB--- 0 SB---			0	NB--- 0 SB---			0
		EB--- 0 WB---		0	EB--- 0 WB---			0	EB--- WB---			0	EB--- 0 WB---			0	EB--- 0 WB---			0
	ATSAC-1 or ATCS-2?			2				2				2				2				2
	Override Capacity			0				0				0				0				0
NORTHBOUND	Left	198	1	198	0	198	1	198	0	198	1	198	0	198	1	198	0	198	1	198
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	874	2	437	0	874	2	437	0	874	2	437	73	947	2	474	0	947	2	474
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	143	1	96	0	143	1	96	0	143	1	96	0	143	1	80	0	143	1	80
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND	Left	102	1	102	0	102	1	102	0	102	1	102	0	102	1	102	0	102	1	102
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	1141	2	424	0	1141	2	424	0	1141	2	424	0	1141	2	424	0	1141	2	424
	Through-Right		1	424			1	424			1	424			1	424			1	424
	Right	132	0	132	0	132	0	132	0	132	0	132	0	132	0	132	0	132	0	132
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND	Left	94	1	94	0	94	1	94	0	94	1	94	5	99	1	99	0	99	1	99
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	987	2	419	0	987	2	419	0	987	2	419	0	987	2	419	0	987	2	419
	Through-Right		1	419			1	419			1	419			1	419			1	419
	Right	269	0	269	0	269	0	269	0	269	0	269	0	269	0	269	0	269	0	269
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND	Left	95	1	95	0	95	1	95	0	95	1	95	31	126	1	126	0	126	1	126
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	545	2	203	0	545	2	203	0	545	2	203	7	552	2	222	0	552	2	222
	Through-Right		1	203			1	203			1	203			1	222			1	222
	Right	63	0	63	0	63	0	63	0	63	0	63	50	113	0	113	0	113	0	113
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
	CRITICAL VOLUMES	North-South:		622	North-South:			622	North-South:			622	North-South:			622	North-South:			622
		East-West:		514	East-West:			514	East-West:			514	East-West:			545	East-West:			545
		SUM:		1136	SUM:			1136	SUM:			1136	SUM:			1167	SUM:			1167
	VOLUME/CAPACITY (V/C) RATIO			0.826				0.826				0.826				0.849				0.849
	V/C LESS ATSAC/ATCS ADJUSTMENT			0.726				0.726				0.726				0.749				0.749
	LEVEL OF SERVICE (LOS)			C				C				C				C				C

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.023 — Δ*v/c* after mitigation: 0.023

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	FALLBROOK AVENUE	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
7	East-West Street:	VICTORY BOULEVARD	Projection Year:	2012	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

		2011 EXISTING COND.			2012 W/ AMBIENT GROWTH				2012 W/ RELATED PROJECTS				2012 W/ PROJECT				2012 W/ TRAFFIC MITIGATION			
	MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
	No. of Phases			4				4				4				4				4
	Opposed Ø'ing N/S-1, E/W-2 or Both-3?			0				0				0				0				0
	Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB---		0	NB--- 0 SB---			0	NB--- SB---			0	NB--- 0 SB---			0	NB--- 0 SB---			0
		EB--- 0 WB---		0	EB--- 0 WB---			0	EB--- WB---			0	EB--- 0 WB---			0	EB--- 0 WB---			0
	ATSAC-1 or ATCS-2?			2				2				2				2				2
	Override Capacity			0				0				0				0				0
NORTHBOUND	Left	198	1	198	4	202	1	202	0	202	1	202	0	202	1	202	0	202	1	202
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	874	2	437	17	891	2	446	34	925	2	463	73	998	2	499	0	998	2	499
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	143	1	96	3	146	1	97	0	146	1	97	0	146	1	82	0	146	1	82
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND	Left	102	1	102	2	104	1	104	0	104	1	104	0	104	1	104	0	104	1	104
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	1141	2	424	23	1164	2	433	23	1187	2	440	0	1187	2	440	0	1187	2	440
	Through-Right		1	424			1	433			1	440			1	440			1	440
	Right	132	0	132	3	135	0	135	0	135	0	135	0	135	0	135	0	135	0	135
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND	Left	94	1	94	2	96	1	96	0	96	1	96	5	101	1	101	0	101	1	101
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	987	2	419	20	1007	2	427	18	1025	2	433	0	1025	2	433	0	1025	2	433
	Through-Right		1	419			1	427			1	433			1	433			1	433
	Right	269	0	269	5	274	0	274	0	274	0	274	0	274	0	274	0	274	0	274
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND	Left	95	1	95	2	97	1	97	0	97	1	97	31	128	1	128	0	128	1	128
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	545	2	203	11	556	2	207	85	641	2	235	7	648	2	254	0	648	2	254
	Through-Right		1	203			1	207			1	235			1	254			1	254
	Right	63	0	63	1	64	0	64	0	64	0	64	50	114	0	114	0	114	0	114
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
	CRITICAL VOLUMES	North-South:		622	North-South:			635	North-South:			642	North-South:			642	North-South:			642
		East-West:		514	East-West:			524	East-West:			530	East-West:			561	East-West:			561
		SUM:		1136	SUM:			1159	SUM:			1172	SUM:			1203	SUM:			1203
	VOLUME/CAPACITY (V/C) RATIO			0.826				0.843				0.853				0.875				0.875
	V/C LESS ATSAC/ATCS ADJUSTMENT			0.726				0.743				0.753				0.775				0.775
	LEVEL OF SERVICE (LOS)			C				C				C				C				C

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.022 — Δ*v/c* after mitigation: 0.022

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	SHOUP AVENUE	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
8	East-West Street:	VICTORY BOULEVARD	Projection Year:	2011	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

		2011 EXISTING COND.			2011 W/ AMBIENT GROWTH				2011 W/ RELATED PROJECTS				2011 W/ PROJECT				2011 W/ TRAFFIC MITIGATION			
	MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
	No. of Phases			2				2				2				2				2
	Opposed Ø'ing N/S-1, E/W-2 or Both-3?			0				0				0				0				0
	Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB---		0	NB--- 0 SB---			0	NB--- SB---			0	NB--- 0 SB---			0	NB--- 0 SB---			0
		EB--- 0 WB---		0	EB--- 0 WB---			0	EB--- WB---			0	EB--- 0 WB---			0	EB--- 0 WB---			0
	ATSAC-1 or ATCS-2?			2				2				2				2				2
	Override Capacity			0				0				0				0				0
NORTHBOUND	Left	107	1	107	0	107	1	107	0	107	1	107	33	140	1	140	-10	130	1	130
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	779	1	426	0	779	1	426	0	779	1	426	0	779	1	426	0	779	1	426
	Through-Right		1	426			1	426			1	426			1	426			1	426
	Right	72	0	72	0	72	0	72	0	72	0	72	0	72	0	72	0	72	0	72
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND	Left	138	1	138	0	138	1	138	0	138	1	138	2	140	1	140	0	140	1	140
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	1140	1	602	0	1140	1	602	0	1140	1	602	47	1187	1	650	-14	1173	1	636
	Through-Right		1	602			1	602			1	602			1	650			1	636
	Right	63	0	63	0	63	0	63	0	63	0	63	50	113	0	113	-15	98	0	98
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND	Left	71	1	71	0	71	1	71	0	71	1	71	0	71	1	71	0	71	1	71
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	937	2	469	0	937	2	469	0	937	2	469	0	937	2	469	0	937	2	469
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	190	1	137	0	190	1	137	0	190	1	137	0	190	1	120	0	190	1	125
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND	Left	80	1	80	0	80	1	80	0	80	1	80	0	80	1	80	0	80	1	80
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	497	2	249	0	497	2	249	0	497	2	249	5	502	2	251	0	502	2	251
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	74	1	5	0	74	1	5	0	74	1	5	0	74	1	4	0	74	1	4
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
	CRITICAL VOLUMES	North-South:		709	North-South:			709	North-South:			709	North-South:			790	North-South:			766
		East-West:		549	East-West:			549	East-West:			549	East-West:			549	East-West:			549
		SUM:		1257	SUM:			1257	SUM:			1257	SUM:			1339	SUM:			1314
	VOLUME/CAPACITY (V/C) RATIO			0.838				0.838				0.838				0.892				0.876
	V/C LESS ATSAC/ATCS ADJUSTMENT			0.738				0.738				0.738				0.792				0.776
	LEVEL OF SERVICE (LOS)			C				C				C				C				C

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.054 — Significant impacted? YES

Δ*v/c* after mitigation: 0.038 — Fully mitigated? YES

CMA Calculation Worksheet

I/S #:	North-South Street:	SHOUP AVENUE				Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
8	East-West Street:	VICTORY BOULEVARD				Projection Year:	2012	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

	2011 EXISTING COND.			2012 W/ AMBIENT GROWTH				2012 W/ RELATED PROJECTS				2012 W/ PROJECT				2012 W/ TRAFFIC MITIGATION			
MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
No. of Phases			2				2				2				2				3
Opposed Ø'ing N/S-1, E/W-2 or Both-3?			0				0				0				0				0
Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB---		0	NB--- 0 SB---			0	NB--- SB---			0	NB--- 0 SB---			0	NB--- 0 SB---			0
	EB--- 0 WB---		0	EB--- 0 WB---			0	EB--- WB---			0	EB--- 0 WB---			0	EB--- 0 WB---			0
ATSAC-1 or ATCS-2?			2				2				2				2				2
Override Capacity			0				0				0				0				0
NORTHBOUND Left	107	1	107	2	109	1	109	0	109	1	109	33	142	1	142	-31	111	1	111
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	779	1	426	16	795	1	434	49	844	1	459	0	844	1	459	-42	802	1	436
Through-Right		1	426			1	434			1	459			1	459			1	436
Right	72	0	72	1	73	0	73	0	73	0	73	0	73	0	73	-4	69	0	69
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND Left	138	1	138	3	141	1	141	0	141	1	141	2	143	1	143	-15	128	1	128
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	1140	1	602	23	1163	1	614	44	1207	1	636	47	1254	1	684	-87	1167	1	625
Through-Right		1	602			1	614			1	636			1	684			1	625
Right	63	0	63	1	64	0	64	0	64	0	64	50	114	0	114	-31	83	0	83
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND Left	71	1	71	1	72	1	72	0	72	1	72	0	72	1	72	-7	65	1	65
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	937	2	469	19	956	2	478	18	974	2	487	0	974	2	487	-49	925	2	462
Through-Right		0	0			0	0			0	0			0	0			0	0
Right	190	1	137	4	194	1	139	0	194	1	139	0	194	1	123	-10	184	1	128
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND Left	80	1	80	2	82	1	82	21	103	1	103	0	103	1	103	-10	93	1	93
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	497	2	249	10	507	2	253	85	592	2	296	5	597	2	298	-33	564	2	282
Through-Right		0	0			0	0			0	0			0	0			0	0
Right	74	1	5	1	75	1	5	0	75	1	5	0	75	1	4	-4	71	1	8
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
CRITICAL VOLUMES	North-South:		709	North-South:			723	North-South:			745	North-South:			826	North-South:			736
	East-West:		549	East-West:			559	East-West:			589	East-West:			589	East-West:			555
	SUM:		1257	SUM:			1282	SUM:			1334	SUM:			1416	SUM:			1291
VOLUME/CAPACITY (V/C) RATIO			0.838				0.855				0.889				0.944				0.906
V/C LESS ATSAC/ATCS ADJUSTMENT			0.738				0.755				0.789				0.844				0.806
LEVEL OF SERVICE (LOS)			C				C				C				D				D

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.055 — Significant impacted? YES

Δ*v/c* after mitigation: 0.017 — Fully mitigated? YES

CMA Calculation Worksheet

I/S #:	North-South Street:	FALLBROOK AVENUE	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
9	East-West Street:	OXNARD STREET	Projection Year:	2011	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

	2011 EXISTING COND.			2011 W/ AMBIENT GROWTH				2011 W/ RELATED PROJECTS				2011 W/ PROJECT				2011 W/ TRAFFIC MITIGATION			
MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
NORTHBOUND																			
Left	9	1	9	0	9	1	9	0	9	1	9	0	9	1	9	0	9	1	9
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	964	1	536	0	964	1	536	0	964	1	536	35	999	1	554	0	999	1	554
Through-Right		1	536			1	536			1	536			1	554			1	554
Right	108	0	108	0	108	0	108	0	108	0	108	0	108	0	108	0	108	0	108
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND																			
Left	181	1	181	0	181	1	181	0	181	1	181	0	181	1	181	0	181	1	181
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	1399	1	711	0	1399	1	711	0	1399	1	711	31	1430	1	727	0	1430	1	727
Through-Right		1	711			1	711			1	711			1	727			1	727
Right	23	0	23	0	23	0	23	0	23	0	23	0	23	0	23	0	23	0	23
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND																			
Left	44	1	44	0	44	1	44	0	44	1	44	5	49	1	49	0	49	1	49
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	209	0	0	0	209	0	0	0	209	0	0	0	209	0	0	0	209	0	0
Through-Right		1	242			1	242			1	242			1	242			1	242
Right	33	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0	33	0	33
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND																			
Left	107	1	107	0	107	1	107	0	107	1	107	0	107	1	107	0	107	1	107
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	115	0	0	0	115	0	0	0	115	0	0	0	115	0	0	0	115	0	0
Through-Right		1	212			1	212			1	212			1	245			1	245
Right	97	0	97	0	97	0	97	0	97	0	97	33	130	0	130	0	130	0	130
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
CRITICAL VOLUMES		*North-South:*	720		*North-South:*		720		*North-South:*		720		*North-South:*		736		*North-South:*		736
		East-West:	349		*East-West:*		349		*East-West:*		349		*East-West:*		349		*East-West:*		349
		SUM:	1069		*SUM:*		1069		*SUM:*		1069		*SUM:*		1085		*SUM:*		1085
VOLUME/CAPACITY *(V/C)* RATIO			0.713				0.713				0.713				0.723				0.723
V/C LESS ATSAC/ATCS ADJUSTMENT			0.613				0.613				0.613				0.623				0.623
LEVEL OF SERVICE (LOS)			B				B				B				B				B

	NB---	0	SB---	0	NB---	0	SB---	0	NB---		SB---	0	NB---	0	SB---	0	NB---	0	SB---	0
Right Turns FREE-1, NRTOR-2 or OLA-3?	EB---	0	WB---	0	EB---	0	WB---	0	EB---		WB---	0	EB---	0	WB---	0	EB---	0	WB---	0
No. of Phases				2				2				2				2				2
Opposed Ø'ing N/S-1, E/W-2 or Both-3?				0				0				0				0				0
ATSAC-1 or ATCS-2?				2				2				2				2				2
Override Capacity				0				0				0				0				0

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.010 — Δ*v/c* after mitigation: 0.010

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	FALLBROOK AVENUE	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
9	East-West Street:	OXNARD STREET	Projection Year:	2012	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

	2011 EXISTING COND.			2012 W/ AMBIENT GROWTH				2012 W/ RELATED PROJECTS				2012 W/ PROJECT				2012 W/ TRAFFIC MITIGATION			
MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
No. of Phases			2				2				2				2				2
Opposed Ø'ing N/S-1, E/W-2 or Both-3?			0				0				0				0				0
Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB---		0	NB--- 0 SB---			0	NB--- SB---			0	NB--- 0 SB---			0	NB--- 0 SB---			0
	EB--- 0 WB---		0	EB--- 0 WB---			0	EB--- WB---			0	EB--- 0 WB---			0	EB--- 0 WB---			0
ATSAC-1 or ATCS-2?			2				2				2				2				2
Override Capacity			0				0				0				0				0
NORTHBOUND Left	9	1	9	0	9	1	9	0	9	1	9	0	9	1	9	0	9	1	9
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	964	1	536	19	983	1	547	34	1017	1	564	35	1052	1	581	0	1052	1	581
Through-Right		1	536			1	547			1	564			1	581			1	581
Right	108	0	108	2	110	0	110	0	110	0	110	0	110	0	110	0	110	0	110
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND Left	181	1	181	4	185	1	185	0	185	1	185	0	185	1	185	0	185	1	185
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	1399	1	711	28	1427	1	725	23	1450	1	737	31	1481	1	752	0	1481	1	752
Through-Right		1	711			1	725			1	737			1	752			1	752
Right	23	0	23	0	23	0	23	0	23	0	23	0	23	0	23	0	23	0	23
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND Left	44	1	44	1	45	1	45	0	45	1	45	5	50	1	50	0	50	1	50
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	209	0	0	4	213	0	0	7	220	0	0	0	220	0	0	0	220	0	0
Through-Right		1	242			1	247			1	254			1	254			1	254
Right	33	0	33	1	34	0	34	0	34	0	34	0	34	0	34	0	34	0	34
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND Left	107	1	107	2	109	1	109	0	109	1	109	0	109	1	109	0	109	1	109
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	115	0	0	2	117	0	0	23	140	0	0	0	140	0	0	0	140	0	0
Through-Right		1	212			1	216			1	239			1	272			1	272
Right	97	0	97	2	99	0	99	0	99	0	99	33	132	0	132	0	132	0	132
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
CRITICAL VOLUMES	North-South:		720	North-South:			734	North-South:			748	North-South:			766	North-South:			766
	East-West:		349	East-West:			356	East-West:			363	East-West:			363	East-West:			363
	SUM:		1069	SUM:			1090	SUM:			1111	SUM:			1129	SUM:			1129
VOLUME/CAPACITY (V/C) RATIO			0.713				0.727				0.741				0.753				0.753
V/C LESS ATSAC/ATCS ADJUSTMENT			0.613				0.627				0.641				0.653				0.653
LEVEL OF SERVICE (LOS)			B				B				B				B				B

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.012 — Δ*v/c* after mitigation: 0.012

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	SHOUP AVENUE				Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
10	East-West Street:	OXNARD STREET				Projection Year:	2011	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

		2011 EXISTING COND.			2011 W/ AMBIENT GROWTH				2011 W/ RELATED PROJECTS				2011 W/ PROJECT				2011 W/ TRAFFIC MITIGATION			
	MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
	No. of Phases			2				2				2				2				2
	Opposed Ø'ing N/S-1, E/W-2 or Both-3?			0				0				0				0				0
	Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB---		0	NB--- 0 SB---			0	NB--- SB---			0	NB--- 0 SB---			0	NB--- 0 SB---			0
		EB--- 0 WB---		0	EB--- 0 WB---			0	EB--- WB---			0	EB--- 0 WB---			0	EB--- 0 WB---			0
	ATSAC-1 or ATCS-2?			2				2				2				2				2
	Override Capacity			0				0				0				0				0
NORTHBOUND	Left	65	1	65	0	65	1	65	0	65	1	65	33	98	1	98	0	98	1	98
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	743	1	412	0	743	1	412	0	743	1	412	33	776	1	429	0	776	1	429
	Through-Right		1	412			1	412			1	412			1	429			1	429
	Right	81	0	81	0	81	0	81	0	81	0	81	0	81	0	81	0	81	0	81
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND	Left	164	1	164	0	164	1	164	0	164	1	164	0	164	1	164	0	164	1	164
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	1077	1	622	0	1077	1	622	0	1077	1	622	47	1124	1	645	0	1124	1	645
	Through-Right		1	622			1	622			1	622			1	645			1	645
	Right	166	0	166	0	166	0	166	0	166	0	166	0	166	0	166	0	166	0	166
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND	Left	98	1	98	0	98	1	98	0	98	1	98	0	98	1	98	0	98	1	98
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	417	2	209	0	417	2	209	0	417	2	209	0	417	2	209	0	417	2	209
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	86	1	54	0	86	1	54	0	86	1	54	0	86	1	37	0	86	1	37
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND	Left	63	1	63	0	63	1	63	0	63	1	63	0	63	1	63	0	63	1	63
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	177	1	177	0	177	1	177	0	177	1	177	0	177	1	177	0	177	1	177
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	66	1	0	0	66	1	0	0	66	1	0	0	66	1	0	0	66	1	0
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
	CRITICAL VOLUMES	North-South:		687	North-South:			687	North-South:			687	North-South:			743	North-South:			743
		East-West:		275	East-West:			275	East-West:			275	East-West:			275	East-West:			275
		SUM:		962	SUM:			962	SUM:			962	SUM:			1018	SUM:			1018
	VOLUME/CAPACITY (V/C) RATIO			0.641				0.641				0.641				0.679				0.679
	V/C LESS ATSAC/ATCS ADJUSTMENT			0.541				0.541				0.541				0.579				0.579
	LEVEL OF SERVICE (LOS)			A				A				A				A				A

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.038 — Δ*v/c* after mitigation: 0.038

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	SHOUP AVENUE				Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
10	East-West Street:	OXNARD STREET				Projection Year:	2012	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

		2011 EXISTING COND.			2012 W/ AMBIENT GROWTH				2012 W/ RELATED PROJECTS				2012 W/ PROJECT				2012 W/ TRAFFIC MITIGATION			
	MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
	No. of Phases			2				2				2				2				2
	Opposed Ø'ing N/S-1, E/W-2 or Both-3?			0				0				0				0				0
	Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB---		0	NB--- 0 SB---			0	NB--- SB---			0	NB--- 0 SB---			0	NB--- 0 SB---			0
		EB--- 0 WB---		0	EB--- 0 WB---			0	EB--- WB---			0	EB--- 0 WB---			0	EB--- 0 WB---			0
	ATSAC-1 or ATCS-2?			2				2				2				2				2
	Override Capacity			0				0				0				0				0
NORTHBOUND	Left	65	1	65	1	66	1	66	0	66	1	66	33	99	1	99	0	99	1	99
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	743	1	412	15	758	1	420	63	821	1	460	33	854	1	476	0	854	1	476
	Through-Right		1	412			1	420			1	460			1	476			1	476
	Right	81	0	81	2	83	0	83	16	99	0	99	0	99	0	99	0	99	0	99
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND	Left	164	1	164	3	167	1	167	10	177	1	177	0	177	1	177	0	177	1	177
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	1077	1	622	22	1099	1	634	64	1163	1	666	47	1210	1	689	0	1210	1	689
	Through-Right		1	622			1	634			1	666			1	689			1	689
	Right	166	0	166	3	169	0	169	0	169	0	169	0	169	0	169	0	169	0	169
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND	Left	98	1	98	2	100	1	100	0	100	1	100	0	100	1	100	0	100	1	100
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	417	2	209	8	425	2	213	7	432	2	216	0	432	2	216	0	432	2	216
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	86	1	54	2	88	1	55	0	88	1	55	0	88	1	38	0	88	1	38
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND	Left	63	1	63	1	64	1	64	13	77	1	77	0	77	1	77	0	77	1	77
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	177	1	177	4	181	1	181	23	204	1	204	0	204	1	204	0	204	1	204
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	66	1	0	1	67	1	0	3	70	1	0	0	70	1	0	0	70	1	0
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
	CRITICAL VOLUMES	North-South:		687	North-South:			700	North-South:			732	North-South:			789	North-South:			789
		East-West:		275	East-West:			281	East-West:			304	East-West:			304	East-West:			304
		SUM:		962	SUM:			981	SUM:			1036	SUM:			1092	SUM:			1092
	VOLUME/CAPACITY (V/C) RATIO			0.641				0.654				0.690				0.728				0.728
	V/C LESS ATSAC/ATCS ADJUSTMENT			0.541				0.554				0.590				0.628				0.628
	LEVEL OF SERVICE (LOS)			A				A				A				B				B

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.038 — Δ*v/c* after mitigation: 0.038

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	FALLBROOK AVENUE	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
11	East-West Street:	VENTURA BOULEVARD	Projection Year:	2011	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

		2011 EXISTING COND.			2011 W/ AMBIENT GROWTH				2011 W/ RELATED PROJECTS				2011 W/ PROJECT				2011 W/ TRAFFIC MITIGATION			
	MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
	No. of Phases			4				4				4				4				4
	Opposed Ø'ing N/S-1, E/W-2 or Both-3?			1				1				1				1				1
	Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB---		3	NB--- 0 SB---			3	NB--- SB---			3	NB--- 0 SB---			3	NB--- 0 SB---			3
		EB--- 0 WB---		3	EB--- 0 WB---			3	EB--- WB---			3	EB--- 0 WB---			3	EB--- 0 WB---			3
	ATSAC-1 or ATCS-2?			2				2				2				2				2
	Override Capacity			0				0				0				0				0
NORTHBOUND	Left	65	1	65	0	65	1	65	0	65	1	65	0	65	1	65	0	65	1	65
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	546	1	327	0	546	1	327	0	546	1	327	0	546	1	327	0	546	1	327
	Through-Right		1	327			1	327			1	327			1	327			1	327
	Right	107	0	107	0	107	0	107	0	107	0	107	0	107	0	107	0	107	0	107
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND	Left	521	1	287	0	521	1	287	0	521	1	287	0	521	1	287	0	521	1	287
	Left-Through		1	467			1	467			1	467			1	467			1	467
	Through	233	0	0	0	233	0	0	0	233	0	0	0	233	0	0	0	233	0	0
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	478	1	424	0	478	1	424	0	478	1	424	31	509	1	420	0	509	1	420
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND	Left	54	1	54	0	54	1	54	0	54	1	54	35	89	1	89	0	89	1	89
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	312	3	104	0	312	3	104	0	312	3	104	0	312	3	104	0	312	3	104
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	33	1	1	0	33	1	1	0	33	1	1	0	33	1	1	0	33	1	1
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND	Left	125	1	125	0	125	1	125	0	125	1	125	0	125	1	125	0	125	1	125
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	467	2	234	0	467	2	234	0	467	2	234	0	467	2	234	0	467	2	234
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	292	1	5	0	292	1	5	0	292	1	5	0	292	1	5	0	292	1	5
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
	CRITICAL VOLUMES		North-South:	794		North-South:		794		North-South:		794		North-South:		794		North-South:		794
			East-West:	288		East-West:		288		East-West:		288		East-West:		323		East-West:		323
			SUM:	1081		SUM:		1081		SUM:		1081		SUM:		1116		SUM:		1116
	VOLUME/CAPACITY (V/C) RATIO			0.787				0.787				0.787				0.812				0.812
	V/C LESS ATSAC/ATCS ADJUSTMENT			0.687				0.687				0.687				0.712				0.712
	LEVEL OF SERVICE (LOS)			B				B				B				C				C

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.025 — Δ*v/c* after mitigation: 0.025

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	FALLBROOK AVENUE	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
11	East-West Street:	VENTURA BOULEVARD	Projection Year:	2012	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

		2011 EXISTING COND.			2012 W/ AMBIENT GROWTH				2012 W/ RELATED PROJECTS				2012 W/ PROJECT				2012 W/ TRAFFIC MITIGATION			
	MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
	No. of Phases			4				4				4				4				4
	Opposed Ø'ing N/S-1, E/W-2 or Both-3?			1				1				1				1				1
	Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 0 SB---		3	NB--- 0 SB---			3	NB--- SB---			3	NB--- 0 SB---			3	NB--- 0 SB---			3
		EB--- 0 WB---		3	EB--- 0 WB---			3	EB--- WB---			3	EB--- 0 WB---			3	EB--- 0 WB---			3
	ATSAC-1 or ATCS-2?			2				2				2				2				2
	Override Capacity			0				0				0				0				0
NORTHBOUND	Left	65	1	65	1	66	1	66	0	66	1	66	0	66	1	66	0	66	1	66
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	546	1	327	11	557	1	333	15	572	1	341	0	572	1	341	0	572	1	341
	Through-Right		1	327			1	333			1	341			1	341			1	341
	Right	107	0	107	2	109	0	109	0	109	0	109	0	109	0	109	0	109	0	109
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND	Left	521	1	287	10	531	1	292	0	531	1	292	0	531	1	292	0	531	1	292
	Left-Through		1	467			1	477			1	482			1	482			1	482
	Through	233	0	0	5	238	0	0	5	243	0	0	0	243	0	0	0	243	0	0
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	478	1	424	10	488	1	432	0	488	1	422	31	519	1	418	0	519	1	418
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND	Left	54	1	54	1	55	1	55	10	65	1	65	35	100	1	100	0	100	1	100
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	312	3	104	6	318	3	106	45	363	3	121	0	363	3	121	0	363	3	121
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	33	1	1	1	34	1	1	0	34	1	1	0	34	1	1	0	34	1	1
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND	Left	125	1	125	3	128	1	128	0	128	1	128	0	128	1	128	0	128	1	128
	Left-Through		0	0			0	0			0	0			0	0			0	0
	Through	467	2	234	9	476	2	238	77	553	2	277	0	553	2	277	0	553	2	277
	Through-Right		0	0			0	0			0	0			0	0			0	0
	Right	292	1	5	6	298	1	6	0	298	1	6	0	298	1	6	0	298	1	6
	Left-Through-Right		0	0			0	0			0	0			0	0			0	0
	Left-Right		0	0			0	0			0	0			0	0			0	0
	CRITICAL VOLUMES	North-South:		794	North-South:			810	North-South:			822	North-South:			822	North-South:			822
		East-West:		288	East-West:			293	East-West:			342	East-West:			377	East-West:			377
		SUM:		1081	SUM:			1103	SUM:			1164	SUM:			1199	SUM:			1199
	VOLUME/CAPACITY (V/C) RATIO			0.787				0.802				0.847				0.872				0.872
	V/C LESS ATSAC/ATCS ADJUSTMENT			0.687				0.702				0.747				0.772				0.772
	LEVEL OF SERVICE (LOS)			B				C				C				C				C

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.025 — Δ*v/c* after mitigation: 0.025

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	EB 101 FWY ONRAMP	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
12	East-West Street:	VENTURA BOULEVARD	Projection Year:	2011	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

	2011 EXISTING COND.			2011 W/ AMBIENT GROWTH				2011 W/ RELATED PROJECTS				2011 W/ PROJECT				2011 W/ TRAFFIC MITIGATION			
MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
No. of Phases			3				3				3				3				3
Opposed Ø'ing N/S-1, E/W-2 or Both-3?			2				2				2				2				2
Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 1 SB--- 0 EB--- 0 WB--- 1			NB--- 1 SB--- 0 EB--- 0 WB--- 1				NB--- 1 SB--- 0 EB--- 0 WB--- 1				NB--- 1 SB--- 0 EB--- 0 WB--- 1				NB--- 1 SB--- 0 EB--- 0 WB--- 1			
ATSAC-1 or ATCS-2?			2				2				2				2				2
Override Capacity			0				0				0				0				0
NORTHBOUND Left	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Through-Right		0	0			0	0			0	0			0	0			0	0
Right	1766	1	0	0	1766	1	0	0	1766	1	0	0	1766	1	0	0	1766	1	0
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND Left	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Through-Right		0	0			0	0			0	0			0	0			0	0
Right	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND Left	961	1	529	0	961	1	529	0	961	1	529	47	1008	1	554	0	1008	1	554
Left-Through		1	910			1	910			1	910			1	932			1	932
Through	956	1	478	0	956	1	478	0	956	1	478	0	956	1	478	0	956	1	478
Through-Right		0	0			0	0			0	0			0	0			0	0
Right	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND Left	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	594	3	198	0	594	3	198	0	594	3	198	17	611	3	204	0	611	3	204
Through-Right		0	0			0	0			0	0			0	0			0	0
Right	21	1	0	0	21	1	0	0	21	1	0	0	21	1	0	0	21	1	0
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
CRITICAL VOLUMES	North-South:		0	North-South:			0	North-South:			0	North-South:			0	North-South:			0
	East-West:		1108	East-West:			1108	East-West:			1108	East-West:			1135	East-West:			1135
	SUM:		1108	SUM:			1108	SUM:			1108	SUM:			1135	SUM:			1135
VOLUME/CAPACITY (V/C) RATIO			0.778				0.778				0.778				0.797				0.797
V/C LESS ATSAC/ATCS ADJUSTMENT			0.678				0.678				0.678				0.697				0.697
LEVEL OF SERVICE (LOS)			B				B				B				B				B

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.019 — Δ*v/c* after mitigation: 0.019

Significant impacted? NO — Fully mitigated? N/A

CMA Calculation Worksheet

I/S #:	North-South Street:	EB 101 FWY ONRAMP	Year of Count:	2011	Ambient Growth: (%):	2	Conducted by:	LCULHANE	Date:	2/28/2011
12	East-West Street:	VENTURA BOULEVARD	Projection Year:	2012	Peak Hour:	AM	Reviewed by:		Project:	NCJHS - VANOWEN

	2011 EXISTING COND.			2012 W/ AMBIENT GROWTH				2012 W/ RELATED PROJECTS				2012 W/ PROJECT				2012 W/ TRAFFIC MITIGATION			
MOVEMENT	Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume	Added Volume	Total Volume	No. of Lanes	Lane Volume
No. of Phases			3				3				3				3				3
Opposed Ø'ing N/S-1, E/W-2 or Both-3?			2				2				2				2				2
Right Turns FREE-1, NRTOR-2 or OLA-3?	NB--- 1 SB--- 0 EB--- 0 WB--- 1			NB--- 1 SB--- 0 EB--- 0 WB--- 1				NB--- 1 SB--- 0 EB--- 0 WB--- 1				NB--- 1 SB--- 0 EB--- 0 WB--- 1				NB--- 1 SB--- 0 EB--- 0 WB--- 1			
ATSAC-1 or ATCS-2?			2				2				2				2				2
Override Capacity			0				0				0				0				0
NORTHBOUND																			
Left	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Through-Right		0	0			0	0			0	0			0	0			0	0
Right	1766	1	0	35	1801	1	0	0	1801	1	0	0	1801	1	0	0	1801	1	0
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
SOUTHBOUND																			
Left	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Through-Right		0	0			0	0			0	0			0	0			0	0
Right	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
EASTBOUND																			
Left	961	1	529	19	980	1	539	20	1000	1	550	47	1047	1	576	0	1047	1	576
Left-Through		1	910			1	929			1	958			1	979			1	979
Through	956	1	478	19	975	1	488	40	1015	1	508	0	1015	1	508	0	1015	1	508
Through-Right		0	0			0	0			0	0			0	0			0	0
Right	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
WESTBOUND																			
Left	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Left-Through		0	0			0	0			0	0			0	0			0	0
Through	594	3	198	12	606	3	202	87	693	3	231	17	710	3	237	0	710	3	237
Through-Right		0	0			0	0			0	0			0	0			0	0
Right	21	1	0	0	21	1	0	0	21	1	0	0	21	1	0	0	21	1	0
Left-Through-Right		0	0			0	0			0	0			0	0			0	0
Left-Right		0	0			0	0			0	0			0	0			0	0
CRITICAL VOLUMES	North-South:		0	North-South:			0	North-South:			0	North-South:			0	North-South:			0
	East-West:		1108	East-West:			1131	East-West:			1189	East-West:			1215	East-West:			1215
	SUM:		1108	SUM:			1131	SUM:			1189	SUM:			1215	SUM:			1215
VOLUME/CAPACITY (V/C) RATIO			0.778				0.793				0.834				0.853				0.853
V/C LESS ATSAC/ATCS ADJUSTMENT			0.678				0.693				0.734				0.753				0.753
LEVEL OF SERVICE (LOS)			B				B				C				C				C

NO INPUT ALLOWED

INPUT DATA CELL

PROJECT IMPACT

Change in *v/c* due to project: 0.019 — Δ*v/c* after mitigation: 0.019

Significant impacted? NO — Fully mitigated? N/A

From:	ronald.ziman@gmail.com on behalf of Ronald Ziman
To:	MSFC-SSFL-EIS
Subject:	Fwd: Personal Comments Regarding NASA"s Draft Environmental Impact Statement
Date:	Sunday, September 29, 2013 8:29:25 PM
Attachments:	DEIS Comments RBZ-signed.pdf

Dear Mr. Elliott,

Please find attached my personal comments regarding NASA's Draft Environmental Impact Statement. In addition to this e-mail, you will be receiving a hard copy sent via the postal service.

Thank you in advance for your review of my comments. I look forward to your response.

Sincerely,

Ronald B. Ziman, MD, FACP, FAAN
Associate Clincal Professor of Neurology, UCLA
President, The NeuroCommunity Foundation

Ronald B. Ziman, MD, FACP, FAAN

Neurology

Dipl., Am. Bd. of Psychiatry & Neurology, Neurology
Dipl., Am. Bd. of Psychiatry & Neurology, Vascular Neurology
Dipl., Am. Bd. of Internal Medicine
Assoc. Clin. Prof., Neurology, UCLA

Fellow, Am. Acad. of Neurology
Member, Stroke Council, AHA/ASA
Fellow, Am. College of Physicians
Member, UCLA Stroke Network

22110 Roscoe Blvd., Suite 304, West Hills, CA 91304
Phone: 818-943-9493 FAX: 818-999-4329

Brain Injury Spine and Spinal Cord Injury Pain Management Nerve and Muscle Diseases
Parkinson's/Movement Disorders Alzheimers/Dementia Stroke Epilepsy Sleep Disorders Multiple Sclerosis

EMG/Nerve Conduction EEG Evoked Potentials

AME QME IME

16 September, 2013

Mr. Allen Elliot - SSFL Project Director
NASA MSAFC ASO, Building 4494
Huntsville, AL 35812
msfc-ssfl-eis@mail.nasa.com

Dear Mr. Elliott,

I am a physician and resident of Bell Canyon, CA. Bell Canyon is to the immediate South of the SSFL, bordering the Southern Buffer Zone and in that regard, the nearest neighbor of the SSFL. Presently 90% of the watershed from the SSFL flows south into Bell Creek which winds its way throughout our neighborhood. The prevailing winds in this area are from North to South, blowing across the SSFL land, sweeping up material and carrying it into our community. We are exposed from all pathways to substances arising from the SSFL and subject to whatever its effects may be. If there is any community that is in the line of fire and to be affected by the contamination of SSFL it would be Bell Canyon. Our community is extremely grateful to DTSC, NASA, DOE and Boeing for all the cleanup efforts to date. Protection of the population is paramount. Without protection of the environment in which we all live, everyone becomes vulnerable.

Having read the Draft Environmental Impact Statement (DEIS) that NASA recently released, I am compelled to comment. I am deeply disturbed by its rationale, structure and conclusions. This document is severely limited and flawed. I recommend that it be rewritten and then resubmitted to the public for further comment. Among other things, your DEIS is in conflict with NEPA and CEQA. Further there are no alternatives besides "all or none," neither of which addresses the area appropriately and are definitely unsatisfactory to my community. How an EIS can actually recommend either placing the public and environment at serious health risk or have "no action" as the only other

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alternative when a clean up is indicated and has been promised for years is beyond me. This appears to be bureaucracy at its worst.

The OIG report of 2/14/13 clearly stated that funding a $200,000,000 clean up for SSFL may "not be feasible" and yet that is the very cleanup you are proposing. A less strict and perfectly acceptable EPA risk based cleanup standard is estimated by the OIG in their same report to cost $80,000, a sum much more likely to be funded. Based on that, I can only conclude that NASA is not serious about doing any cleanup given that "no action" is the only other possible alternative presented if your "all" proposal is not funded.

In your own NASA National Environmental Policy Act; Santa Susana Field Laboratory Status report, (Source: Marshall Space Flight Center) of 8/2/13, you indicate that alternatives will be considered,

"The DEIS will consider a range of alternative technologies that meet NASA's objectives to clean up soil and groundwater contamination at the portion of the SSFL site administered by NASA. Implementation of this Proposed Action would occur by implementing one Demolition Alternative and one or more Cleanup Technologies, from the following: (1) Soil Cleanup Technologies: Excavation and Offsite Disposal, Soil Washing, Soil Vapor Extraction, Ex Situ Treatment Using Land Farming, Ex Situ Treatment Using oxidation, In Situ Chemical Oxidation, In Situ Anaerobic or Aerobic Biological Treatment; (2) Groundwater Treatment Technologies: Pump and Treat, Vacuum Extraction, Heat Driven Extraction, In situ Chemical Oxidation, In situ Enhanced Bioremediation, and Monitored Natural Attenuation.

NEPA requires analysis of the ``No Action'' alternative which in this case means no environmental cleanup at the site and/or no demolition of test stands and ancillary structures on the NASA- administered property."

Paradoxically you also state in the same report that,

"Based on comments from some members of the public, DTSC, Senator Boxer, and guidance from the White House's Council on Environmental Quality, the DEIS now considers only the strictest ``Cleanup to Background'' and the least effective ``No Action'' alternatives. All other cleanup alternatives, consistent with both the Scoping Process and the potential future use of the land, were specifically removed from the DEIS."

Nothing in the letter you received from the CEQ requires you to exclude other alternatives. It simply states alternatives need not be mandatorily included. I have to believe that Barbara Boxer, who has fought both for the environment and at the same time the "strictest cleanup ever" in the interest of public health, has been misled and is now working at odds with her own core environmental principles. Laying waste to 105 acres of earth is catastrophic and when of that magnitude will take decades, if not centuries, to heal. There will be multiple negative consequences, many likely unforeseen, to the public and the environment. These 2 incongruities, advocating for an overly strict and rigid clean up which will be harmful to all and at the same time representing oneself

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as a defender of public health and the environment is irreconcilable. I will be contacting her about this very issue shortly.

The last paragraph of the CEQ is critical to the process, yet it appears that NASA, while placing great weight on 1 sentence, completely ignored the last paragraph. To quote (emphasis added):

"As to assisting the State and NASA in moving forward cooperatively, is fully consistent with CEQ regulations for ***NASA and the State to coordinate their environmental reviews to the greatest extent possible****. CEQ would recommend such coordination while allowing NASA to retain the integrity of its NEPA decision making authority****. CEQ would propose that the State and NASA conduct face-to-face meetings with the goal of establishing an updated cleanup timetable****. During the process of working on the timetable, the State and NASA will also be able to resolve other issues, including (1) what information, including any site characterization information, NASA and the State can provide each other to facilitate NASA's NEPA process and the State's California Environmental Quality Act (CEQA) work; (2) how the NEPA and CEQA processes will work together; (3) What the State's timeline is for the CEQA process; and (4) whether an extension for completion of the cleanup could assist in facilitating coordination among the NASA and State efforts.*** *CEQ would be pleased to assist NASA, the STATE and the Committee as appropriate in fostering this coordination."*

The reasons quoted in the report to exclude alternatives relate to what I assume to be political pressure associated with Senator Boxer's and the CEQ's letter. Yet the CEQ letter clearly states, as quoted above, that the timeline can and should be subject to negotiation. Senator Boxer's letter doesn't even mention the 2017 date or give a timeline by which the cleanup is completed. The Consent Order of 2010 indicates that the cleanup methods should be in place by 2017, but to expect cleanup to be complete by then is not realistic and yet appears to be driving the process. The apparent rationale to remove rather than treat soil directly relates to the "self imposed" 2017 deadline for clean up. There is no reason the cleanup must be completed by 2017 other than an agreement between NASA and DTSC (the AOC) that includes a mechanism for modification and is severabile. Mutual agreement of the parties is the only requirement. Mutual agreement is conveniently ignored despite it being part of the CEQ letter to Senator Boxer. Similarly the emphasis of coordination between NASA and the State to optimize the CEQA and NEPA processes also included in the letter and quoted above are "forgotten."

As outlined on the timeline the NASA DEIS, CEQA and NEPA are all uncoordinated and disconnected. This is the worst of all worlds, like ships passing in the night, never to see each other or be able to interact. While the land is destroyed, including its archeological resources, and the test stands are dismantled, erasing the space history that is so rich and comprehensive at the SSFL (from the Redstone and Atlas rockets to landing men on the moon and the space shuttle), the very laws and their associated report mechanisms designed to protect haven't even been drafted or considered before destruction occurs. By the time there is a document addressing what to preserve, all will have been removed. What logic is there in that? Is that taking your charge and responsibility as stewards of

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space and its history seriously and responsibly? It appears that the very processes that are intended to be coordinated have purposely been disconnected. There is no other explanation for your blatantly ignoring the law and the advice given in the CEQ's letter quoted above.

How can one know what to preserve if the end use of the land has not yet been determined. NASA has made no attempt to balance the financial costs, cultural costs and costs to the environment, all mandated by NEPA and CEQA. Though it may be expedient to tear everything out, including the ground itself, creating a Tabla Rasa, it would seem, given the rich resources that exist there, rather than a Tabla Rasa, NASA, California, and future generations would be better served to preserve the physical monuments to this history. How does anyone know what to preserve if there is no discussion about ultimate long term land use?

The Alpha, Bravo and Coca test stands should all be preserved. They each represent a unique part of the history of the cold war and later the space age where all are inextricably linked. Some of the test stands are considered to qualify for registration in the National Registry of Historic Sites, yet this is ignored. The Burro Flats Cave and its acknowledged remarkably rich and exquisitely preserved paintings, currently registered, is placed in jeopardy by the clean up. Other caves and known sites are similarly put in harms way for no reason. This wanton "scorched earth policy" is beyond any rationale. To me and my neighbors, it appears to be almost cruel and vindictive. Who are you hurting other than the environment, the people and future generations of Americans and foreign visitors who should be educated, see, learn and understand this amazing and diverse history? All these resources: the test stand and significant associated structures, Indian sacred sites, TCPs and archeological areas could and should be preserved within the AOCs. I am shocked at the apparent disrespect and irreverence of NASA and the US Government, ignoring all safeguards to protect tangible treasures of prior millennia. The ancient Chumash people gazed at the stars, recorded their observations and dreamed of visiting. Ironically, within steps of their past, what would have appeared to them to be fire-spitting "gods" were conceived that actually transport man to the heavens.

The cleanup of soil is astronomical (pun intended) with unfortunate and irreparable astronomical consequences. 80,000 truck trips to transport soil removed from 105 acres with the demolition debris of multiple structures added. Removal of this soil unavoidably removes all the plants and biota. Seeding with native plant species sounds all well and good, but no one knows if the natives will grow in soil with different biota and chemical characteristics that comes from another area. How inviting will this barren soil be for non-natives? Where is the soil coming from? That is not known at this time. Is there even enough soil to obtain that would replace 30% of what was removed? The 30% is a maximal amount. It could turn out to be less. What are the consequences to this? Where are they addressed in the DEIS?

Erosion from wind and rain will be substantial and unavoidable. Dust, not only from the trucks but from the prevailing north to south winds will carry infectious Valley Fever organisms (Coccidioidomycosis) and other pathogens into neighboring inhabited areas.

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Outbreaks of Valley Fever increase even after an earthquake. Removing plants and soil, and then replacing only part of the soil while hoping that native rather than non invasive species will grow and take hold in time to avoid disease is wishful thinking at best. As a physician I have had the unfortunate experience of caring for those with Valley Fever. Once acquired it is present for life and can kill despite the most aggressive treatment. For those who develop involvement of the central nervous system it is not only incurable, but results in the need for continuous treatments with toxic medications that are painful to administer directly into the spinal fluid. This is no minor matter. I have not seen this discussed anywhere in the NASA DEIS despite the fact that coccidioidomycosis is endemic in the San Fernando Valley and I am sure in the SSFL soils as well. Has it even been looked for there?

There are other organisms of concern that are also not discussed. Stagnant pools related to improper drainage from the extensive soil excavation enhance breeding for mosquito transmitted viral diseases such as Avian Flu and West Nile Virus. This impact is similarly ignored. The risk of other illnesses, such as equine encephalitis, will likely rise, not only for horses, but also people. Flies breeding in the stagnant pools carry parasites and other diseases. None of this was addressed in the DEIS. Changes in topography and water related soil erosion will choke the streams and creeks that come off the SSFL mountain into neighboring areas. Multiple deleterious and unforeseen consequences related to alteration of the stream beds have not been considered.

The topography will be completely altered and with it the surface water flow and percolation needed to recharge ground water. The aquifers have not been adequately characterized and we are already seeing the "law of unintended consequences" related to the GWIM and pumping at the WS-09A well on NASA's property. The aquifer's water is being purposefully removed to lower the water table to dry the seeps and springs. Now Bell Creek, an historically perennial creek, is dry. Its well developed canopy with rich understory is not just in jeopardy, but dying. What will be its fate and state after erosion chokes the creek and the groundwater recharge is altered in unknown ways? How will these changes impact the character of the creek? Will it be better or will it destroy this fragile and beautiful habitat? What consequences will occur to the animals that use the creek and its water as part of their habitual migration? Has this really been investigated and adequately addressed in the DEIS? I not only think not, I know not, it has not.

The SSFL is a critical point within the migration pathways connecting the coastal range to the inland forests and other wilderness areas. How will the animals fare when the land has been denuded, the plants eliminated, the soil biota completely changed and surface water and groundwater hydrology altered in ways that are not predictable? Open moon-space does not sustain the animals. It is not habitable for them any more than it would have been for the Chumash ancestors. No good will come of this cleanup as far as the animals and plants are concerned -- so much for the environmental concerns that are central to the title and purpose of this report.

How can mitigation of impacts be addressed when alternatives are not even included for consideration? Titling this document an "Environmental Impact Report (EIS)" has never

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been truer, but all the impacts are negative without considering any alternative mitigation that is normally included to protect the people and the environment. A supposed goal of government is to protect and preserve the environment for posterity. The proposed actions are going to do just the opposite.

What of the damage to our roads, the predicted fatalities along the routes, the potential for contamination from trucks, the diesel pollution from the trucks themselves and the multiple deleterious impacts they will have on the neighborhoods and its inhabitants as they go through? All negative health and property impacts directly related to the way the cleanup is proposed, the dimension of which is multiplied further because of the arbitrary 2017 goal of soil cleanup. Actually the soil is really not being cleaned. It is being moved to another location, contaminating and polluting along its travel route, exposing ever more people to hazardous materials and then ultimately contaminating another area. Where is the justice to the community or the environment from this action? Add to this the cumulative burdens from Boeing's and DOE's cleanup efforts. How do you spell disaster? Answer: NASA DEIS.

The "decontaminated," scarred and damaged land left behind would clearly be subject to "recontamination" as a result of the less strict clean up standards being applied to the adjacent Boeing owned property. Contamination will obviously be transported by air and water to properties neighboring Boeing including the NASA owned area at the SSFL as well as neighborhoods surrounding the SSFL, Bell Canyon among them.

To be applying 2 different cleanup standards within the same overall property makes no sense. This AOC defined NASA cleanup is to an impractical standard that has never been done anywhere else in the world – and probably never will be again. It is an arbitrary and impractical standard relative to public health and the environment. This cleanup standard is without justification. Simply put, it is irrational. In the name of clean up that has no rational basis you are destroying that which you are charged to protect and preserve. You are proposing to remove everything, destroying the environment and its unique history and irreplaceable archeology and, at the same time putting public health at risk. How can those who authored this document or those who have presented it maintain a straight face? What is needed is a rational, scientifically sound, risk based clean up.

If I were to grade my property I would need to file a grading plan and water drainage plan with Ventura County. Yet we are presented with a plan involving an area hundreds of times larger than my lot, to be "graded" in an indefinite way. There really is no grading plan or drainage plan. It is not known if soil meeting the impossibly strict cleanup standards can be located to replace a mere fraction of what is to be removed. Considering the severity of the consequences, how can this all simply be allowed to happen? Alternative methods must be considered to effect a practical level of clean up that is risk based, not based on an arbitrary and overly strict standard that is beyond any clean up done anywhere in the world.

SB990 was struck down in part because of its arbitrary and unreasonably strict standards that are without peer. The AOCs are partly based on SB990. Applying the same

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reasoning as was applied to SB990, the AOCs themselves are at risk to be invalidated on the same grounds. Rather than undoing all the years of work that have ultimately brought us to where we are, I propose that the AOCs be preserved -- unlike what the DEIS is proposing for the NASA portion of SSFL. I propose that they be modified to incorporate risk based cleanup standards. The arbitrary 2017 completion date should be renegotiated as indicated by the CEQ, or at the least affirmed the 2010 Consent Order which requires that methods be in place by then. It is unrealistic to expect the completion of soil cleanup by 2017 and NASA should not be held to that. A realistic, achievable deadline should be renegotiated. Clean up can proceed over however many years with alternative sometimes serial in situ and ex situ techniques applied to the soil that would be far less destructive to the environmental, cultural and historical resources.

Inherent in NEPA and CEQA is the end use. That should define the risk based cleanup standard. Ultimate use is being completely ignored in this DEIS. Given the fact that NEPA and CEQA have not even been started, let alone completed, there is no way to consider those documents' recommendations in this plan. As I said in the beginning, the process has been perverted by disconnecting NEPA and CEQA from the DEIS and the elimination of all but the 2 most extreme options.

Preserving SSFL's cultural and historic resources creates the opportunity for the SSFL to become an open "space" park, allowing the wildlife corridor, the Chumash archeological sites, sacred sites and TCPs and our monuments to missile development and space exploration to be seen and admired. The preserved Chumash sacred sites serendipitously prophesize NASA's later use of the same land. Such an open "space" park gives further opportunity to showcase a living demonstration laboratory for innovative, experimental and proven decontamination strategies and techniques under the administration of the National Park Service. Academic institutions could become involved under a competitive system to apply their ingenuity to further the decontamination effort. Properly structured, financial resources could be identified and admission fees instituted to help sustain it. This plan illustrates responsible government leadership to protect both the environment and the people. This would be applauded as the Federal Government exhibiting demonstrable vision in its stewardship of this special land and preservation of its unique cultural, historical and environmental resources.

Sincerely,

Ronald B. Ziman, MD, FACP, FAAN
Associate Clinical Professor of Neurology,
David Geffen School of Medicine, UCLA
Vice President Bell Canyon HOA
Bell Canyon Representative to the SSFL

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From:	Christine Rowe
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01); ZORBA, PETER D. (HQ-LP040); Fellows, Merrilee (HQ-LD000)
Subject:	Fwd: Pierce College 2010 Traffic plan documents
Date:	Monday, September 09, 2013 3:26:26 AM
Attachments:	LADOT MOU_Pierce College_12_15_09.pdf

Dear Mr. Elliott,

I am sending you two different documents related to Pierce College's traffic plan. One is this document, the second is the school's 2010 Master Plan.

The reason that I am sending it is due to your Section 4.5 Traffic and Transportation.

I would like you to be aware that I read and commented on both the 2002 Pierce College Master Plan relative to the 2010 Pierce College Master Plan. In doing so, I told the LADOT that the traffic plan that had been submitted to them was full of false assumptions - essentially not worth the paper it was printed on. That is because what the current traffic plan showed versus the planned changes to the routing within the Pierce campus under their 2010 Master Plan, would have changed the routing within the college itself, and it would have made the Mason entrance to the college on the north no longer a through street.

On your document Table 4.5 - 2 and Table 4.5 - 3 you reference the peak hour volume with a date of 2011.

Please understand that the Pierce College proposed construction has not been completed. Also, the enrollment at Pierce has fluctuated over the years by changes of up to 10,000 students in a decade. I would say that Pierce is at its lower end of enrollment at this time - partially due to the costs associated with community college tuition, and partially associated with a reduction in the number of classes offered.

I do want you to compare your numbers to the Pierce studies to see if the numbers that are projected in their traffic study are similar in nature to NASA's.

Respectfully submitted.

Christine L. Rowe

SCOPING FOR TRAFFIC STUDY

This Memorandum of Understanding (MOU) acknowledges Los Angeles Department of Transportation (LADOT) requirements of traffic impact analysis for the following project:

DOT Case No: _____ EAF No. _____

Project Name: Pierce College Facilities Master Plan Update

Project Address: 6201 Winnetka Avenue, Woodland Hills, California 91371

Project Description: Increase in Student Full-time Equivalency of 1,909

Geographic Distribution: N 28% S 19% E 29% W 22% with 2% of trips within the immediate area surrounding the campus. See attached figures for both generalized and intersection project trip distribution. The trip distribution is based on student zip code data.

Trip Generation Rate(s): Other: Counts were taken at campus driveways in order to calculate the in/out rate of the campus during the AM/PM peak hours with the college's current and future (2015) Full-Time Equivalency (FTE) rate. Please see attached trip generation tables.

Land Use	Per FTE		Land Use		
	in	out		in	out
AM Trips	206	42			
PM Trips	113	97			

Project Buildout Year: 2015 Ambient or CMP Growth Rate: 1% Per Yr., Compounded

Related Projects: (To be researched by consultant under approval of LADOT)

Study Intersections PLEASE SEE ATTACHED PAGE (Additional study intersections have been added, per our meeting with LADOT)

(Subject to revision after CMP requirement, related projects, trip generation and distribution are determined)

1. _____ 4. _____
2. _____ 5. _____
3. _____ 6. _____

Trip Credits: (Exact amount of credit subject to approval by LADOT)

	yes	no
Transportation Demand Management (TDM)	☐	☒
Existing Active Land Use	☒	☐
Previous Land Use	☐	☒
Internal Trip	☐	☒
Pass-By Trip	☐	☒
Transit Credit (per LADOT Traffic Study guidelines)	☐	☒

This analysis must follow latest LADOT Traffic Study guidelines.

	Consultant	Developer
Name	Fehr & Peers	Pierce College – President Joy McCaslin
Address	15707 Rockfield Bl., Ste. 155, Irvine, 92618	6201 Winnetka Av., Woodland Hills, 91371
Phone No.	(949) 859-3200	(818) 719-6408

Approved by: _____ 12/15/09

Consultant's Representative Date

_____

LADOT Representative Date

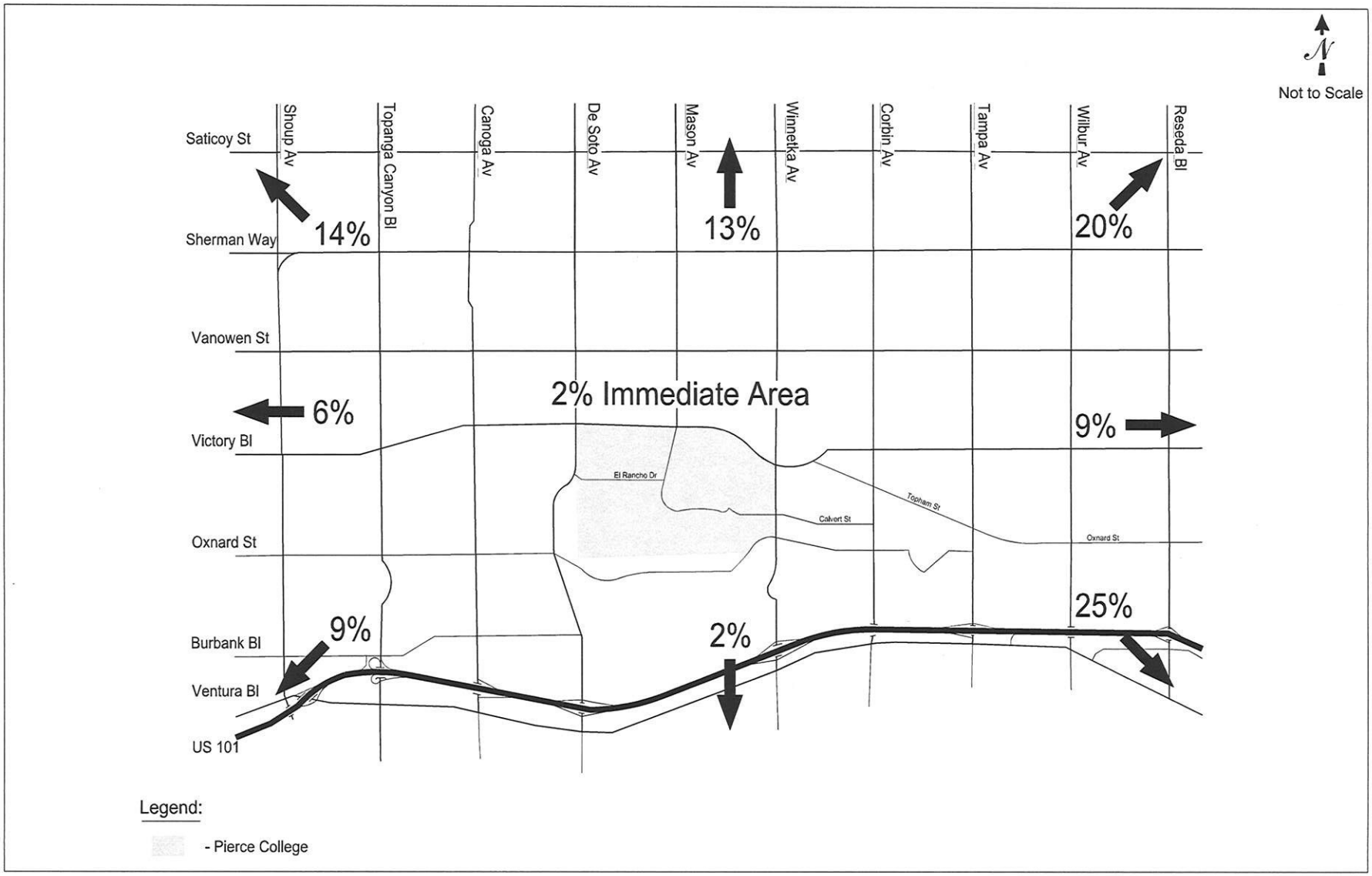
TRAFFIC STUDY APPROACH
PIERCE COLLEGE FACILITIES MASTER PLAN UPDATE

The Pierce College Facilities Master Plan Update project modifies and refines the Pierce College Facilities Master Plan approved in 2002. The traffic impact analysis is considered a supplemental analysis to the previous traffic impact analysis completed in July 2002 by Kaku Associates. The reason for this supplemental analysis is to determine whether or not the updated Master Plan would create new significant project impacts not identified in the original EIR. Since the current study is considered an amendment to the 2002 study, the baseline year for campus enrollment will remain at 2002. This assumption means the incremental growth produced by Pierce College in the future will continue to be measured from the full-time equivalent student (FTE) level in 2002 (13,591 FTE).

Existing street traffic conditions will be based on existing counts taken between 2007 and 2009, consistent with LADOT guidelines. In order to measure project impacts using 2002 enrollment as the campus baseline, the trips generated by the change in FTE from 2002 to 2009 (2,488 FTE) will be estimated and deducted from the existing counts prior to developing the future forecasts. Future baseline traffic for the year 2015 will be developed using a 1% per year compounded ambient growth rate and adding related projects, and then the total change in Pierce College-generated trips from 2002 to 2015 will be added to represent project trips.

The project's buildout year for the study will be Year 2015. The estimated FTE in 2014-2015 is 15,500, based on student enrollment trends and market conditions, a slight increase from the current 2009-2010 FTE of 14,763. As such, the campus is projected to add 1,909 FTE between 2002 and 2015 (15,500 in 2015 less 13,591 in 2002).

New empirical trip generation rates were developed for the campus academic trips by counting the campus driveways in fall 2008 and spring 2009 and comparing the observed driveway counts to the 2008-2009 FTE of 16,079. An adjustment was made to these rates to account for the fact that some Pierce College students park on street and are not captured in the driveway counts.



FEHR & PEERS
TRANSPORTATION CONSULTANTS

Oct 14, 2009 JS
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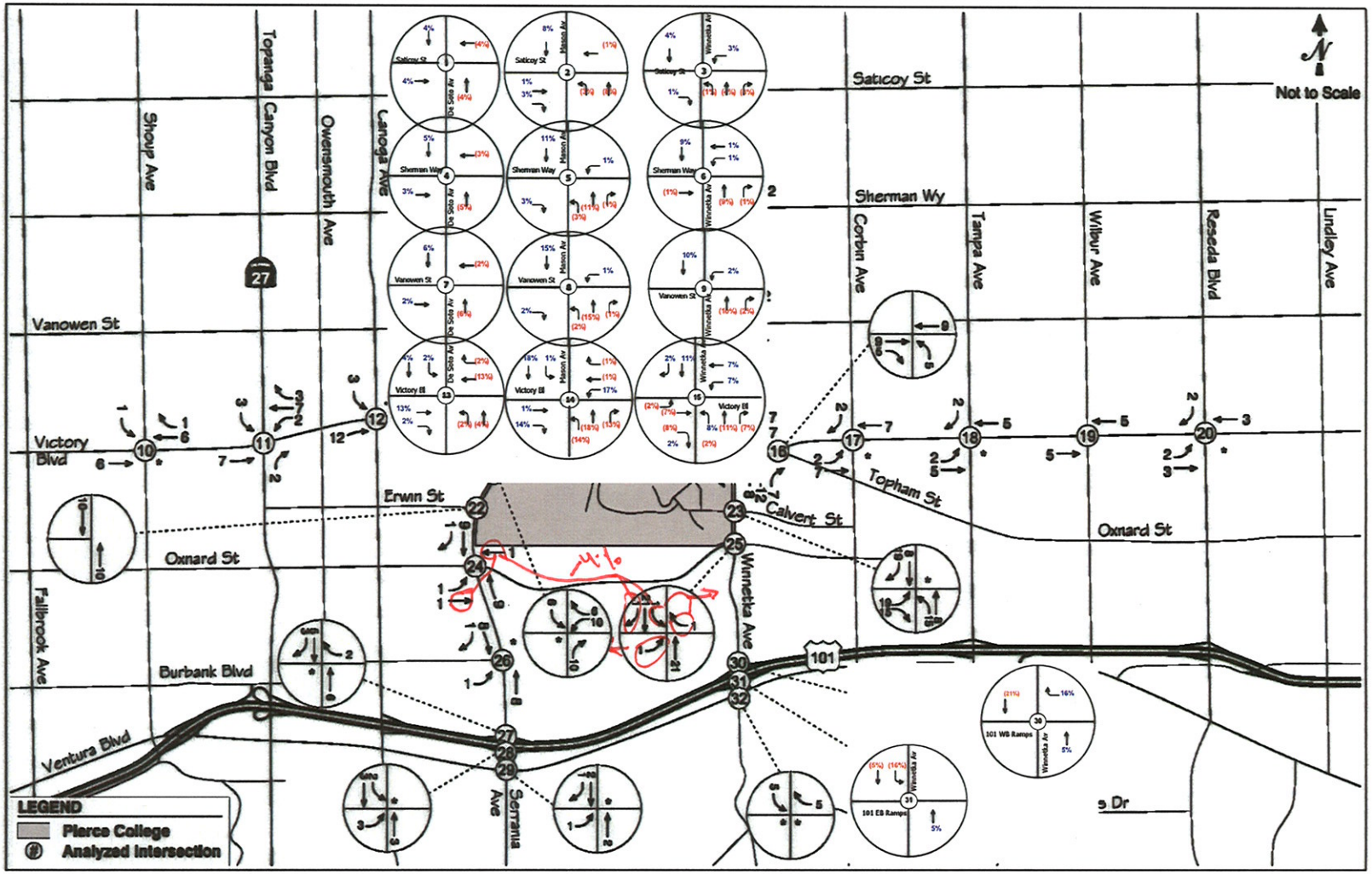
GENERALIZED PROJECT TRIP DISTRIBUTION PATTERN

FIGURE 12



FEHR & PEERS
TRANSPORTATION CONSULTANTS

Sep 08, 2009 JD
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ACADEMIC PROJECT PERCENTAGE TRIP DISTRIBUTION

FIGURE

TABLE 6
PIERCE COLLEGE FACILITIES MASTER PLAN UPDATE
TRIP GENERATION ESTIMATES: ACADEMIC GROWTH

	Student FTE	Daily	AM Peak Hour [a]			PM Peak Hour [a]		
			In	Out	Total	In	Out	Total
Existing Pierce College In/Out Trips (November 2008/March 2009)								
Mason Street Driveway			624	146	770	327	352	679
Lot 7 Driveway on Victory Boulevard			447	65	512	159	122	281
Calvert Street Driveway			388	90	478	197	250	447
El Rancho Drive Driveway			171	41	212	207	42	249
Total Driveway Trips		19,720	1,630	342	1,972	890	766	1,656
Estimate for On-Street Parkers [b]		990	82	17	99	45	38	83
Estimated Total Existing Trips		20,710	1,712	359	2,071	935	804	1,739
Empirical Trip Rates Based on 2008-2009 Data								
FTE (2008-2009) [c]	16,079							
2008-2009 Trip Rate per FTE		1.29	83%	17%	0.13	54%	46%	0.11
Base and Future FTE								
FTE (2001-2002 Base) [d]	13,591							
FTE (2008-2009 Existing) [c]	16,079							
FTE (2014-2015 Buildout) [c]	15,500							
Trips Added by Pierce College Academic Growth								
Change in FTE: 2002 to 2009	2,488	3,210	268	55	323	148	126	274
Change in FTE: 2009 to 2015	(579)	(750)	(62)	(13)	(75)	(35)	(29)	(64)
Change in FTE: 2002 to 2015	1,909	2,460	206	42	248	113	97	210

Notes:

a. Trip estimates are based on November 2008 and March 2009 manual in/out counts and estimated FTE.

b. Estimated existing trips generated by Pierce College students parked on surrounding street frontages (Victory Boulevard and Winnetka Avenue). Assumed to be 5% addition to driveway trips, based on percent of existing peak parking demands that are on-street

c. Source: Pierce College, November 2009.

d. Source: Pierce College, June 2002.

Pierce College Study Intersection List

1. De Soto Avenue & Saticoy Street
2. Mason Avenue & Saticoy Street
3. Winnetka Avenue & Saticoy Street
4. De Soto Avenue & Sherman Way
5. Mason Avenue & Sherman Way
6. Winnetka Avenue & Sherman Way
7. De Soto Avenue & Vanowen Street
8. Mason Avenue & Vanowen Street
9. Winnetka Avenue & Vanowen Street
10. Shoup Avenue& Victory Boulevard
11. Topanga Canyon Boulevard & Victory Boulevard
12. Canoga Avenue & Victory Boulevard
13. De Soto Avenue & Victory Boulevard
14. Mason Avenue & Victory Boulevard
15. Winnetka Avenue & Victory Boulevard
16. Topham Street & Victory Boulevard
17. Corbin Avenue & Victory Boulevard
18. Tampa Avenue & Victory Boulevard
19. Wilbur Avenue & Victory Boulevard
20. Reseda Boulevard & Victory Boulevard
21. De Soto Avenue & El Rancho Drive
22. De Soto Avenue & Erwin Street
23. Winnetka Avenue & Calvert Street
24. De Soto Avenue & Oxnard Street
25. Winnetka Avenue & Oxnard Street
26. De Soto Avenue & Burbank Boulevard
27. De Soto Avenue & US 101 WB ramps
28. De Soto Avenue & US 101 EB ramps
29. De Soto Avenue & Ventura Boulevard
30. Winnetka Avenue & US 101 WB ramps
31. Winnetka Avenue & US 101 EB ramps
32. Winnetka Avenue & Ventura Boulevard

From:	Christine Rowe
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01); Fellows, Merrilee (HQ-LD000)
Subject:	Fwd: PSR LA
Date:	Sunday, September 29, 2013 6:30:11 AM
Attachments:	PSR LA Tell NASA to Uphold its SSFL Cleanup Agreement.jpg

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Dear Mr. Elliott,

This action alert was posted on a website on FACEBOOK that I am a member of. I erased the preprogrammed message that was on this alert - below in red. I put in my own comments. Unfortunately, I sent the message without copying my comments. My comments were related to the fact that - to the best of my understanding - the person that posted this message does not live in the community that is impacted by the SSFL site today, or by any of the NASA SSFL proposed traffic routes - unless it is a freeway route? I am not sure where this person actually lives - but I believe it is in the eastern part of the San Fernando Valley.

Furthermore, the information from this individual's posts makes me believe that he has not read the whole document - and I believe that he is misquoting you? Yet I have never seen this person at a DTSC or NASA related meeting - because I have not seen him does not mean that he has not attended one.

Should you receive a PSR- LA action alert from me, could you please have someone from your staff forward it to me so that I can be assured that the message that I sent on that alert that you received was truly my own words?

It will come in from rowecl@yahoo.com - that should be an easier search for you from me.

Thank you.

Respectfully,

Christine L. Rowe

http://org2.salsalabs.com/o/5393/p/dia/action3/common/public/?action_KEY=15435

Tell NASA to Uphold its SSFL Cleanup Agreement

PSR-LA has been working for a proper cleanup of the Santa Susana Field Laboratory (SSFL) for over thirty years. SSFL, located in the hills above the San Fernando and Simi Valleys, was the site of extensive nuclear reactor work and rocket testing beginning in the early days of Cold War and lasting for decades that left it grossly polluted with radiological and chemical contaminants.

In addition to a partial nuclear meltdown and other nuclear accidents, approximately thirty thousand rocket tests were conducted at SSFL. These tests and related activities

released large quantities of chemically hazardous materials, including extraordinary quantities of TCE, PCBS, dioxins, and toxic heavy metals that contaminated soil and groundwater. Also used in large quantities was perchlorate, a thyroid disrupter that causes developmental disorders, and also contaminates much soil and groundwater at SSFL.

Over 30,000 rocket tests were conducted at SSFL.

The contaminants at SSFL pose a significant threat to public health. Federally-funded studies have found evidence that exposures onsite resulted in significantly elevated rates of death from various cancers for exposed workers, indications of increased cancer rates in nearby populations associated with their proximity to the site, and offsite releases of pollutants from SSFL at levels that could produce significant health effects in the surrounding communities.

In 2010, PSR-LA and hundreds of community members, health professionals, and concerned organizations successfully advocated for NASA and the Department of Energy to enter into agreements with the California Department of Toxic Substances Control to clean up the contamination on their portion of SSFL to background levels. In short, this means if they detect contamination, they are to clean it up.

NASA published a draft Environmental Impact Report on the SSFL cleanup that examined two options – one, a cleanup to background levels as it agreed to do in 2010, and the other, "no action." There are indications that some within NASA are pushing for it to break out of its cleanup agreement. Please tell NASA to uphold its commitment to the cleanup agreement, and *fully and completely* carry out its provisions, which provide substantial protections to public health from toxic chemicals at the site.

A sample message is below but we strongly encourage you to use your own words. You can just go into the body of the sample email and edit it as you see fit. If you do personalize your message, we encourage you to customize the e-mail subject line too. The deadline is Tuesday October 1. **Please send your message today!**

"Dear Mr. Elliott,

I'm writing to applaud NASA for having entered into a binding agreement with the State of California in 2010 to clean up all detectible contamination at the polluted Santa Susana Field Laboratory (SSFL). In response to NASA's Draft Environmental Report on the SSFL cleanup, I now urge NASA to now fully and rigorously carry out the commitments made in that cleanup agreement.

NASA's portion of SSFL is contaminated with toxic chemicals including PCBs, perchlorate, dioxins, heavy metals, and various volatile and semi-volatile organic compounds, all of which can produce harmful health effects. These materials can cause solid cancers and leukemias as well as developmental, genetic, neurological and immune system disorders.

NASA's contamination at SSFL has the potential to impact communities near the site and beyond. Indeed, pollutants from the site have already migrated offsite. The best way to ensure that public health is protected is to clean up to background as NASA has agreed to do.

NASA should be commended for having entered into the 2010 cleanup agreement. Now it is time to, without further delay, implement this historic cleanup agreement, thoroughly and completely.

Sincerely,"

(13) Valley Democrats Unit | PSR-LA | Physicians for So | PSR-LA | Physicians for So | California rolls out new en
org2.salsalabs.com/o/5393/p/dia/action3/common/public/?action_KEY=15435

Tell NASA to Uphold its SSFL Cleanup Agreement

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Over 30,000 rocket tests were conducted at SSFL.

In addition to a partial nuclear meltdown and other nuclear accidents, approximately thirty thousand rocket tests were conducted at SSFL. These tests and related activities released large quantities of chemically hazardous materials, including extraordinary quantities of TCE, PCBS, dioxins, and toxic heavy metals that contaminated soil and groundwater. Also used in large quantities was perchlorate, a thyroid disrupter that causes developmental disorders, and also contaminates much soil and groundwater at SSFL.

The contaminants at SSFL pose a significant threat to public health. Federally-funded studies have found evidence that exposures onsite resulted in significantly elevated rates of death from various cancers for exposed workers, indications of increased cancer rates in nearby populations associated with their proximity to the site, and offsite releases of pollutants from SSFL at levels that could produce significant health effects in the surrounding communities.

In 2010, PSR-LA and hundreds of community members, health professionals, and concerned organizations successfully advocated for NASA and the Department of Energy to enter into agreements with the California Department of Toxic Substances Control to clean up the contamination on their portion of SSFL to background levels. In short, this means if they detect contamination, they are to clean it up.

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A sample message is below but we strongly encourage you to use your own words. You can just go into the body of the sample email and edit it as you see fit. If you do personalize your message, we encourage you to customize the e-mail subject line too. The deadline is Tuesday October 1. **Please send your message today!**

Sample E-mail

Subject:

Santa Susana Cleanup Draft EIS

E-mails will be sent to:

Allen Elliott

NASA SSFL Program Director

Email:msfc-ssfl-eis@mail.nasa.gov

3:39 AM
9/29/2013

From:	Christine Rowe
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01); ZORBA, PETER D. (HQ-LP040); Fellows, Merrilee (HQ-LD000)
Subject:	Fwd: Topanga Fire 2005 Mudflow maps
Date:	Monday, September 09, 2013 5:26:55 AM
Attachments:	2005 Topanga Fire Debris Map topanga_attach_a.pdf 2005 topnga fire mudflow map 1_topanga_attach_c1.pdf 2005 topanga fire reporttopanga_bar_report.pdf

---

Dear Mr. Elliott,

This email bounced due to the sizes of the maps. I am going to try to send them in two emails.

Respectfully,

Christine L. Rowe

---------- Forwarded message ----------
From: **Christine Rowe** <crwhnc@gmail.com>
Date: Mon, Sep 9, 2013 at 3:08 AM
Subject: Fwd: Topanga Fire 2005 Mudflow maps
To: msfc-ssfl-eis@mail.nasa.gov
Cc: "James A. Elliott, (MSFC-AS10)" <allen.elliott@nasa.gov>, "peter.d.zorba@nasa.gov" <peter.d.zorba@nasa.gov>, "Merrilee Fellows, (HQ-NB000)" <mfellows@nasa.gov>

Dear Mr. Elliott,

Seems It Never Rains In Southern California Lyrics

Read more: Hammond Albert - Seems It Never Rains In Southern California Lyrics | MetroLyrics
"Seems it never rain in Southern California
Seems I've often heard that kind of talk before
It never rains in California
But girl, don't they warn ya
It pours man it pours."

On Table 2.5 - 1 reference is made to flooding at Santa Susana. While I do recognize that NASA's property is pretty much a mountain top area shaped with a bowl type of interior, if you remove the vegetation and two feet of soil at a minimum over 105 acres, if you remove all of the structures that are in place without the Best Management Practices in place, we could have major flooding and landslides if we were to have a major flood like a hundred year flood.

In fact, I believe that the original treatment train that was being designed for Santa Susana by the Boeing Expert Storm Water Panel was supposed to be able to mitigate the impacts of a major flood. I believe that NASA chose to do the ISRA removal action rather than put these more massive treatment systems into place.

Table 2.5 - 1 talks about the fact that FEMA has not created any flood insurance maps for the area.

I believe that if the DOE and NASA have to remove a great deal of vegetation as the result of their respective AOCs, parts of Santa Susana will be tremendously denuded. This would be similar in nature to the impacts of a brush fire.

Since a major brush fire did blow through about 70 % of the Santa Susana site, I have attached 2005 maps showing the direction of impacts of the various drainages - some of which could potentially impact my community of West Hills.

We also must consider that our local weather patterns nationwide are not the same as they were in the recent past. We have had prolonged periods of drought locally. Other areas of the United States have had tremendous flooding.

I don't believe that even NASA can predict future floods - when they will occur. Maybe NOAA can in the short term.

Please consider the potential impact of removing all of that soil and vegetation on the local communities. This should be a risk based cleanup - what are the potential dangers to my community if you remove this soil and vegetation to the AOC level?

Respectfully submitted,

Christine L. Rowe

QUADS:
CALABASAS 1-H1-25
OAT MOUNTAIN 1-H1-35
SANTA SUSANA 1-H1-34
THOUSAND OAKS 1-H1-24

T.G. PAGES:
499, 500, 529
530, 557, 558, 559

2500 0 2500 5000 7500 Feet

SANTA SUSANA CREEK INLET
CHATSWORTH PARK SOUTH
OAKWOOD MEMORIAL PARK (CEMETARY)
CHATSWORTH OAKS PARK
VENTURA WAY
CHATSWORTH NATURE PRESERVE
DAYTON CREEK INLET/CULVERT
BELL CREEK NORTH FORK (SOUTHERN INLET)
PD 716
PD 1684 LAS VIRGENES CREEK INLET
LONG VALLEY DRAIN INLET
PD 1684 DRI
PALO COMADO CREEK
CHESEBORO CANYON CREEK
SLOAN DRI
THOSAND OAKS DRI
PD 562 RISER W/ RAIL AND TIMBER
PD 1522 INLET
HORSE STABLES
DRIVER DRAIN INLET

TOPANGA CANYON BLVD
LASSEN ST
PLUMMER ST
ROSCOE BLVD
VALLEY CIRCLE BLVD
VANOWEN ST
LONG VALLEY RD
LAS VIRGENES RD
CHESEBORO RD
VENTURA (101) FREEWAY

LEGEND
- WATERSHED SUBAREA BOUNDARY
- FIRE BOUNDARY
- COUNTY BOUNDARY
- 1 SUBAREA NUMBER
- SUBAREA OUTLET
- MUDFLOW HAZARD AREA
- MUDFLOW ON STREET
- POTENTIAL MUDFLOW AREA
- DEBRIS RETAINING INLET
- STORM DRAIN INLET

N

ATTACHMENT C1

PREPARED BY WS/SS	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
DATE 11-08-05	TOPANGA FIRE SEPTEMBER 28, 2005 BURNED AREA = 21,603 ACRES
SCALE 1" = 2,500'	**POTENTIAL MUDFLOW IMPACT AREAS PHASE 1** (GREATER THAN .75 DESIGN DEBRIS EVENT)

November 14, 2005

PROCESSED
THANKS
Rod Kubomoto 11/14

TO: Rod H. Kubomoto

FROM: Patricia Wood PW
Facilities Section

TOPANGA FIRE
BURNED AREA REPORT
FILE NO. 2-11.40

The Topanga Fire occurred on September 28 to October 13, 2005, and burned a total of approximately 23,000 acres. The majority of the fire occurred within Ventura County with watersheds that flow into the Los Angeles County Flood Control District boundary.

Recommendations

1. Authorize us, by copy of this report, to provide confirmation to the following:

   a. Flood Maintenance Division (FMD) of the potential sediment impacts to all storm drains and debris control facilities maintained by Public Works within/below the burned area including Bell Canyon Debris Retaining Facility. It is recommended that FMD monitor these facilities for post fire sediment impacts during storms and clean out these facilities in accordance with established criteria. The monitoring should continue for the next four to five years until the watershed has significantly recovered from the burn.

   b. Road Maintenance Division (RMD) of the potential sediment impacts to all roads and culverts maintained by Public Works within/below the burned area. It is recommended that RMD monitor these facilities for post fire sediment impacts during storms and clean out these facilities in accordance with established criteria. The monitoring should continue for the next four to five years until the watershed has significantly recovered from the burn.

2. Authorize us to send copies of this report to the following agencies apprising them of the potential impacts of the burn:

   - Congressman Brad Sherman (27th District)
   - Congressman Elton Gallegly (24th District)
   - Congressman Henry Waxman (30th District)
   - Supervisor Michael D. Antonovich's Office
   - Supervisor Zev Yaroslavsky's Office
   - National Park Service
   - Natural Resources Conservation Service

- California Department of Transportation (Caltrans)
- Santa Monica Mountains Conservancy
- County of Los Angeles Fire Department
- Sanitation Districts of Los Angeles County
- Ventura County Watershed Protection Agency
- City of Agoura Hills
- City of Calabasas
- City of Hidden Hills
- City of Los Angeles

Attachments

A. Burned Area Map

B. Description of Burn and Potential Sediment Impact

C. Mudflow Phase Maps:
Attachment C-1, Phase 1 Map
Attachment C-2, Phase 2 Map
Attachment C-3, Phase 3 Map
Attachment C-4, Temporary Flood Control Facility Mitigation Measures

D. List of residents either offered or received mudflow engineering advice.

Summary of Potential Sediment Impact

The Topanga Fire, which started on September 28, 2005, burned approximately 23,000 acres in Ventura and Los Angeles Counties. The majority of the fire occurred in Ventura County with watersheds that flow into the Los Angeles County Flood Control District boundary. The burned area (see Attachment A) covers Debris Producing Areas 6 and 7. During storms, debris-laden flows from burned canyons may overwhelm drainage facilities adjacent to Las Virgenes Road, Alizia Canyon Drive, and Lake Manor Drive at Ventura Way, which are Public Works maintained roads (FMD - MD3). This may result in flooding and sediment deposition on roadways causing a potential hazard to motorists. Nuisance debris from burned hillsides could also deposit on nearby roads, including Kittridge Street and Randiwood Lane (Public Works maintained). These Public Works maintained roads should be monitored during and after storm events for sediment deposition for the next four to five years until the watershed has recovered. Valley Circle Boulevard, Long Valley Road, and Lassen Street are roadways likely to be impacted by burned area debris flows and are maintained by local cities.

Increased debris flow to Thousand Oaks Debris Retaining Inlet, PD 1684 Debris Retaining Inlet, Sloan Debris Retaining Inlet, and storm drain inlets including Driver Drain, PD 1522, PD 1684 (Las Virgenes Creek), PD 562, Long Valley Drain, Dayton Creek, and Santa Susana Creek is anticipated. Drainage facilities below the burned area should be monitored by FMD during storms and cleaned out as specified in Attachment C-4.

Details of potential sediment impacts are provided in Attachment B.

Mudflow Phase Maps

The phase maps for the fire are found in Attachment C. These maps are prepared when potential mudflows pose a major threat to homes, roadways, flood control facilities, or other public infrastructure. These maps were given to emergency response agencies, and mudflow forecast phase level alerts will be given to those agencies prior to each significant storm event throughout the storm season. The maps can be accessed through the Internet at http://www.ladpw.org/WRD/FIRE/. The phase maps identify the critical locations and magnitudes of potential mudflow impacts below the burned areas.

Coordination

WRD contacted FMD and RMD to assess the potential impact from the burn to Public Works' facilities. A storm response plan to mitigate the mudflow impacts was developed and includes the following:

- RMD to monitor areas of concern during storm events and be prepared to remove sediment from affected County roads and culverts.

- FMD to monitor drainage facilities as specified in Attachment C-4 and be prepared to clear storm drain inlets impacted by post burn debris.

From October 13, 2005, to October 18, 2005, Water Resources Division (WRD) staff contacted and/or provided mudflow engineering advice to 11 residences that may be impacted by potential flooding/debris flows during storms. Within the vicinity of the burn area, there are two residences in Knapp Ranch Area, one in the Lake Manor Area, one in the Calabasas Area, and seven in the Woosley Canyon Area. The list of these residences and their addresses are in Attachment D of this report.

If you require further information on this fire, please contact Sam Stevens at 458-6134 or William Saunders at 458-6187.

SS:yg
\\PW01\wrd\GENERAL\Facilities\Users\Sam\Topangal_Fire_Report-2.doc

Attach.

cc: B. T. Sasaki
Disaster Services (Dunn)
Flood Maintenance (Lee, Doudar)
Road Maintenance (Cadena, Lehman)
Watershed Management (Bapna, George)
Water Resources (Walden, Wood, Soriano, Saunders, Stevens, Files)

TOPANGA FIRE

ATTACHMENT A
BURNED AREA MAP
WITH DEBRIS PRODUCTION QUANTITIES

ATTACHMENT B

Topanga Fire
Description of Burn and Potential Sediment Impact

Fire Name: Topanga Fire
Date of Fire: September 28 to October 13, 2005
Burned Area: Approximately 23,000 acres
Location: Along the Ventura/Los Angeles County boundary line from the Chatsworth Area (Thomas Guide 500, A1) on the north to Oak Park/Agoura Hills Area to the south (Thomas Guide 558, E2). West of Valley Circle Boulevard. (Thomas Guide 529, B5) and east of Kanan Road. (Thomas Guide 558, E2). The fire was generally contained south of the Ronald Reagan (118) Freeway and north of the Ventura (101) Freeway. The burned area is delineated in Attachment A.

Vegetation Types Before Burn

Grass
Sage Scrub
Chamise
Oak Woodland

Improvements Damaged

Three residences, three commercial properties, and seven outbuildings were destroyed. One residence and two commercial properties were damaged.

Fire History

The Wright/Clampitt Fire, which started on September 25, 1970, is the most recent significant fire in the same area. The extent of the Wright/Clampitt Fire was from Malibu north to Newhall and burned 70,675 acres. The Topanga Fire burned area lies entirely within that for the Wright/Clampitt Fire.

Potential Sediment Impact Below/Within the Burned Area

The burned area, which is located in Debris Producing Areas 6 and 7, is subdivided into a total of 30 subarea watersheds (see Attachment A). Subareas 1 through 6, 19 through 21, and Subarea 25 are located within the Malibu Creek Watershed. Subareas 7 through 18 are located within the Los Angeles River Watershed. Subareas 26 through 30 are located within the Santa Clara River Watershed.

Subarea 1 and 2

Subarea 1 has an area of 0.32 square mile and is located near the Oak Park area of unincorporated Ventura County. The subarea was 8 percent burned creating an adjusted debris production potential of 5,500 cubic yards. Subarea 2 has an area of

0.40 square mile and is also located in unincorporated Ventura County. Subarea was 23 percent burned creating an adjusted debris production potential of 7,400 cubic yards. Debris and mudflow are anticipated to deposit at the mouth of the canyon in Ventura County. No adverse effects from debris flows are expected to County of Los Angeles residents or facilities from this subarea.

Subarea 3

Subarea 3 has an area of 1.83 square miles and is located near the Oak Park area of unincorporated Ventura County. The subarea was 46 percent burned creating an adjusted debris production potential of 30,100 cubic yards. Debris will flow down the canyon into a series of parks and ponds located in the Oak Park area. Mud and debris flows are anticipated to deposit on relatively flat terrain at the mouth of the canyon and have minimal or no impact to County of Los Angeles residents or facilities.

Subareas 4 and 5 – Palo Comado Canyon and Cheseboro Canyon

Subarea 4 (Palo Comado Canyon) has an area of 3.47 square miles and is located in unincorporated Ventura County and the City of Agoura Hills. The subarea was 92 percent burned creating an adjusted debris production potential of 69,100 cubic yards. Debris is anticipated to flow down the canyon and deposit along Palo Comado Creek.

Subarea 5 (Cheseboro Canyon) has an area of 2.96 square miles and is located in the Santa Monica Mountains National Recreation Area in unincorporated Ventura County and unincorporated County of Los Angeles. The subarea was 93 percent burned creating an adjusted debris production potential of 60,300 cubic yards. Debris is anticipated to flow down the canyon following Cheseboro Canyon Creek and deposit within low lying areas.

Palo Comado Creek and Cheseboro Canyon Creek outlet into Driver Drain which is maintained by Public Works, Flood Maintenance Division. It is recommended Flood Maintenance Division closely monitor and keep it clear of debris and sediment.

Subarea 6 – Las Virgenes Canyon

Subarea 6 has an area of 7.46 square miles and is located in Ventura County on property owned by the Santa Monica Mountains Conservancy (SMMC), and in the City of Calabasas. The subarea was 100 percent burned creating an adjusted debris production potential of 148,500 cubic yards. Debris will flow down the canyon to the accelerated debris inlet for PD 1684, which is located in Las Virgenes Creek. The PD 1684 facility is maintained by Public Works, Flood Maintenance Division.

The estimated design flow for PD 1684 inlet is 9,860 cfs. The burned and bulk flow rate for the area is 8,348 cfs. This indicates that the facility is adequate to handle capital storm bulked flows provided it is kept clear. The facility should be monitored for sediment flow and cleaned out as necessary. As added protection, it is recommended

Flood Maintenance Division implement the measures for this facility detailed within Attachment C-4 should be taken.

Sediment-laden flows from Subarea 6 are anticipated to make their way down Las Virgenes Creek. The creek reaches between Thousand Oaks and Parkmoor Boulevards are comprised of PD 1522, PD 1463, and PD 492, which are maintained by Public Works, Flood Maintenance Division. The burned and bulk flow for this reach is 9,486 cfs. The PD 1522 and PD 1463 facilities have a design capacity of 10,232 cfs, which is adequate capacity to handle capital storm bulked flows provided they are kept clear. The PD 492 facility has a design capacity of 8,500 cfs, but the available freeboard in the facility is anticipated to accommodate the capital storm bulked flows, provided it is kept clear. It is recommended Flood Maintenance Division monitor these reaches during major storms and keep them clear.

The reaches of Las Virgenes Creek south of Parkmoor Boulevard are maintained primarily by the City of Calabasas and a local business district. The burned and bulk flow for the reaches between Parkmoor Boulevard and Lost Hills Road ranges from 10,619 cfs to 14,935 cfs. The creek's culvert under the Ventura Freeway is maintained by Caltrans. The creek's culverts under Meadow Creek Lane (PD 2055, Line B) and Lost Hills Road (PD 2055, Line A) are maintained by Public Works, Flood Maintenance Division. Both culverts have a design capacity of 15,300 cfs, which is adequate to accommodate the capital storm bulked flows, provided they are kept clear. It is recommended Flood Maintenance Division monitor these culverts and keep them clear.

Subarea 7 – Bell Canyon

Subarea 7 has an area of 4.54 square miles and is located in unincorporated Ventura County. The subarea was 69 percent burned creating an adjusted debris production potential of 80,800 cubic yards. Debris will flow down the canyons and deposit into Bell Creek, a vegetated, natural streambed before reaching the County of Los Angeles. The mud and debris flows are not expected to impact County of Los Angeles residents or facilities.

Subarea 8 – Dayton Canyon

Subarea 8 has an area of 1.99 square miles and is located in unincorporated Ventura County, unincorporated County of Los Angeles, and the City of Los Angeles. The subarea was 95 percent burned creating an adjusted debris production potential of 43,800 cubic yards. Debris will flow down the canyon to the Public Works maintained Dayton Creek Storm Drain Inlet near the intersection of Roscoe Boulevard and Valley Circle Boulevard. During major storms, the inlet could plug causing post burn mudflow debris to deposit on Valley Circle Boulevard. Storm deposits could pose a hazard to the motoring public. It is recommended Flood Maintenance Division closely monitor the inlet and keep it clear of debris and sediment.

Subarea 9 – Woosley Canyon

Subarea 9 has a total area of 0.86 square mile and is located in unincorporated Ventura County, unincorporated County of Los Angeles, and the City of Los Angeles. The subarea was 94 percent burned creating an adjusted debris production potential of 20,900 cubic yards. Debris is expected to flow down Woosley Canyon and may deposit along Valley Circle Boulevard near its intersection with Woosley Canyon Road. Valley Circle Boulevard is maintained by the City of Los Angeles. Mudflow deposition on the road could become a hazard to motorists.

Public Works provided mudflow protection advice to seven residents in the Woosley Canyon area. Three residents were located in the Summit Mobile Home Park at 24425 Woosley Canyon Drive, Spaces 128, 133, and 174. Four residents were located in the Mountain View Estates Mobile Home Park at 24303 Woosley Canyon Road, Spaces 92, 93, 95, and 98.

Subarea 10 – Box Canyon

Subarea 10 has a total area of 1.28 square miles and is located in unincorporated Ventura County, unincorporated County of Los Angeles, and in the City of Los Angeles. The subarea was 86 percent burned creating an adjusted debris production potential of 34,100 cubic yards. Debris will flow down Box Canyon and deposit along Valley Circle Boulevard between Woosley Canyon Road and Box Canyon Road. Valley Circle Boulevard is maintained by the City of Los Angeles. Mudflow deposition on the road could be a hazard to motorists.

Subarea 11

Subarea 11 has an area of 0.34 square mile and is located in unincorporated Ventura County and in the unincorporated County of Los Angeles. The subarea was 63 percent burned creating an adjusted debris production potential of 8,900 cubic yards. Debris is anticipated to follow the natural watercourse and deposit near Lake Manor Drive and Ventura Way.

The subarea outlets into a culvert underneath Lake Manor Drive. If the culvert plugs, debris and sediment will back up north of Lake Manor Drive. Lake Manor Drive is maintained by Public Works, Road Maintenance Division. It is recommended Road Maintenance Division closely monitor the culvert underneath Lake Manor Drive and keep it clear of debris and sediment.

Public Works provided mudflow protection advice to a community church at 23449 Lake Manor Drive.

Subarea 12

Subarea 12 has an area of 0.45 square mile and is located in unincorporated Ventura County and the Chatsworth area of the City of Los Angeles. The subarea was 84 percent burned creating an adjusted debris production potential of 13,700 cubic

yards. Sediment flow is anticipated to spread and settle out where the hillside transitions to a flat area near Valley Circle Boulevard. No homes or structures are anticipated to be impacted by this nuisance flow.

Subarea 13

Subarea 13 has an area of 0.56 square mile and is located in unincorporated Ventura County and in the Chatsworth area of the City of Los Angeles. The subarea was 83 percent burned creating an adjusted debris production potential of 21,500 cubic yards. Debris flow is anticipated to follow the natural water course southwest of Oakwood Memorial Park Cemetery. Sediment and debris could potentially deposit along Lassen Street in the City of Los Angeles. No homes or structures appear to be threatened by this nuisance flow.

Subarea 14

Subarea 14 has an area of 0.69 square mile and is located in unincorporated Ventura County and in the Chatsworth area of the City of Los Angeles. The subarea was 90 percent burned creating an adjusted debris production potential of 25,600 cubic yards. Debris and sediment will likely deposit in Chatsworth Park South, where the canyon becomes wider and flattens out. No homes or structures appear to be threatened by this nuisance flow.

Subarea 15 – Santa Susana Creek

Subarea 15 has an area of 1.61 square miles and is located in unincorporated Ventura County, unincorporated County of Los Angeles, and in the City of Los Angeles. The subarea was 40 percent burned creating an adjusted debris production potential of 40,300 cubic yards. Debris flow will follow Santa Susana Wash and will likely deposit along the natural watercourse.

Santa Susana Wash flows into the Santa Susana Creek Inlet which is maintained by Public Works, Flood Maintenance Division. A significant amount of debris and sediment is expected to deposit behind a railroad culvert upstream of this inlet. It is recommended Flood Maintenance Division monitor this inlet during and after storms and keep it clear of debris.

Subarea 16

Subarea 16 has an area of 0.80 square mile and is located in unincorporated Ventura County and in the City of Los Angeles. The subarea was 84 percent burned creating an adjusted debris production potential of 19,300 cubic yards. Debris will flow down the canyon to a storm drain inlet (PD1653) which eventually drains into Bell Canyon Debris Retention facility.

Public Works and the City of Los Angeles jointly maintain PD1653 with the City maintaining the inlet portion of the drain. If the inlet becomes plugged, burned area

debris will back up and possibly overflow onto Sunset Ridge Court. A recommendation to prepare the facility for the upcoming storm season is outlined in Attachment C-4.

Subarea 17

Subarea 17 has an area of 0.10 square mile and is located in unincorporated County of Los Angeles and the City of Los Angeles. The subarea was 71 percent burned creating an adjusted debris production potential of 4,200 cubic yards. Debris is expected to flow down the canyon and deposit along Randiwood Lane and Kittridge Street. These streets are maintained by Public Works, Road Maintenance Division. It is recommended Road Maintenance Division monitor these streets for sediment flow during and after any significant rainfall events and clear debris as needed.

Public Works provided mudflow protection advice to the residents at 6652 Randiwood Lane and 6644 Randiwood Lane on October 13, 2005.

Subarea 18

Subarea 18 has an area of 0.40 square mile and is located in unincorporated Ventura County. The subarea was 87 percent burned creating an adjusted debris production potential of 11,200 cubic yards. Debris will flow down the canyon to a pair of storm drain inlets at the upstream end of Long Valley Storm Drain.

Long Valley Storm Drain's inlets are maintained by Public Works, Flood Maintenance Division. If the inlets plug, sediment flows will potentially follow the natural watercourse through residents' properties and along Long Valley Road in the City of Hidden Hills. As specified in Attachment C-4, it is recommended Flood Maintenance Division monitor and clean the facility for debris and sediment during and after any significant rainfall event.

Subarea 19

Subarea 19 has an area of 0.22 square mile and is located in unincorporated Ventura County and in unincorporated County of Los Angeles. The subarea was 77 percent burned creating an adjusted debris production potential of 7,000 cubic yards. Debris flow from the burned canyon will deposit in Sloan Debris Retaining Inlet, which is maintained by Public Works, Flood Maintenance Division. It is recommended Flood Maintenance Division monitor the inlet for sediment and debris build up during and after storms and clean it out as necessary.

Subarea 20

Subarea 20 is a canyon with an area of 0.22 square mile and is located in unincorporated Ventura County and in unincorporated County of Los Angeles. The subarea was 73 percent burned creating an adjusted debris production potential of 6,800 cubic yards. Debris is anticipated to flow down the hillsides and into the Thousand Oaks Debris Retaining Inlet at the mouth of the canyon.

The inlet is maintained by Public Works, Flood Maintenance Division. It is recommended Flood Maintenance Division monitor the inlet and clean it out as necessary during and after any significant storms.

Subarea 21

Subarea 21 is a small canyon with an area of 0.27 square mile and is located in unincorporated Ventura County. The subarea was 99 percent burned creating an adjusted debris production potential of 5,500 cubic yards. Debris is anticipated to flow down the hillsides and to PD562's inlet at the mouth of the canyon. The inlet is equipped with a riser and a rail and timber structure.

The inlet to PD 562 is maintained by Public Works, Flood Maintenance Division. It is recommended that Flood Maintenance Division monitor the inlet and clean it out as necessary during and after any significant storms.

Subarea 22

Subarea 22 is a small hillside with an area of 0.04 square mile and is located in the City of Calabasas and unincorporated County of Los Angeles. The subarea was 100 percent burned creating an adjusted debris production potential of 1,900 cubic yards. Debris is anticipated to flow down the hillsides and into the PD1684 Debris Retaining Inlet just West of Las Virgenes Road. If the inlet plugs, debris will overflow onto Las Virgenes Road, which is maintained by Public Works, Road Maintenance Division.

The PD 1684 Debris Retaining Inlet is maintained by Public Works, Flood Maintenance Division. It is recommended Flood Maintenance Division monitor the inlet for sediment flow and clean it out as necessary during and after significant storms.

Subarea 23

Subarea 23 has an area of 0.84 square mile and is located in unincorporated Ventura County, unincorporated County of Los Angeles, and the City of Calabasas. The subarea was 67 percent burned creating an adjusted debris production potential of 17,900 cubic yards. Debris is expected to flow down the canyon and into the inlet of PD 1522. If the inlet plugs, debris will overflow onto Las Virgenes Road causing a hazard to motorists. There are existing k-rails upstream of the inlet, and the inlet is equipped with debris posts.

The PD 1522 facility is maintained by Public Works, Flood Maintenance Division. Las Virgenes Road is maintained by Public Works, Road Maintenance Division. It is recommended Flood Maintenance Division and Road Maintenance Division monitor the inlet and road, respectively, for sediment deposition during and after major storm events and clean them as necessary.

Subarea 24

Subarea 24 has an area of 0.12 square mile and is located in unincorporated County of Los Angeles and in the City of Calabasas. The subarea was 73 percent burned creating an adjusted debris production potential of 4,600 cubic yards. Debris and sediment is anticipated to deposit at the mouth of the canyon just west of Las Virgenes Road.

The resident at 5607 Las Virgenes Canyon Road declined engineering advice. No other homes or structures appear to be threatened by debris flows.

Subareas 25-30

Subarea size, percent burned, and adjusted debris production potential for Subareas 25 to 30 can be found in the table below. The subareas are located in unincorporated Ventura County. Debris and sediment are likely to deposit at the mouths of their respective canyons.

Subarea	Area (Square Miles)	Percent Burned	Adjusted Debris Production (Cubic Yard)
25	1.69	56	31,600
26	0.80	76	17,800
27	4.53	90	102,900
28	2.00	53	34,500
29	1.19	69	24,200
30	1.38	46	34,500

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TOPANGA FIRE

ATTACHMENT C-1
PHASE 1 POTENTIAL MUDFLOW IMPACT AREAS

TOPANGA FIRE

ATTACHMENT C-2
PHASE 2 POTENTIAL MUDFLOW IMPACT AREAS

TOPANGA FIRE

ATTACHMENT C-3
PHASE 3 POTENTIAL MUDFLOW IMPACT AREAS

ATTACHMENT C-4

Topanga Fire
Summary of Potential Sediment Impact to
Major Public Works Maintained Facilities
Below the Burn and Recommended Temporary Mitigation Measures

Fire Name: Topanga Fire
Date of Fire: September 28 through October 13, 2005
Burned Area: Approximately 23,000 acres
Location: Along the Ventura / LA County Boundary line from Chatsworth area (TG 500-A1) on the north to Oak Park/ Agoura Hills Area to the South (TG 558-E2). West of the Valley Circle Blvd. (529-B5) and East of Kanan Rd (TG 558-E2). The fire was generally contained between the Ronald Reagan (118) Freeway and the Ventura (101) Freeway.

Canyons Affected by the Burn

Bell Canyon	Las Virgenes Canyon
Box Canyon	Santa Susana Pass Canyon
Cheseboro Canyon	Palo Comado Canyon
Dayton Canyon	Woolsey Canyon

Flood Control Facilities Damaged

None

Fire History

The Wright/Clampitt Fire, which started on September 25, 1970, is the most recent significant fire in the same area. The extent of the Wright/Clampitt Fire was from Malibu north to Newhall and burned 70,675 acres. The Topanga Fire burned area lies entirely within that for the Wright/Clampitt Fire.

Potential Sediment Impact Below/Within the Burned Area

The Topanga Fire burned area is subdivided into a total of 30 subarea watersheds (see Attachment C-3). Potential sediment impact mitigation measures are discussed for the Las Virgenes Creek Inlet, the Long Valley Drain Inlets, the Bell Creek North Fork (Southern) Inlet, the Dayton Creek Inlet at Roscoe Boulevard, and the Santa Susana Creek Inlet. All other locations below the burned area called out on Attachment C-3 will need to be reassessed during and after any significant rainfall events.

Las Virgenes Canyon -Subarea 6

Las Virgenes Canyon-Subarea 6 has an area of 7.46 square miles, of which 99 percent is located in unincorporated Ventura County and property owned by the Santa Monica Mountains Conservancy (SMMC). The entire watershed flows down into the remaining 1percent of the watershed area located within the City of Calabasas. The subarea was 100 percent burned creating an estimated adjusted debris production potential of 148,500 cubic yards. Debris will flow down the canyon to the Las Virgines Creek Inlet (PD1684) which is maintained by the Department of Public Works.

Figure 1

Design Division estimates the design capacity of the Las Virgenes Creek Inlet is 9,860 cfs. The burned and bulked flow calculated for the area in June 2002 (using Public Works' new Zone Method of hydrology) is 8,348 cfs. This indicates that the facility is adequate to handle Capital Storm bulked flows. To direct mud and debris flows to the Las Virgenes Creek Inlet and provide additional freeboard, it is recommended that plywood be attached to the existing right-of-way fence bordering the apartment complex and the inlet facility as shown in Figure 1.

From the base of the fence, the plywood should rise a minimum of 3 feet. The SMMC will be adviced to attach plywood along its fence, from the gate to Public Works' fencing, to aid in directing flows to the inlet facility. The SMMC will also be advised to cut down any dead trees immediately upstream of the inlet to prevent their dislodgement and blocking of the inlet facility during storms.

Long Valley Drain -Subarea 18

Long Valley Drain-Subarea 18 has an area of 0.40 square miles of which 95 percent is located in unincorporated Ventura County on property owned by the SMMC. The watershed flows down into the remaining 5 percent of the watershed area located within the City of Hidden Hills. The subarea was approximately 87 percent burned creating an estimated adjusted debris production potential of 11,200 cubic yards. Debris will flow down the canyon to a pair of storm drain inlets which initiate Long Valley Storm Drain. The inlets and drain are maintained by Public Works.

Figure 2

Design Division estimates that the total design capacity for the pair of inlets is 620 cfs. The burned and bulked flow calculated for the area in 1988 (using Public Works' old Depth Method of hydrology) is 930 cfs. This indicates that the facility could be potentially overwhelmed by capital storm bulked flows. As shown in Figure 2, the inlets have become overgrown with vegetation and should be cleared. Drawing No. 547-D4.4. indicates that LACFCD right of way exists around the inlets.

Bell Creek North Fork (Southern) Inlet -Subarea 16

Bell Creek North Fork (Southern) Inlet-Subarea 16 has an area of 0.80 square miles of which approximately 67 percent is located in unincorporated Ventura County territory. The watershed flows down into the remaining 33 percent of the watershed area located within the City of Los Angeles (El Escorpion Park). The subarea is approximately 84 percent burned creating an estimated adjusted debris production potential of 19,300 cubic yards. Debris will flow down the canyon to a storm drain inlet (PD1653) which eventually drains into Bell Canyon Debris Retention facility. The Department of Public Works and the City of Los Angeles maintain PD1653 jointly, with the City maintaining the inlet portion of the drain.

Figure 3

The facility's "As Built" plans indicate the design capacity to the inlet is 1,870 cfs. The burned and bulked flow calculated for the area in 1970 (using Public Works' old Depth Method hydrology) is 1,870 cfs. This indicates that the facility is adequate for Capital Storm bulked flows. As shown in Figure 3, the inlet has become overgrown with vegetation and should be cleared. As indicated within Drawing No. 134-F133.6, the City of Los Angeles should be advised to clean the inlet.

Dayton Creek Inlet -Subarea 8

Dayton Creek Inlet -Subarea 8 has an area of 1.99 square miles of which approximately 50 percent is located in unincorporated Ventura County territory. The watershed flows down into the remaining 50 percent of the watershed area located within the City of Los Angeles. The subarea is approximately 95 percent burned creating an estimated adjusted debris production potential of 43,800 cubic yards. Debris will flow down the canyon to the Public Works-maintained Dayton Creak Storm Drain Inlet located near the intersection of Roscoe and Valley Circle Boulevards. The County Assessors map for Parcel Number 2017-026-009 indicates that an LACFCD easement exists 54 feet upstream of the inlet.

Figure 4

Design Division estimates the inlet design capacity is 2,920 cfs. The burned and bulked flow calculated for the location in 1970 (using Public Works' old Depth Method hydrology) is 3,880 cfs, which is greater than the inlet's design capacity. As shown in Figure 3, the inlet has become overgrown with vegetation and should be cleared. Flows in excess of the inlet's capacity will likely deposit on Valley Circle and Roscoe Boulevards, which are maintained by the City of Los Angeles. The City will be advised of this potential impact to its streets.

Santa Susana Creek Inlet -Subarea 15

Santa Susana Creek Inlet -Subarea 15 has an area of 1.61 square miles of which approximately 5 percent is located in unincorporated Ventura County territory. The watershed flows down into the remaining 95 percent of the watershed area located within the City of Los Angeles. The subarea is approximately 40 percent burned creating an estimated adjusted debris production potential of 40,300 cubic yards. Debris will flow down the canyon to the Santa Susana Creek Channel Inlet which is maintained by the Department of Public Works.

Figure 5

The facility's "As-Built" plans indicate that the design flow to the inlet is 3,460 cfs. The burned and bulked flow calculated for the area in 1970 (using Public Works' old Depth Method hydrology) is 4,800 cfs, which is greater than the inlet's design capacity. As shown in Figure 5, a railroad culvert restricts debris flows upstream of the facility inlet. Thus Capital Storm bulked flows are expected to be regulated below the calculated burned and bulked flows and large debris kept west of the railroad culvert.

Figure 6

Similar to the recommendation given for the same location after the 1970 Wright/Clampitt Fire, the Santa Susana Creek Channel Inlet (Figure 6) should be kept clear of burned area debris. It is recommended that the area be subject to storm patrols to insure that the channel does not become obstructed.

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C:Topanga fire attachment C4-2.doc

TOPANGA FIRE

September 28 to October 13, 2005

List of Homeowners Contacted or Received Mudflow Engineering Advice

Subarea	Name	Address	Mudflow Engineering Advice	Date	Engineer / Division
19	Rosenberg, Kate	2835 Shady Grove Place Calabasas, CA 91307	Provided Engineering Advice	10/18/05	Saunders/Stevens WRD
9	Resident	24303 Woosley Canyon Rd., #92 West Hills, CA 91304	Left Engineering Advice	10/13/05	Saunders/Stevens WRD
9	Smith, Trish	24303 Woosley Canyon Rd., #93 West Hills, CA 91304	Provided Engineering Advice	10/13/05	Saunders/Stevens WRD
9	Mr.& Mrs. Kramer	24303 Woosley Canyon Rd., #95 West Hills, CA 91304	Provided Engineering Advice	10/13/05	Saunders/Stevens WRD
9	Stine, Bill	24303 Woosley Canyon Rd., #98 West Hills, CA 91304	Provided Engineering Advice	10/13/05	Saunders/Stevens WRD
9	Resident	24426 Woosley Canyon Rd., #128 Canoga Park, CA 91304	Left Engineering Advice	10/13/05	Saunders/Stevens WRD
9	Mr. & Mrs. Terrusa	24425 Woosley Canyon Rd., #133 Canoga Park, CA 91304	Provided Engineering Advice	10/13/05	Saunders/Stevens WRD
9	Mr. & Mrs. Parks	24427 Woosley Canyon Rd., #174 Canoga Park, CA 91304	Provided Engineering Advice	10/13/05	Saunders/Stevens WRD
11	Stevens, Jesse	23449 Lake Manor Drive Chatsworth, CA 91311	Provided Engineering Advice	10/13/05	Saunders/Stevens WRD
17	Resident	6652 Randiwood Lane West Hills, CA 91307	Left Engineering Advice	10/13/05	Saunders/Stevens WRD
17	Resident	6644 Randiwood Lane West Hills, CA 91307	Left Engineering Advice	10/13/05	Saunders/Stevens WRD
24	Resident	5607 Las Virgenes Road Calabasas, CA 91302	Declined Engineering Advice	10/18/05	Saunders/Stevens WRD

ATTACHMENT D

QUADS:
CALABASAS 1-H1-25
OAT MOUNTAIN 1-H1-35
SANTA SUSANA 1-H1-34
THOUSAND OAKS 1-H1-24

T.G. PAGES:
499, 500, 529
530, 557, 558, 559

2500 0 2500 5000 7500 Feet

9321 VENTURA WAY

MOUNTAIN VIEW ESTATES
MOBILE HOME PARK
24303 WOOSLEY CANYON RD

SUMMIT MOBILE HOME PARK
24425 WOOSLEY CANYON RD.

6652 RANDIWOOD LANE

2835 SHADY GROVE PLACE

DEBRIS PRODUCTION TABLE

SUBAREA	AREA (SQ.MI.)	%BURNED	ADJ. DEBRIS PROD. (CY)
1	0.32	08	5,500
2	0.40	23	7,400
3	1.83	46	30,100
4	3.47	92	69,100
5	2.96	93	60,300
6	7.46	100	148,500
7	4.54	69	80,800
8	1.99	95	43,800
9	0.86	94	20,900
10	1.28	86	34,100
11	0.34	63	8,900
12	0.45	84	13,700
13	0.56	83	21,500
14	0.69	90	25,600
15	1.61	40	40,300
16	0.80	84	19,300
17	0.10	71	4,200
18	0.40	87	11,200
19	0.22	77	7,000
20	0.22	73	6,800
21	0.27	91	5,500
22	0.04	100	1,900
23	0.84	67	17,900
24	0.12	73	4,600
25	1.69	56	31,600
26	0.80	76	17,800
27	3.77	90	77,900
28	2.00	53	34,500
29	1.19	69	24,200
30	1.38	46	34,500

NOTE: FINAL FIRE BOUNDARY PROVIDED BY THE NATIONAL PARK SERVICE: U.S. DEPARTMENT OF INTERIOR, BURN SEVERITY MAP DATED OCT. 19, 2005. ADJUSTED DEBRIS PRODUCTION QUANTITIES ARE BASED ON PUBLIC WORKS' PRELIMINARY FIRE BOUNDARY DATED OCT. 13, 2005 AND ARE FULL DEBRIS PRODUCTION RATES FOR BURNED AREAS AND HALF OF THAT RATE FOR UNBURNED AREAS. THE BURNED AREA WITHIN CHATSWORTH RESERVOIR HAS BEEN OMITTED FOR CLARITY.

N

LEGEND
- WATERSHED SUBAREA BOUNDARY
- FIRE BOUNDARY
- COUNTY BOUNDARY
- 1 SUBAREA NUMBER
- SUBAREA OUTLET
- LOCATION OF BUILDINGS THAT MAY BE IMPACTED

ATTACHMENT A

PREPARED BY: WS/SS	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
DATE: 11-8-05	TOPANGA FIRE BURNED AREA: 21,603 ACRES DATE OF FIRE: 9-28-05
SCALE: 1" = 2,500'	

From:	Christine Rowe
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01); ZORBA, PETER D. (HQ-LP040); Fellows, Merrilee (HQ-LD000)
Subject:	Fwd: Topanga Fire 2005 Mudflow maps
Date:	Monday, September 09, 2013 5:28:58 AM
Attachments:	2005 topanga fire mud flow 2 map topanga_attach_c2.pdf 2005 Topanga Fire Mud flow map 3 topanga_attach_c3.pdf

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Dear Mr. Elliott,

I hope that the second email with 2005 Topanga Fire maps made it. These are the last two maps.

Respectfully,

Christine L. Rowe

---------- Forwarded message ----------
From: **Christine Rowe** <crwhnc@gmail.com>
Date: Mon, Sep 9, 2013 at 3:08 AM
Subject: Fwd: Topanga Fire 2005 Mudflow maps
To: msfc-ssfl-eis@mail.nasa.gov
Cc: "James A. Elliott, (MSFC-AS10)" <allen.elliott@nasa.gov>, "peter.d.zorba@nasa.gov" <peter.d.zorba@nasa.gov>, "Merrilee Fellows, (HQ-NB000)" <mfellows@nasa.gov>

QUADS:
CALABASAS 1-H1-25
OAT MOUNTAIN 1-H1-35
SANTA SUSANA 1-H1-34
THOUSAND OAKS 1-H1-24

T.G. PAGES:
499, 500, 529
530, 557, 558, 559

2500 0 2500 5000 7500 Feet

SANTA SUSANA CREEK INLET
CHATSWORTH PARK SOUTH
OAKWOOD MEMORIAL PARK (CEMETARY)
CHATSWORTH OAKS PARK
VENTURA WAY
CHATSWORTH NATURE PRESERVE
DAYTON CREEK INLET/CULVERT
BELL CREEK NORTH FORK (SOUTHERN INLET)
PD 716
PD 1684 LAS VIRGENES CREEK INLET
PD 1684 DRI
LONG VALLEY DRAIN INLET
PALO COMADO CREEK
SLOAN DRI
THOSAND OAKS DRI
PD 562 RISER W/ RAIL AND TIMBER
CHESEBORO CANYON CREEK
PD 1522 INLET
HORSE STABLES
DRIVER DRAIN INLET

LASSEN ST
PLUMMER ST
ROSCOE BLVD
VANOWEN ST
LONG VALLEY RD
VENTURA (101) FREEWAY
TOPANGA CANYON BLVD
VALLEY CIRCLE BLVD
LAS VIRGENES RD
KANAN RD
CHESEBORO RD

LEGEND
- WATERSHED SUBAREA BOUNDARY
- FIRE BOUNDARY
- COUNTY BOUNDARY
- 1 SUBAREA NUMBER
- SUBAREA OUTLET
- MUDFLOW HAZARD AREA
- MUDFLOW ON STREET
- POTENTIAL MUDFLOW AREA
- DEBRIS RETAINING INLET
- STORM DRAIN INLET

N

ATTACHMENT C3

PREPARED BY: WS/SS	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
DATE: 11-8-05	TOPANGA FIRE SEPTEMBER 28, 2005 BURNED AREA = 21,603 ACRES
SCALE: 1" = 2,500'	**POTENTIAL MUDFLOW IMPACT AREAS PHASE 3** (GREATER THAN .75 DESIGN DEBRIS EVENT)

QUADS:
CALABASAS 1-H1-25
OAT MOUNTAIN 1-H1-35
SANTA SUSANA 1-H1-34
THOUSAND OAKS 1-H1-24

T.G. PAGES:
499, 500, 529
530, 557, 558, 559

2500 0 2500 5000 7500 Feet

SANTA SUSANA CREEK INLET
CHATSWORTH PARK SOUTH
OAKWOOD MEMORIAL PARK (CEMETARY)
CHATSWORTH OAKS PARK
VENTURA WAY
CHATSWORTH NATURE PRESERVE
DAYTON CREEK INLET/CULVERT
BELL CREEK NORTH FORK (SOUTHERN INLET)
PD 716
PD 1684 LAS VIRGENES CREEK INLET
PD 1684 DRI
LONG VALLEY DRAIN INLET
PALO COMADO CREEK
CHESEBORO CANYON CREEK
SLOAN DRI
THOSAND OAKS DRI
PD 562 RISER W/ RAIL AND TIMBER
PD 1522 INLET
HORSE STABLES
DRIVER DRAIN INLET

LASSEN ST
PLUMMER ST
ROSCOE BLVD
VANOWEN ST
LONG VALLEY RD
VENTURA (101) FREEWAY
TOPANGA CANYON BLVD
VALLEY CIRCLE BLVD
LAS VIRGENES RD
CHESEBORO RD
KANAN RD

LEGEND
- WATERSHED SUBAREA BOUNDARY
- FIRE BOUNDARY
- COUNTY BOUNDARY
- 1 SUBAREA NUMBER
- SUBAREA OUTLET
- MUDFLOW HAZARD AREA
- MUDFLOW ON STREET
- POTENTIAL MUDFLOW AREA
- DEBRIS RETAINING INLET
- STORM DRAIN INLET

N

ATTACHMENT C2

PREPARED BY: WS/SS	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
DATE: 11-08-05	TOPANGA FIRE SEPTEMBER 28, 2005 BURNED AREA = 21,603 ACRES
SCALE: 1" = 2,500'	**POTENTIAL MUDFLOW IMPACT AREAS PHASE 2** (GREATER THAN .75 DESIGN DEBRIS EVENT)

From:	Christine Rowe
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01); ZORBA, PETER D. (HQ-LP040); Fellows, Merrilee (HQ-LD000)
Subject:	Fwd: West Hills and West Hills"s School Maps
Date:	Monday, September 09, 2013 3:05:52 AM
Attachments:	Hamlin Street School ShoupAvenue Crosswalk.pdf Enadia Steet Schooll Crossings.pdf Welby Way School Crossings.pdf Haynes Steet School Crossings.pdf Justice Street School Crossings.pdf Pomelo School Crossings.pdf Capistrano School Crossings.pdf Nevada School Crossings.pdf Schools map.jpg screen shot LAUSD school map west SFV.jpg

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Dear Mr. Elliott,

On NASA DEIS Figure 3.12.- 3, the Figure shows Schools, Parks, and Open Space. It shows the Region of Influence Roadways.

Because this map shows areas of open space that are not along the proposed traffic routes, it is not clear to me if this document should show all schools in West Hills, both public and private including preschools and Pierce College. I include Pierce College because I have read their traffic study, and some of the roads that you will be accessing will also be impacted by Pierce traffic. Pierce College is roughly two miles east of Topanga and Victory.

This is one link that I found for schools in the LAUSD.
http://laschoolboard.org/sites/default/files/images/maps/2012-13BoardDistrict4Map.pdf

I have also taken screen shots of other LAUSD maps which I have attached. I have attached all of the elementary school maps for West Hills that I am familiar with.

Based upon my research, if you wanted to indicate the major schools in West Hills (I do not know what ones you missed in other Neighborhood Council areas), I believe that you have not noted the following schools:

1. Enadia Way Elementary
2. Welby Way Elementay (which also is a Magnet school)

Another school that I found reference to was Ingenium Charter School.

NASA needs to be aware that the LAUSD has regular public schools, the Magnet program, and the charter schools. Many students do not attend their local schools - and there are not always buses. Therefore, parents must drive their children some distance to attend schools out of their local walking area.

On your map, if you are looking at the Region of Influence Roadways, I would like to direct you to a number of private schools and preschools that I am aware of - some which may be in your Region of Influence.

They include:

1. New Community Jewish High School (NCJHS)- proposed enrollment of 450 students with a maximum occupation of 700 people during school hours, That school would be plotted about where the flag is for Hamlin Street School on your map.
2. Today's Montessori School - about 200 feet east of the NCJHS.
3. Faith Baptist School on Farralone.
4. Academy Just for Kids - Fallbrook
5. Parkhill School
6. Stepping Stone Montessori - closer to Valley Circle
7. Kadima Day School - on Shoup
8. West Valley Christian School on Sherman Way
9. Shepherd of the Valley School on Kittridge

Some of these school may be in Canoga Park because of the way Neighborhood Council boundaries are formed.

I would appreciate it if there is more detailed research done to find out the real number of school children that will be impacted by the NASA trucks.

Thank you.

Christine L. Rowe

West Hills

CITY OF LOS ANGELES - DEPARTMENT OF TRANSPORTATION

July 2008

PEDESTRIAN ROUTES FOR WELBY ELEMENTARY SCHOOL

Legend

- Recommended Crossing
- Stop Sign
- Traffic Signal
- Crossing Guard
- Flashing Warning Light
- Stairs or Walkway
- Pedestrian Bridge
- Pedestrian Tunnel
- Parks

N W E S

0 300 600

Feet

Parents:

This map shows the recommended crossings to be used from each block in your school attendance area. Following the arrows, select the best route from your home to the school and mark it with a colored pencil or crayon. This is the route your child should take. Instruct your child to use this route and to cross streets only at locations shown. You and your child should become familiar with the route by walking it together. Obey marked crosswalks, stop signs, traffic signals and other traffic controls. Crossing points have been located at hese controls wherever possible, even though a longer walk may be necessary. Instruct your child to always look both ways before crossing the street. If no sidewalk exists, your child should walk facing traffic.

Estimados Padres:

Este mapa muestra los cruzados recomendados para los peatones de cada cuadra en la area de su escuela. Siguiendo las flechas en el mapa, selecione la ruta mas segura de su casa a la Escuela y marquelo con un lapis o tiza de color. Esta es la ruta que su hijo (a) debe de usar. Digale a su hijo (a) que use esta ruta y que cruce las calles solamente en los lugares indicados. Usted y su hijo (a) deberian de familiarizarce con esta ruta. Obedezcan los rotulos de peatones, de altos, semaforos y todos los señales de trafico. Puntos para cruzar estan localizados en areas controladas, aunque sea necesario de alargar el tiempo para cruzar. Instruye a su hijo (a) que siempre se fije de los dos lados antes de cruzar la calle. El estudiante debe de siempre caminar en la direccion opuesta del trafico si no existe una banqueta.

CITY OF LOS ANGELES - DEPARTMENT OF TRANSPORTATION

July 2008

PEDESTRIAN ROUTES FOR POMELO DRIVE ELEMENTARY SCHOOL

Legend

- Recommended Crossing
- Stop Sign
- Traffic Signal
- Crossing Guard
- Flashing Warning Light
- Stairs or Walkway
- Pedestrian Bridge
- Pedestrian Tunnel
- Parks

N W E S

0 400 800

Feet

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CITY OF LOS ANGELES - DEPARTMENT OF TRANSPORTATION

July 2008

PEDESTRIAN ROUTES FOR NEVADA AVENUE ELEMENTARY SCHOOL

Legend

- Recommended Crossing
- Stop Sign
- Traffic Signal
- Crossing Guard
- Flashing Warning Light
- Stairs or Walkway
- Pedestrian Bridge
- Pedestrian Tunnel
- Parks

N
W E
S

0 450 900

Feet

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CITY OF LOS ANGELES - DEPARTMENT OF TRANSPORTATION

July 2008

PEDESTRIAN ROUTES FOR JUSTICE STREET ELEMENTARY SCHOOL

Legend

- Recommended Crossing
- Stop Sign
- Traffic Signal
- Crossing Guard
- Flashing Warning Light
- Stairs or Walkway
- Pedestrian Bridge
- Pedestrian Tunnel
- Parks

N
W E
S

0 350 700

Feet

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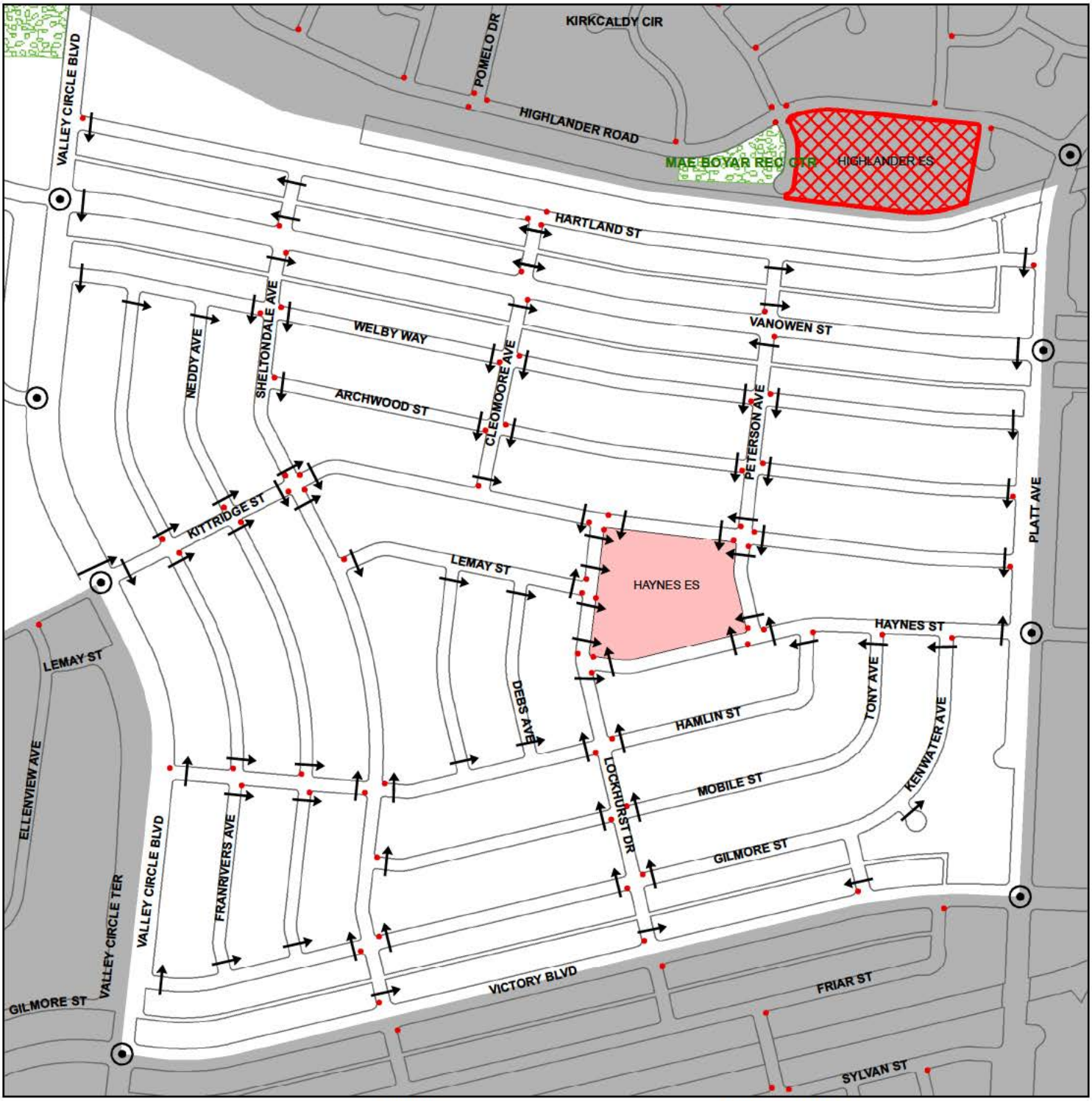
CITY OF LOS ANGELES - DEPARTMENT OF TRANSPORTATION

July 2008

PEDESTRIAN ROUTES FOR HAYNES STREET ELEMENTARY SCHOOL



Legend

- Recommended Crossing
- Stop Sign
- Traffic Signal
- Crossing Guard
- Flashing Warning Light
- Stairs or Walkway
- Pedestrian Bridge
- Pedestrian Tunnel
- Parks

N W E S

0 250 500

Feet

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CITY OF LOS ANGELES

CALIFORNIA

RITA L. ROBINSON
GENERAL MANAGER

ANTONIO R. VILLARAIGOSA
MAYOR

DEPARTMENT OF
TRANSPORTATION
100 S. MAIN STREET, 10TH FLOOR
LOS ANGELES, CA 90012
(213) 972-8470
FAX (213) 972-8410

July 23, 2009

West Hills Neighborhood Council
Attn: Steven Lenske
P.O. Box 4670
West Hills, CA 91308

SUBJECT: SHOUP AVENUE AT KITTRIDGE STREET CROSSWALK MODIFICATION

Improving pedestrian safety and enhancing the pedestrian environment are important goals for the City. An important component of the pedestrian safety program considers the relative safety risk of using signalized versus uncontrolled crosswalks for routes to school. The designated Pedestrian Routes to School maps are periodically reviewed to determine if alternate routes should be designated, as a result of changes of school entrances, school boundaries, student usage and traffic conditions. Across most major highways near elementary schools, crossing guards and traffic signal control provide positive traffic control for students to cross the major highway. However, where these controls cannot be provided, these locations need to be evaluated periodically to determine if another route to school would be more advisable. If it is determined that another route to school would be preferable, then the current route to school, which may include utilizing an uncontrolled crosswalk, would be revised in the interest of traffic and pedestrian safety.

Currently, there is an uncontrolled marked crosswalk across Shoup Avenue at Kittridge Street. Traffic counts taken during a recent school day indicate that only 2 students use this crossing in the hour just before school begins. In addition, we noted that the average prevailing critical speeds along this segment of Shoup Avenue were 43 miles per hour. Numerous national studies indicate a significantly higher pedestrian safety risk where there is low pedestrian usage in combination with high speeds. It would appear to be preferable to direct students to cross Shoup Avenue at the traffic signal located a short distance away at the intersections of Vanowen Street and Victory Boulevard. This can be accomplished by revising the recommended crossing on Shoup Avenue at Kittridge Street in the recommended Pedestrian Routes for Hamlin Street Elementary School, which is sent to the school district for distribution to students and parents. In addition, it can be effectively communicated to the community by removing the conflicting pavement markings and signage of the existing crosswalk.

Enclosed are summaries of the Department of Transportation's programs with respect to school safety. See " School Pedestrian Safety" and "Pedestrian Safety At Uncontrolled Crosswalks: To Mark or Not To Mark?" from the TIPS Guide of the LADOT website. If your Neighborhood Council has any comments on how best to route students to the safest crossing, please submit your comments in writing within 30 days of the date of this letter to the City of Los Angeles Department of Transportation, 19040 Vanowen Street, Reseda, CA 91335.

Unfortunately, there is no City funding available for new traffic signals at this time. However, if the West Hills Neighborhood Council or other entity is interested in financing a traffic signal at this location we would be pleased to discuss it further with you.

We hope to receive any comments that your Neighborhood Council may have that would assist us in evaluating the school crossings. If you have any questions regarding this matter, please e-mail me at Randall.Tanijiri@lacity.org or call me at (213) 972-8871.

Sincerely,

Randall Tanijiri

Randall Tanijiri
Senior Transportation Engineer
Department of Transportation

rmt:sierra/Shoup & Kittridge West Hills NC notification 7_23_09.doc

Attachments

c: Council District 3
LADOT West Valley District
Carolyn Jackson, LADOT

CITY OF LOS ANGELES - DEPARTMENT OF TRANSPORTATION

PEDESTRIAN ROUTES FOR ENADIA WAY ELEMENTARY SCHOOL

July 2008

Legend

- Recommended Crossing
- Stop Sign
- Traffic Signal
- Crossing Guard
- Flashing Warning Light
- Stairs or Walkway
- Pedestrian Bridge
- Pedestrian Tunnel
- Parks

N
W E
S

0 350 700
Feet

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CITY OF LOS ANGELES - DEPARTMENT OF TRANSPORTATION

July 2008

PEDESTRIAN ROUTES FOR CAPISTRANO AVENUE ELEMENTARY SCHOOL

Legend

- Recommended Crossing
- Stop Sign
- Traffic Signal
- Crossing Guard
- Flashing Warning Light
- Stairs or Walkway
- Pedestrian Bridge
- Pedestrian Tunnel
- Parks

N W E S

0 350 700

Feet

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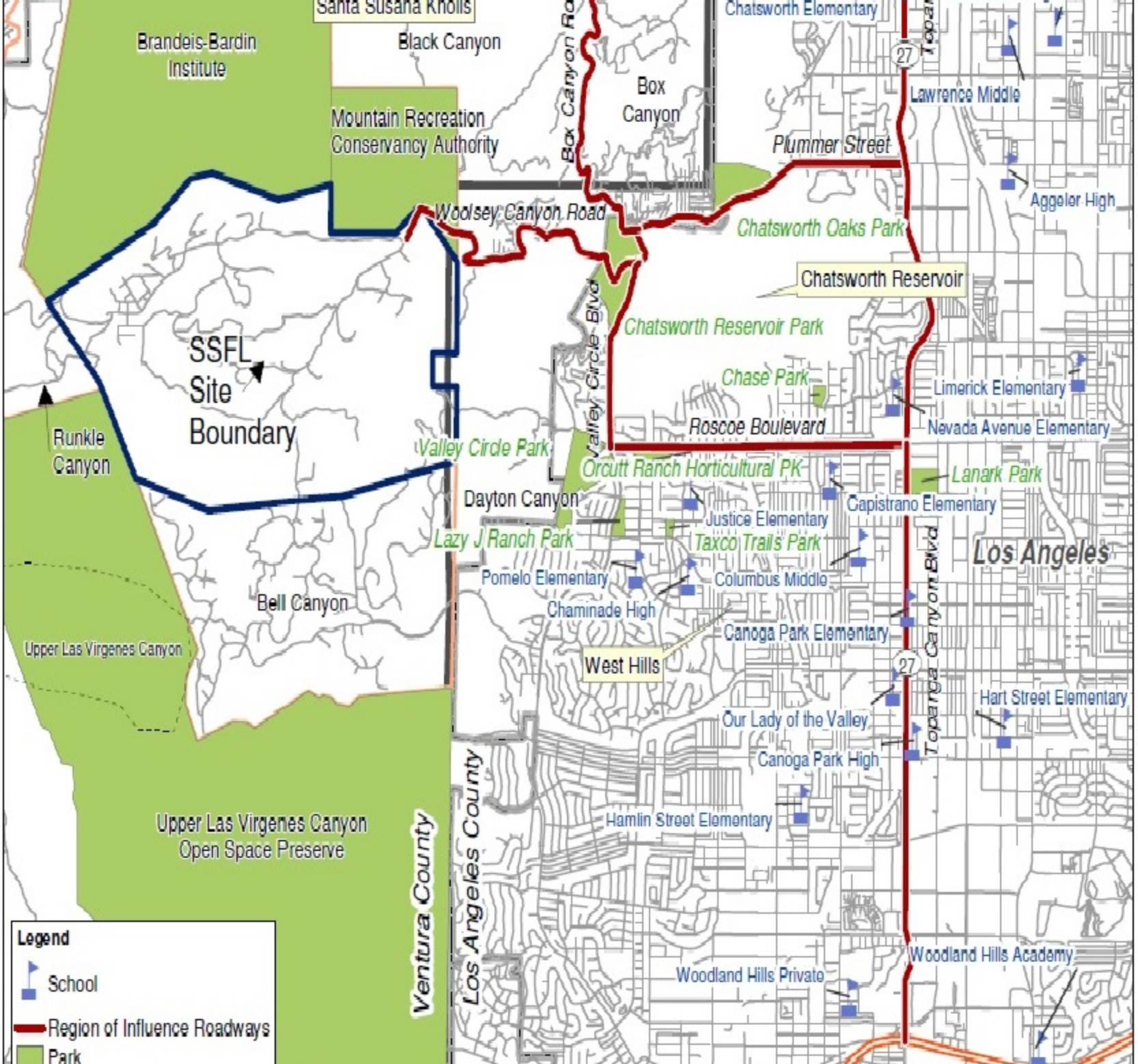
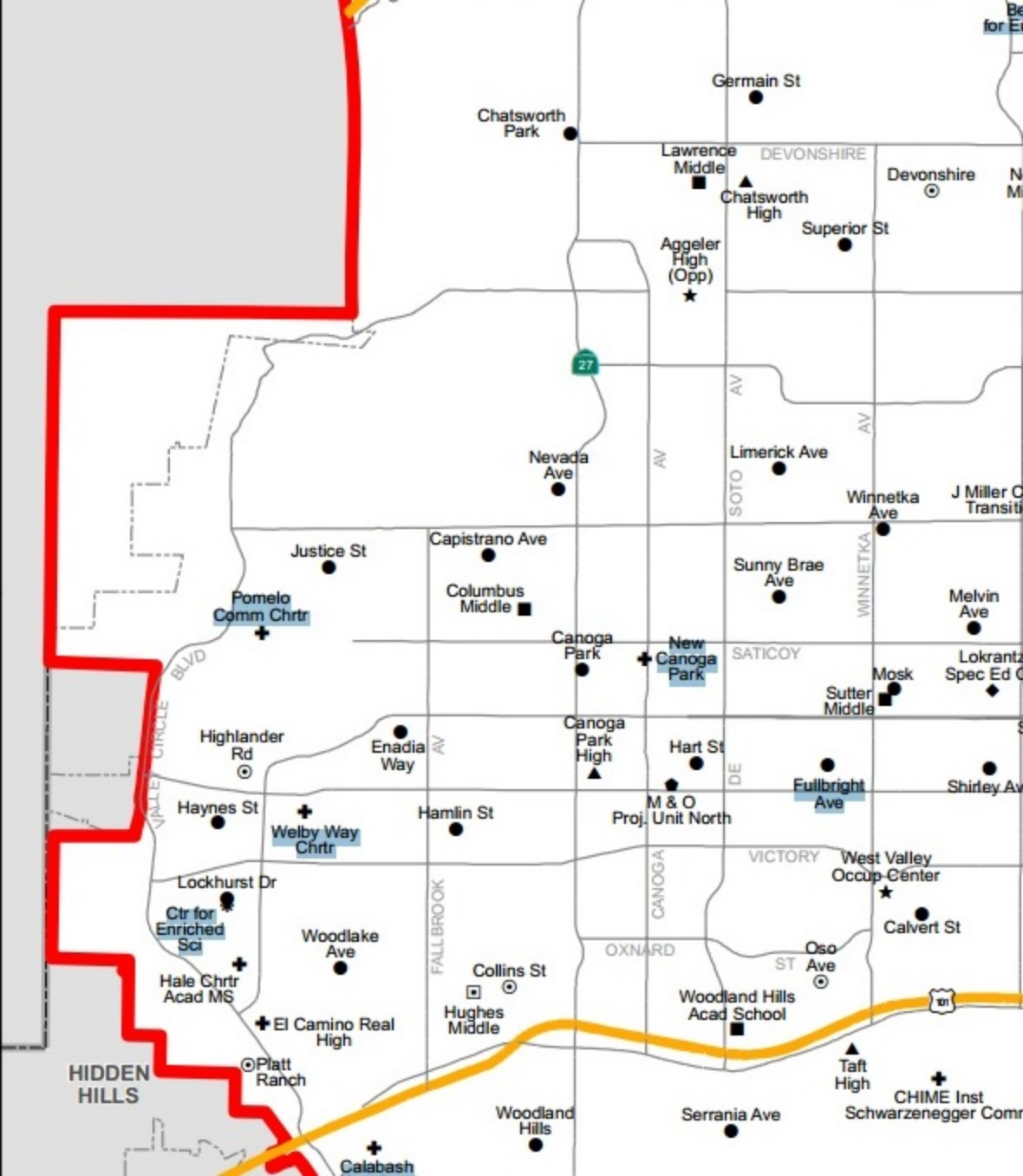

Santa Susana Knolls
Brandeis-Bardin Institute
Black Canyon
Box Canyon Road
Box Canyon
Chatsworth Elementary
Topanga Canyon Blvd
27
Lawrence Middle
Mountain Recreation Conservancy Authority
Plummer Street
Aggeler High
Woolsey Canyon Road
Chatsworth Oaks Park
Chatsworth Reservoir
Valley Circle Blvd
Chatsworth Reservoir Park
SSFL Site Boundary
Chase Park
Limerick Elementary
Runkle Canyon
Roscoe Boulevard
Nevada Avenue Elementary
Valley Circle Park
Orcutt Ranch Horticultural PK
Lanark Park
Dayton Canyon
Capistrano Elementary
Justice Elementary
Lazy J Ranch Park
Taxco Trails Park
Los Angeles
Pomelo Elementary
Columbus Middle
Chaminade High
Bell Canyon
Canoga Park Elementary
Upper Las Virgenes Canyon
West Hills
27
Hart Street Elementary
Our Lady of the Valley
Canoga Park High
Topanga Canyon Blvd
Hamlin Street Elementary
Upper Las Virgenes Canyon Open Space Preserve
Ventura County
Los Angeles County
Woodland Hills Academy
Woodland Hills Private
Legend
School
Region of Influence Roadways
Park


Germain St
Chatsworth Park
Lawrence Middle
DEVONSHIRE
Devonshire
Chatsworth High
Superior St
Aggeler High (Opp)
27
AV
Nevada Ave
Limerick Ave
SOTO
Winnetka Ave
WINNETKA
Justice St
Capistrano Ave
Sunny Brae Ave
Columbus Middle
Melvin Ave
Pomelo Comm Chrtr
Canoga Park
New Canoga Park
SATICOY
Mosk
Sutter Middle
VALLEY CIRCLE BLVD
Highlander Rd
Enadia Way
Canoga Park High
Hart St
DE
Fullbright Ave
Shirley Av
Haynes St
Welby Way Chrtr
Hamlin St
M & O Proj. Unit North
VICTORY
West Valley Occup Center
Lockhurst Dr
Ctr for Enriched Sci
Woodlake Ave
FALLBROOK
CANOGA
Calvert St
OXNARD
Oso Ave
ST
Collins St
Hale Chrtr Acad MS
Hughes Middle
Woodland Hills Acad School
101
El Camino Real High
Platt Ranch
HIDDEN HILLS
Taft High
CHIME Inst Schwarzenegger Comm
Woodland Hills
Serrania Ave
Calabash

From:	Susan Lapes
To:	MSFC-SSFL-EIS
Cc:	Laura Hocking
Subject:	Letter from Chris Stephens
Date:	Friday, September 27, 2013 3:52:24 PM
Attachments:	CS Ltr to Allen Elliot 09272013.pdf

Good Afternoon,

Please find attached a letter to Mr. Allen Elliott, from Mr. Chris Stephens, Director, Resource Management Agency, County of Ventura. This letter is also being sent via U.S. Mail today.

Susan Lapes
Management Assistant
Resource Management Agency
800 South Victoria Avenue, L#1700
Ventura, CA 93009
(805) 654-2662
susan.lapes@ventura.org

county of ventura

RESOURCE MANAGEMENT AGENCY
CHRISTOPHER STEPHENS
Agency Director

Code Compliance Division
Jim Delperdang, Director

Building and Safety Division
Jim MacDonald, Building Official

Operations Division
Jennifer Padre, Director

Planning Division
Kimberly L. Prillhart, Director

Environmental Health Division
William C. Stratton, Director

September 27, 2013

Mr. Allen Elliot, SSFL Program Director
NASA MSFC AS01
Building 4494
Huntsville, AL 35812

E-mail: msfc-ssfl-eis@mail.nasa.gov

Subject: County of Ventura, California Comments on Draft Environmental Impact Statement (DEIS) for demolition and cleanup activities at Santa Susana Field Laboratory (SSFL) in Ventura County, California pursuant to the National Environmental Policy Act (NEPA), as amended (42 U.S.C. §4321 et seq.) and the National Historic Preservation Act (NHPA), as amended (16 U.S.C. §470 et seq.)

Dear Mr. Elliot:

Thank you for the opportunity to review and comment on the subject document. As a potential regulating governmental agency over portions or aspects of the above-referenced project and in response to the Notice of Availability of the DEIS (78 FR 47007, 08/02/2013), the County of Ventura (COUNTY) provides the National Aeronautics and Space Administration (NASA), the NEPA lead agency for this project, the following comments pursuant to NEPA, as amended (42 U.S.C. § 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508), and NASA's NEPA policy and procedures (14 CFR Part 1216, subpart 1216.3).

The COUNTY, by and through its constituent agencies, departments and divisions, reviewed the July 2013, DEIS for the SSFL project with a focus on whether the DEIS sufficiently identifies and analyzes the proposed SSFL demolition and cleanup project's environmental impacts and adequately discusses measures in which such impacts may be mitigated or avoided. To that end, the COUNTY provides the following comments based upon its duties and responsibilities under California state law and local ordinance:

A. Public Works Agency, Integrated Waste Management Division (IWMD)

Pursuant to IWMD review and responsibilities, the following contract specifications pertain to all uncontaminated materials generated during demolition and environmental cleanup activities on NASA's portion of the SSFL site.

The IWMD requests that NASA comply with Ventura County Ordinances 4445 (solid waste handling, disposal, waste reduction, and waste diversion) and 4421 (the diversion of construction and demolition debris from landfills by recycling, reuse, and salvage) to assist the County in its efforts to comply with the waste diversion mandates of Assembly Bill 939 (AB 939) which mandates all cities and counties in California to divert recyclable solid waste from landfills. Both of these Ordinances may be viewed in their entirety on the IWMD's website at: www.wasteless.org/landfills/ordinances.

The following contract specifications shall apply to uncontaminated materials generated by this project:

Recyclable, Uncontaminated Construction & Demolition (C&D) Debris
Contract specifications for this project must include a requirement that C&D debris generated by the demolition of uncontaminated buildings on the project site must be diverted from the landfill. Recyclable C&D materials include, but are not limited to, concrete, asphalt, rebar, wood, and metal. These materials must be recycled at an appropriate, permitted C&D debris recycling facility. A complete list of permitted C&D debris recycling facilities in Ventura County is available at: www.wasteless.org/construction&demolitionrecyclingresources. All uncontaminated, non-recyclable, materials shall be disposed of at a permitted disposal facility.

Uncontaminated Soil - Recycling & Reuse
Contract specifications for this project must include a requirement that uncontaminated soil that is not reused on-site during the C&D phase(s) of this project shall be transported to an authorized and/or permitted organics facility for recycling or reuse. Illegal disposal and landfilling of uncontaminated soil is prohibited. A complete list of facilities in Ventura County that recycle uncontaminated soil is available at: www.wasteless.org/construction&demolitionrecyclingresources.

Uncontaminated Green Materials - Recycling & Reuse
The Contract Specifications for this project must include a requirement that uncontaminated wood waste and vegetation removed during the C&D phase(s) of this project must be diverted from the landfill. This can be accomplished by on-site chipping and land-application at the project

site if deemed appropriate by NASA, or by transporting uncontaminated materials to an authorized and/or permitted greenwaste facility in Ventura County. A complete list of authorized greenwaste facilities is located at: www.wasteless.org/greenwasterecyclingfacilities.

Recyclable, Uncontaminated Construction & Demolition (C&D) Debris – Required Reports per Ventura County Ordinance 4421:

1. Contractors selected to demolish uncontaminated buildings/structures at the Santa Susana Field Laboratory site are required to submit a completed *Form B – Recycling Plan* to the IWMD for approval. The *Form B – Recycling Plan* must specify how uncontaminated, recyclable C&D debris generated by the project (e.g., concrete, asphalt, wood, soil, greenwaste, metal) will be diverted from the landfill. A copy of IWMD's *Form B – Recycling Plan* is available at: www.wasteless.org/recycling/greenbuildingCD.

2. Contractors selected to demolish uncontaminated buildings/structures at the Santa Susana Field Laboratory site are required to submit a completed *Form C – Recycling Report* to the IWMD at the conclusion of the project. The *Form C – Recycling Report* must have original recycling facility receipts and/or other documentation attached to verify that recycling, NASA approved on-site reuse, or salvage of uncontaminated C&D debris occurred. A copy of IWMD's *Form C – Recycling Report* is available at: www.wasteless.org/recycling/greenbuildingCD.

B. Public Works Agency, Transportation Department, Traffic, Advance Planning & Permits Division

This project will generate approximately 39,000 trucks over an estimated 650 working days. The project will require 34 construction workers during the 150-day demolition phase and 15 construction workers during the 500-day excavation and disposal phase.

The COUNTY Transportation Department reviewed several documents in regard to the SSFL cleanup. Our previous comments are still valid and applicable.

Transportation Department staff offers the following comments on the DEIS for the demolition and cleanup activities in the NASA-administered areas of the SSFL:

1. According to the Truck Route Map (Figure 4.5-1), the project proposes to access the SSFL via Santa Susana Pass Road and Box Canyon Road in the County of Ventura and Woolsey Canyon Road in the County of Los Angeles.

    a. The project proponent should be aware that Santa Susana Pass Road from Katherine Road to Rocky Peak Road has a "No Trucks Over 2 Axles" Truck Restriction adopted by the Ventura County Board of Supervisors (BOS) February 4, 1986.

    b. The project proponent should be aware that Box Canyon Road from Santa Susana Pass Road to the Ventura County and Los Angeles County jurisdictional boundary has a "No Trucks 3 Or More Axles" Truck Restriction adopted by the BOS September 28, 1999.

    c. If the project proponent plans to use trucks that are not restricted on Santa Susana Pass Road or Box Canyon Road, then please include these roads in the survey of road conditions as described in Traffic MM-2 on Pages 6-3 of the DEIS.

        i. Proper precautions should be taken to protect all County road facilities in the unincorporated areas.

        ii. If, in the opinion of the Transportation Department, any portion of a County road is damaged by the project's operations, then it should be repaired in accordance with current standard construction details and/or in a manner acceptable to the Transportation Department.

        iii. An Encroachment Permit is required for any work in the public right-of-way.

    d. The Transportation Department will not allow/permit hauling on Black Canyon Road north of the project site.

2. Please notify the Transportation Department when the Final EIS is ready for review and comment.

    Transportation Department review is limited to the impacts this project may have on the County's Regional Road Network.

C. Resource Management Agency, Planning Division, Biological Resources

The following comments address biological resource issues associated with the Proposed Action at the NASA SSFL, including issues related to COUNTY regulations and the adequacy of impact analysis and proposed mitigation measures within the DEIS. Specific areas of comment address the following:

- General Plan goals and policies related to biological resources
- Ventura County Locally Important Species and Communities
- DEIS Data and Analysis Corrections
- Impacts and Mitigation Measures

Ventura County General Plan

Currently, the DEIS does not discuss the Proposed Action with respect to General Plan goals and policies for biological resources. Several policies in the County's General Plan support the protection of biological resources as follows:

(1) Wildlife migration corridors, threatened or rare species and their habitats, and locally important species/communities are considered to be significant biological resources that should be preserved and protected from incompatible land uses and development (GP Goal 1.5.1);

(2) Biological resource policies include wetland protection policies, such as a 100 foot setback from significant wetland habitat for all discretionary development (GP Policy 1.5.2.4) and a requirement to evaluate biological impacts for discretionary projects within 300 feet of waters and wetlands (GP Policy 1.5.2.3); and

(3) The Santa Susana Field Laboratory is identified as an area with a "Significant Biological Resource" under Figure 1.5.6.2, *Biological Resource Map,* in the General Plan Resource Appendix.

The DEIS should be revised to discuss consistency with General Plan policies in identifying impact intensity, type, context, and duration. Mitigations measures should be developed that preserve and protect SSFL biological resources and incorporate recommended wetland protections.

Ventura County Locally Important Species and Communities

Section 4.4 and Appendix E Section 2.1 of the DEIS do not include an analysis of Ventura County Locally Important Species, and the DEIS does not consider them as "special status species" under Section 4.4.1.1. Impacts to Ventura County Locally Important Plant Species identified on-site should be evaluated and mapped (e.g., *Allophyllum divaricatum* and *Crassula aquatic*). For a complete listing of Locally Important Species please see the following link:

http://www.ventura.org/rma/planning/conservation/locally-important-species.html

Impacts to Locally Important Communities (e.g., Venturan coastal sage scrub, oak woodlands) should be acknowledged in the EIS. The EIS should evaluate direct and indirect (i.e., dust) impacts to Locally Important Communities.

DEIS Data and Analysis Corrections

The list below, which is not exhaustive, identifies examples of biology-related issues that need to be further addressed in the EIS analysis.

(1) Evaluation of Presence of the Californian Gnat Catcher (CAGN). The CAGN should be discussed in Section 4.4.1.1, and included where applicable throughout the DEIS biological resource analysis. On-site Venturan coastal sage scrub, and potentially other unidentified vegetation alliances absent the DEIS analysis, provides suitable habitat for the CAGN, a ***federally listed threatened bird***. In recent years, CAGN has been observed in coastal sage scrub habitats in Ventura County that were previously thought to be unoccupied. Many of these occurrences, which are near Thousand Oaks, Camarillo, Simi Valley, and Moorpark, are located in habitats similar to the habitats on the project site. Given that suitable habitat is present, and no protocol presence/absence surveys were conducted, potential exists for the presence of the CAGN. Page E-38 Appendix E describes the potential for CAGN to occur on the project site as "unlikely" based the transition from coastal sage to chaparral and the dense brush cover. This evidence is inadequate for three reasons: (a) the project site was never surveyed for CAGN, (b) suitable habitat exists on the project site, and (c) several new occurrences of CAGN were identified in the region.

Given this additional evidence, protocol surveys should be conducted within suitable habitat in the areas proposed to be directly and indirectly impacted by the project to adequately evaluate the potential impacts of the project on CAGN.

(2) Wildlife Corridor. A significant biological resource located adjacent to the project site is the regional wildlife movement corridor that connects habitats within the Simi Hills and Santa Susana Mountains with the western portion of the Santa Monica Mountains. This corridor, identified and mapped by the South Coast Missing Linkages Project (2006), is located immediately east of the project site. However, modeled corridor strands should not be taken as absolute limits to the areas of the landscape on SSL that wildlife use for movement, as nearby areas outside the modeled corridor that appears on the South Coast Missing Linkages map are likely still utilized.

The project site contains significant habitat connections and movement patterns for both transitory and permanent wildlife populations. Direct impacts from habitat destruction, fencing, and equipment can create physical barriers to wildlife movement while indirect impacts from lighting, noise, and increased human activity may also discourage wildlife use of the area. Impacts to the regional wildlife corridor, including temporary and long-term introduction of barriers to gene flow, should be considered in the DEIS. In addition, the "no impact" assessment in Section 4.4.1.3 should be corrected to reflect the appropriate intensity level, duration, and context. Additionally, Figure 4.4-2 and 3.4-2 should be updated to include on-site specific connectivity features and impediments to connectivity that would result from the project.

(3) Vegetation Mapping. Vegetation types and sensitive communities, which are briefly categorized in the Appendices and in Section 3.4, should be mapped to the alliance level consistent with the *California Manual of Vegetation* (2010) and included in the DEIS. The entire site, and any off-site affected area (e.g., groundwater basins), should be mapped to the alliance level, which would provide an analysis of sensitive communities and habitats and a baseline for mitigation opportunities such as habitat restoration.

The EIS analysis, including Figure 4.4-1, only describes two types of communities affected by the project. Detail on the amount of vegetation

removed and the area of *all* native vegetation alliances impacted needs to be depicted and discussed in the DEIS and its appendices.

(4) Native Soil Import Impacts. Page 4-35 states that 39 acres of native soil would be removed as a result of the Proposed Action, and that an unknown amount of replacement native soil would be imported. The DEIS should specify the off-site locations where imported, replacement native soil would be obtained and provide an analysis of potential impacts associated with the removal of soil from that property.

If the excavation areas for the native soil fill for the proposed project are located within unincorporated Ventura County, it is presumed that a discretionary permit from Ventura County would be required, and the potential project impacts associated with the removal of native soil within the unincorporated County must therefore be evaluated in the DEIR in accordance with the County's thresholds of significance. Those thresholds are found in the *Ventura County Initial Study Assessment Guidelines*. In addition, the removal of off-site soil must be evaluated for consistency with the County's policies and ordinances.

(5) Oak Woodlands Preservation. Absent from Appendix B, *Applicable Laws and Regulations*, is the California State Oak Woodland Conservation Act (OWCA) (PRC §21083.4, Fish and Game Code §1361). The Ventura County Oak Woodland Management Plan was developed in response to the OWCA, and oak woodlands have also been acknowledged as a Locally Important Community by the Ventura County Board of Supervisors. Oak Woodlands were also identified as a sensitive community by the California Department of Fish and Wildlife, and impacts to the two oak woodlands on-site should be included in the DEIS. Figure 4.4-1 only shows two communities in the context of soil clean-up boundaries. The two types of oak woodlands need to be shown on Figure 4.4-1, and the acreage removed should be quantified in the DEIS. The DEIS does not provide adequate detail to know whether direct or indirect impacts would occur to the approximately 22.5 acres of oak woodland habitat identified onsite (Appendix D, Table 10), and the document should be revised to address impacts to oak woodlands and individual oak trees.

(6) Groundwater Clean-up: The DEIS currently lacks adequate information on potential impacts to biological resources that could result from proposed changes to hydrology. Section 4.4.1.4 (Page 4-41) of the DEIS should include more information regarding impacts both on-site and offsite related

to the following changes associated with the Proposed Action: (a) changes to the water table, (b) additional topsoil removal "outside the soil clean-up footprints", (c) on-site wetlands, and (d) effects on regional hydrology. In addition, the DEIS should include impacts to off-site and on-site native vegetation alliances that would be affected by changes to hydrology as shown in Appendix Figure 2.2-4.

(7) Protocol Surveys. Additional protocol surveys are needed for special status species found within the SSFL study area. In the absence of protocol surveys for special status species (e.g., riverside shrimp, red-legged frog), actual impacts to wildlife from the implementation of the project are speculative.

Impacts and Mitigation Measures

The proposed project would result in extensive impacts to biological habitat for numerous special status species. The biological resource mitigation measures within the DEIS are generally inadequate under the requirements of NEPA (40 CFR 1508.20) for addressing significant regional impacts that affect sensitive biological resources. As defined under the Council of Environmental Quality (CEQ) guidance document (dated January 4, 2011), NEPA mitigation measures should include documentation, monitoring, and performance standards. The proposed BMPs and mitigation measures lack details on requirements, timing, monitoring, and success criteria. The list below, which is not exhaustive, contains examples of suggested revisions to the EIS impact assessment and mitigation measures:

(1) Removal of Native Vegetation Communities: The removal of approximately 39 acres of native vegetation (impact biology 2a) would be regionally significant and long-term, especially in the absence of adequate mitigation as discussed below. The proposed best management practices mitigation measures would have minimal effect on mitigating this impact. Additionally, removing developed areas (biology impact 2b) would not have a beneficial effect on native vegetation, unless these previously developed areas were carefully restored. Planting an "approved seed mix" without performance criteria or an effective invasive plant removal program would not constitute restoration.

(2) Pre-Construction Wildlife Surveys, Monitoring, and Relocation. Appendix E, Section 4.2, recommends preconstruction surveys and the development of a breeding season schedule for listed and protected

species. However, the Draft EIS Section 4.4.2 only recommends avoidance if protected species are discovered by workers (BMP-4), and it includes a vague reference to red-legged frog monitoring (MM-5). Pre-construction protocol surveys and relocation should be required for all special status wildlife, including Locally Important Species that may be expected to occur, and as recommended in Appendix E, Section 4.2. Additionally, surveys should include species that are present in the vicinity, but are not identified in the DEIS as having the potential to occur (e.g., ring-tailed cat).

Typically, a biological monitor, with any appropriate permits needed, should survey the construction area prior to construction and relocate special-status wildlife outside the construction area. In addition, the construction area should be fenced to prevent the return of wildlife to the construction area. The biological monitor should also be present during project implementation.

(3) Pre-construction Santa Susana Tarplant Surveys and Monitoring. The proposed mitigation (MM-2) and BMPs (BMP-4) are inadequate to address what should be considered a significant regional impact to the State-listed rare Santa Susana Tarplant (Impact Biology 1a and 1g). Avoidance and worker awareness (MM-2) is *not a recognized mitigation measure*. Likewise, BMP-4 is not considered an acceptable strategy for the management of this plant. The mitigation measures should be revised to include preconstruction surveys, biologist monitoring during project implementation, and relocation of impacted species.

(4) On-site Habitat Restoration and Monitoring Plan. The proposed removal of seven (7) acres of the sensitive Ventura Sage scrub, of 0.05 acres southern willow scrub, and of unspecified impacted oak woodlands should be mitigated through on-site restoration. In addition, the on-site restoration should be implemented through mitigation that requires a Habitat Restoration and Monitoring Plan with timing and success criteria. The DEIS should include mitigation measures that require restoration at different ratios for each habitat type, as developed in consultation with the California Department of Fish and Wildlife.

The proposed BMP to reseed with a "approved mix" (BMP-1) is not adequate, and permanent restoration should be conducted with a compatible plant pallet that is derived from reference sites specific to each impacted alliance. In order to maintain the genetic integrity of the local

flora, Native plants and seed stock used during the revegetation process should be locally collected or propagated from locally collected seed or cuttings (from the Simi Valley area or same watershed). An attempt should be made to restore some of the diversity of the existing native plant community by specifically including some of the less common native species currently found on the project site. For temporary revegetation, the DEIS should provide specific information that identifies seed mix, seed application, seeding methods, timing of monitoring, and reporting and performance criteria.

(5) On-site Habitat Preservation. The loss of habitat for locally important wildlife species should be mitigated through the preservation of existing, intact plant communities and through the restoration and preservation of disturbed plant communities at an appropriate ratio in the project vicinity.

(6) Off-site Mitigation Measures. The DEIS should include mitigation measures that require preservation of off-site biological habitats that offset the destruction of native habitat and underlying soils.

(7) Nesting Bird Mitigation. The mitigation that would protect nesting birds (Biology MM-4) is incomplete. Proposed mitigation measures should include nesting and breeding considerations for any special status birds identified onsite, including the Least Bell's Vireo and the Loggerhead Shrike.

(8) Dust. Indirect impacts to biological resources from dust would vary greatly depending on the amount of excavation required. The DEIS should consider impacts and mitigation measures from dust based on the excavation to 20 feet.

(9) Wetlands. The DEIS must disclose all mitigation measures and related impacts in the current document. Currently, the DEIS (Page 4-39) states that the project could affect two (2) acres of wetlands, and it identifies this loss as moderate, regional, and long-term. The DEIS further states that "NASA would work with the USACE during the permitting process to mitigate the disturbance to waters of the U.S". Impact 6a and b of the DEIS should therefore be updated to reflect that the loss of 2 acres of wetlands is significant, regional, and long-term *unless clearly defined mitigation measures would explicitly reduce impacts*. Additionally, groundwater impacts (Biology impact 2k) to wetlands would not be "no impact" if changes in groundwater were to affect surface water availability.

(10) Deferred Mitigation. Impacts Biology 1b, 1f, 1i,1l, 1o, 1r, , 6a, and 6b were considered (or should be considered, in the case Impacts Biology 6a and 6b) to be "regionally significant". However, the DEIS does not identify appropriate mitigation measures but instead defers the development of mitigation measures to future USFWS review. It is critical that mitigation measures be defined within the DEIS in order to disclose to the public whether (or not) the project under review does (or does not) have potentially significant regional impacts following the application of mitigation measures. Accepted standards for environmental review include the development of mitigation measures within the DEIS, and prior to project approval and implementation. The impact analysis is not clear and clearly defined mitigation is needed within the DEIS.

D. Resource Management Agency, Planning Division, Long Range Planning

The Ventura County Planning Division (Planning Division) Long Range Planning Section evaluated the NASA DEIS for the Proposed Demolition and Environmental Cleanup Activities at the SSFL for consistency with the Ventura County General Plan and the Non-Coastal Zoning Ordinance. This consistency evaluation provides an opportunity for the Planning Division to identify key issues of concern related to land use, and to notify NASA of local regulatory requirements that would be applicable for a non-federally owned property.

This section identifies General Plan land use issues related to the County's Open Space land use designation as well as ordinance-level land use regulations. Additional General Plan issues related to biology and cultural resource issues are identified in separate topic areas.

General Plan Land Use

The County's General Plan land use designation for the entire NASA property is "Open Space". General Plan Section 3.2, Land Use Designations, defines the purpose of the Open Space land use designation, and that definition includes the following:

- Preserve natural resources, (plants, animals, water courses, etc.);
- Manage the production of resources (forest lands, rangeland, agricultural land, etc.);
- Preserve outdoor recreation opportunities including those areas of "outstanding scenic, historic, and cultural value; areas particularly suited for park and recreation purposes"; and

- Preserve areas necessary for public health and safety including those areas, "which require special management or regulation because of hazardous or special conditions..."

The County's General Plan also includes goals and policies for the Open Space land use designation. The Planning Division review identified relevant goals/policies as follows:

(1) Retain open space lands in a relatively undeveloped state so as to preserve the maximum number of future land use options.

(2) Retain open space lands for outdoor recreational activities, parks, trails and for scenic lands.

(3) Recognize the intrinsic value of open space lands and not regard such lands as "areas waiting for urbanization."

While the proposed cleanup at the SSFL is intended to remove the groundwater and soil contamination present at the site, and thus return the site to its "background" condition, the proposed cleanup will occur in a manner that is not consistent with the Open Space goals of the County's General Plan. For example, the project includes significant clearing of native vegetation and soil, which is not consistent with the County's goals of preserving natural resources, using such lands for recreational purposes, or retaining the scenic value of the land. In addition, while the proposed cleanup levels may bring the contaminant levels down to "background," the site would not be returned to "its natural state prior to the introduction of contaminants" (NASA Audit Report No. IG-13-007, pg. 6; NASA SSFL Fact Sheet) given NASA's plan to remove such large amounts of soil and vegetation.

Furthermore, the Planning Division questions the elimination of future "land use" as a consideration for cleanup. Table 2.5-1 of the DEIS states the following:

> *"The proposed demolition and environmental cleanup activities would not result in a change in land use on the NASA-administered property; implementation of the Proposed Action or action alternatives would not require a change in zoning and no easements or land encroachments would be necessary. No land use acquisition or transfers would be required. Existing and proposed land uses do not conflict with federal or state land use plans, policies, regulations, or laws. Therefore, no impacts to land use would occur."*

Although the Proposed Action may not require a change to the County's land use classifications, and would presumably not affect minor land use issues such as easements, that does not lead to a conclusion that "existing and proposed land uses do not conflict with...state land use plans, policies,

regulation, or laws. The State of California requires that local jurisdictions prepare a General Plan, and (as noted previously) the Proposed Action is not consistent with the purpose or goals associated with the property's Open Space land use classification.

In addition, the Planning Division is concerned that remediation alternatives were not developed in a way that reasonably anticipates, or even discusses future land use. In fact, as part of NASA's response to comments, they state that, "(a) decision about future land use is not within NASA's purview, nor part of NASA's EIS" (Appendix K, Pg. K-7). Given the lack of analysis in the EIS, NASA's conclusion that land use can be eliminated as a cleanup consideration appears to be unfounded and premature. Without an examination of land use options (e.g. park use, recreation use, residential use, or other types of land use), it is impossible to state what effect the proposed demolition and cleanup activities will have on future land use of the property. Although not a federal Superfund site, the U.S. Environmental Protection Agency's guidance with respect to remedy selection at Superfund sites is instructive. An EPA 2010 Directive state:

> *"In carrying out Superfund response actions that protect human health and the environment, EPA typically considers the reasonably anticipated future land use of a site in the remedy selection process" (EPA OSWER Directive 9355.7-19).*

Without an analysis of "reasonably anticipated future land use", it is difficult to conclude that remediation decisions are, indeed, consistent with existing and/or future land uses.

Zoning

In addition to the General Plan, future land use for the SSFL site will be dependent upon zoning. The SSFL site, which includes properties owned by Boeing, is also subject to a 1947 Special Use Permit issued by Ventura County. It should be noted that the current zoning for the NASA property, which is Rural Agricultural, or RA-5 acre, is not consistent with the General Plan land use designation of Open Space, which has a 10-acre minimum lot size. Consistent zones would be as follows:

- Open Space (OS), which has a 10-acre minimum
- AE (Agricultural Exclusive), which has a 40-acre minimum

The Zoning Matrix (pg. 44 of the Non-Coastal Zoning Ordinance) shows minor differences in allowable uses between the current zone and the two consistent zones. However, the minimum lot size would change from 5 acres to either 10 or 40 acres, depending on the selected zone.

Tree Protection Ordinance

In addition to the County's General Plan, the County's Non-Coastal Zoning Ordinance (NCZO) guides land use actions. Notably, the NCZO includes a tree protection program (NCZO Sec. 8107-25). Tree protection regulations are a relevant local land use regulation that are not noted among the other applicable regulations listed in Appendix B of the DEIS. The County's tree protection regulations apply to the removal of protected trees in unincorporated areas of Ventura County. Within the NASA property, protected trees include all oak and sycamore tree species as well as any tree that is ninety inches (90") in circumference or larger, which are classified as heritage trees.

The NCZO requires a discretionary permit and offsets for the removal of more than four (4) oak trees. Based on the information provided in Appendix D of the DEIS, there are over 20 acres of oak woodland on the NASA property (Appendix D, Pg. D-17). Although this resource is mapped on Figure 3.4-1 (Vegetated Cover Types), these oak woodlands do not appear in Figure 4.4-1, which is the map showing the Biological Resources that will be impacted by NASA's proposed actions.

The Planning Division recommends that oak woodlands be added to Figure 4.4-1, as it appears that the remediation will remove a portion of the oak woodlands. Moreover, the Planning Division assumes that NASA's remediation plan will remove far more than four oak trees, and hence would have required a discretionary permit and commensurate offsets (such as in-lieu fees) as mitigation for the loss of this resource. In addition, Appendix B of the DEIS should be revised to include the Tree Protection Ordinance and appropriate mitigation should be included in the DEIS to account for the loss of oak woodlands that result from cleanup activities.

Noise Standards

After a review of County noise standards within the General Plan and Noise Ordinance, staff concluded that none of the standards apply to the Proposed Action as follows:

- *Noise Ordinance:* Appendix B of the DEIS refers to the County's Noise Ordinance as an applicable regulation (Pg. B-18), and the document states that it provides relevant night-time noise standards. However, the Noise Ordinance only applies in residential neighborhoods between the hours of 9:00 p.m. to 7:00 a.m. of the following day. Given that NASA's remediation activities will not occur in residential neighborhoods and are scheduled between the hours of 7:00 a.m. and 7:00 p.m. (DEIS, Section 4.11, Pg. 4-140), the night-time noise standard would not apply. The

Planning Division recommends that the reference to this noise ordinance be removed from Appendix B, as it does not appear to be applicable.

- *General Plan:* The General Plan does contain policies related to noise (General Plan, Section 2.16.2), but the policies that would otherwise be relevant to the Proposed Action apply only when the noise being generated occurs near noise sensitive uses - which the County defines as dwellings, schools, hospitals, nursing homes, churches, and libraries (Ventura County Initial Study Assessment Guidelines, pg. 120). Given that most proposed noise-generating activities (such as demolition) will take place on-site away from noise sensitive uses, the General Plan policies would not apply.

  General Plan noise policies do apply to truck traffic generated by the Proposed Action that occurs near noise sensitive uses. The DEIS discusses noise impacts generated by the trucks that will transport materials generated by proposed cleanup activities. As shown in Figure 3.11-1, one of the haul routes, Box Canyon Road, is located in Ventura County. However, Box Canyon Road is part the County's 2020 Regional Road Network (Figure 4.2.3 of the General Plan - Public Facilities Appendix), and the General Plan excludes traffic-general noise on the Regional Road Network from noise policies/standards within the General Plan (General Plan, Section 2.16.2(4)).

The County recommends that NASA clarify its truck trip calculations so that noise impacts can be properly evaluated. Currently, there's an inconsistency within the report regarding the amount of additional truck traffic that could be generated by the Proposed Action. On page 4-119 of the DEIS, it states that 3,476 trips associated with demolition hauling would take place over the course of approximately one year. However, on page 4-139 of the DEIS, it says that the "analysis assumed that up to 142 trucks per day would use the designated haul routes." Assuming 260 work days in a year, these 142 daily truck trips add up to almost 37,000 annual truck trips, which is considerably more trips than the 3,476 trips estimated elsewhere in the DEIS. In addition, in Section 4.11.1.1 (Demolition) of the DEIS (pg. 4-140), it states that demolition activities would take place between 2014 and 2016. Of course, demolition activities would result in additional truck trips and those trips do not appear to be accounted for in the 37,000 truck trips noted above.

E. Resource Management Agency, Planning Division, Cultural Heritage

Planning Division Cultural Heritage Board staff (CHB Staff) is aware of and acknowledges that NASA intends to use the NEPA process and this DEIS in lieu of procedures set forth in 36 CFR §§ 800.3 through 800.6 to review the cultural heritage impacts of the SSFL demolition and cleanup project in order to comply with the directives set forth in section 106 of the NHPA. Particular attention has been placed on Sections 3.3 and 4.3 of the DEIS and DEIS Appendix C: Section 106 Findings of Effect Consultation Report, Ventura County, California.

The CHB staff comments seek to evaluate whether "'most or all of the primary structures, sites, and other improvements . . . could be considered potentially eligible for listing on both the National Register of Historic Places and the California Register of Historic Places. (Calvit and Barrier 2006:1)'" (NASA, Historic Resources Survey and Assessment of the NASA Facility at Santa Susana Field Laboratory, Ventura County, California (March 2009 ver.) p. i.; see also 36 CFR Part 60) and whether the proposed project significantly affects existing cultural resources, including sacred sites and historic properties in the project's region of influence or area of potential effects.

Identified Cultural Resources

The historic architectural resources identified in the DEIS and Appendix C (Draft Cultural Resources Study for the Environmental Cleanup and Demolition at SSFL, NASA Areas I and II) consist of three historic districts (Alfa, Bravo and Cocas Test Areas) and their contributing elements, as well as the individual eligibility of the nine structures within those districts.

The archaeological resources identified in the DEIS and Appendix C include the Burro Flats Painted Cave site of approximately 10 acres that is listed in the National Register of Historic Places (NRHP) and the California Register of Historic Resources (CRHR). Sites CA-VEN-1800 and CA VEN-1803 are being considered potentially eligible for purposes of this undertaking.

CHB staff concurs with the NRHP eligibility of the three districts and their contributing elements, as well as the nine individual eligible structures and the NRHP eligible archaeological sites as described in the May 2008 Historic Resources Survey and Assessment of the NASA facility at SSFL.

Area of Potential Effects (APE)

The Area of Potential Effects, as shown in Figure 3.3-1 of the DEIS text, is also referred to as the Region of Influence (ROI). The APE includes approximately 490 acres, including 182.6 ha (451.2 acres) of NASA-administered property, 16.9 ha (41.7 acres) in Area I, and 165.7 ha (409.5 acres) in Area II. An additional 15.7 ha (39 acres) of Boeing property are included in the APE, because these areas likely would be part of NASA's remediation activities.

CHB staff believes the APE boundary is inadequate. As shown in Figure 2 of Appendix C, additional soil remediation cleanup areas are located outside of the existing APE. The APE should be adjusted to include these sites. Furthermore, the Traditional Cultural Property and Cultural Landscape Assessment ("TCP Assessment") has not been completed, so it is unknown whether these sites would be within the current APE. Once the Assessment has been completed, the results and recommendations should be incorporated into the DEIS for recirculation to the public and if necessary, the APE adjusted to incorporate these sites.

Ventura County General Plan Policies Related to Cultural Resources

The COUNTY's General Plan establishes goals and policies for paleontological and cultural resources of the COUNTY (including archaeological, historical and Native American resources) for their scientific, educational and cultural value. The Ventura County General Plan Policies which apply to cultural resources are as follows:

1.8.2.1 - Discretionary developments shall be assessed for potential paleontological and cultural resource impacts, except when exempt from such requirements by CEQA. Such assessments shall be incorporated into a Countywide paleontological and cultural resource data base.

In accordance with the above policy, the TCP Assessment and the Chumash Sacred Site boundary identification should be completed so that the full scope of the project is known. Once the assessment and the boundary identification are completed, the potential impacts to such resources can be disclosed to the general public and considered by the decision makers in their determination to implement the project.

The purpose of the DEIS is to "inform decision makers and the general public of the environmental consequences of a proposed federal action." The DEIS doesn't disclose the full magnitude of the property disturbance. Delineation of

the contaminated areas is still underway so it is premature to circulate a NEPA document when the full scope of the project is unknown.

1.8.2.2 - Development shall be designed or re-designed to avoid potential impacts to significant paleontological and cultural resources. Unavoidable impacts, whenever possible, shall be reduced to a less than significant level and/or shall be mitigated by extracting maximum recoverable data.

Decisions presented in the DEIS should first consider project avoidance and minimization of effects, rather than mitigation. Mitigation measures should be developed to save all three test stands, and their contributing elements, as well maintaining the individual eligibility of the nine structures within the three historic districts.

1.8.2.5. During environmental review of discretionary development, the reviewing agency shall be responsible for identifying sites having potential archaeological, architectural or historical significance and this information shall be provided to the County Cultural Heritage Board for evaluation.

1.8.2.3 - Mitigation of significant impacts on cultural or paleontological resources shall follow the Guidelines of the State Office of Historic Preservation and the State Native American Heritage Commission, and shall be performed in consultation with professionals in their respective areas of expertise.

1.8.2.4. Confidentiality regarding locations of archaeological sites throughout the County shall be maintained in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts.

In accordance with the policies above, CHB staff recommends that the DEIS incorporate feasible mitigation measures identified by the Santa Ynez Band of Chumash Indians and the Native American Heritage Commission through consultation with NASA for the protection of the nationally significant Burro Flats Painted cave archaeological site, the not-yet defined Chumash Sacred Site, as well as Sites CA-VEN-1800 and CA VEN-1803. As part of the consultation, the location of the archaeological sites shall remain confidential. Additionally, feasible mitigation measures identified by the National Park Service, Advisory Council on Historic Preservation, and the State Office of Historic Preservation staff for the protection of the NRHP eligible historic architectural resources during the Section 106 consultation should be incorporated into the DEIS.

Mitigation Measures (Cultural MM-1, MM2, MM3, MM4 and MM5 under Section 4.3 – Cultural Resources)

The identified Mitigation Measures "MM-1 Retaining one Test Stand," "MM-2 HABS/HAER documentation" and "MM-3 In-depth ethnographic study" for the impacts on cultural and historic resources from proposed demolition, excavation, soil removal and groundwater cleanup do not reduce the significant adverse effects of the project to a less than significant level.

MM-1 Mitigation Measure for retention of one test stand does not meet the *Secretary of Interior's Standards and Guidelines for Preservation* which requires retention of the greatest amount of historic fabric, along with the building's historic form, features, and detailing as they have evolved over time.

MM-2 and MM-3 Mitigation measures of HABS/HAER documentation recording and the completion of ethnographic studies would avoid the loss of historical information, but do not prevent the physical loss of historically significant resources. It should be noted that photographic documentation to HABS standards of a historic building or structure is not sufficient mitigation for its demolition (Architectural Heritage Assn. et al v. County of Monterey, (2004) 122 Cal.App. 4th 1095.)

CEQA requires that all feasible mitigation be undertaken even if they do not mitigate the project below a level of significance. Therefore, additional mitigation measures should be developed to save all three test stands, and their contributing elements, as well as the nine structures within the three identified historic districts.

CHB staff concurs with using the following Mitigation Measures:

- Avoidance of excavation within the boundaries of Burro Flats (CA-VEN-1072) and CA-VEN-1803 to diminish or eliminate adverse impacts to known archeological sites and reduce the impacts to negligible.
- All three Test Stands and their contributing elements, as well as with the individual eligibility of the nine structures should be retained in-situ or relocated elsewhere on the same project site.
- Use Monitored Natural Attenuation (MNA) to monitor soils or groundwater to evaluate the reduction in contamination over a period of time once another treatment technology had been implemented or the naturally occurring attenuation processes had proven effective in reducing contamination in the subsurface.

- Use of Institutional Controls including deed restrictions, fencing, signage, and other security measures to eliminate public access to the most significant sites.

Project Alternatives

The DEIS alternatives ("No Action" and 100% Demolition) discussion is inadequate. The alternatives analysis is considered the "heart" of the EIS and should discuss a range of alternatives, including all "reasonable alternatives." CHB staff recommends that the DEIS include additional alternatives that are feasible from an economic, technical, and future land use standpoint that provides for the preservation of the most significant historic resources at SSFL. The DEIS should develop mitigation measures in conformance with the *Secretary of Interior's Standards for Rehabilitation* that would result in the retention of the greatest amount of historic fabric, along with the building's historic form, features, and detailing as they have evolved over time. Other cleanup alternatives consistent with the potential future use of the land should be considered.

F. Resource Management Agency, Environmental Health Division

The Ventura County Environmental Health Division (EHD) does not have jurisdiction over the cleanup activities at Santa Susana Field Laboratory (SSFL). Nevertheless, the EHD provides the following comments upon the DEIS and the activities referenced therein:

1. The information in the DEIS indicates that the handling of solid waste and hazardous materials encountered or created in the cleanup activities appears to be in conformance with applicable regulations regarding these materials.

2. Two known closed solid waste landfills exist within the general area of the SSFL. These are identified as Area 1 Landfill Solid Waste Information System (SWIS) #56-CR-0051, and Area 2 Landfill SWIS #56-CR-0052. The EHD understands that the cleanup activities proposed in the DEIS will not impact these closed solid waste landfills, however, in the event that changing conditions during the cleanup occur which results in disturbance of either of these landfills, the EHD, as Local Enforcement Agency for Solid Waste must be contacted prior to any disturbance. Also, the EHD will continue to monitor the condition of these solid waste landfills, in conformance with State minimum standards.

3. The EHD oversees testing requirements for specified projects in proximity to the SSFL for perchlorate and trichloroethylene. The EHD does not anticipate any change to this testing protocol related to the cleanup.

Thank you for the opportunity to review and comment on the DEIS. Additional comments may have been sent directly to you by other County agencies, such as the Ventura County Air Pollution Control District.

Please note that responses to Public Works Agency comments should be sent directly to the commenter, with a copy to Laura Hocking at the Ventura County Planning Division, L#1740, 800 S. Victoria Avenue, Ventura, CA 93009. Memos from the Public Works Agency Transportation Department and Integrated Waste Management Division with their comments are attached for reference.

General questions on this letter may be directed to Laura Hocking, RMA Planning Division, at (805) 654-2443 or via email at Laura.Hocking@ventura.org, using County RMA Reference Number 13-019.

Sincerely,

Chris Stephens
Director

cc: Laura Hocking, RMA Planning Division

Attachments:

Response to DEIS from County of Ventura Public Works Agency Integrated Waste Management Division dated August 21, 2013

Response to DEIS from County of Ventura Public Works Agency, Transportation Department dated August 20, 2013

County of Ventura
Public Works Agency
Integrated Waste Management Division
MEMORANDUM

Date: August 21, 2013

To: Allen Elliott
National Aeronautics & Space Administration (NASA)

From: Derrick Wilson, Staff Services Manager
Integrated Waste Management Division

Subject: **Non-County Project – RMA No. 13-019**
Draft Environmental Impact Statement (DEIS) for Proposed Demolition and Environmental Cleanup Activities at Santa Susana Field Laboratory

Lead Agency: National Aeronautics & Space Administration (NASA)
Lead Agency Contact: Allen Elliott, 256/544-0662

Summary:
NASA has announced the availability of a Draft Environmental Impact Statement (DEIS) to evaluate the potential environmental impacts of proposed demolition and environmental cleanup activities on property administered by NASA at the Santa Susana Field Laboratory (SSFL) in Ventura County. NASA is preparing land they administer at the SSFL for disposition, or "excess," through the Department of General Services (GSA). NASA's preparation of the land for disposition includes consideration of the possible demolition of all structures on land they administer at the SSFL. The purpose of the DEIS is to inform NASA decision makers, regulating agencies, and the public of potential environmental consequences of the proposed demolition of buildings and structures at the SSFL, and the proposed environmental cleanup actions for groundwater and soil on NASA administered land at the SSFL. The DEIS will consider a range of remedial technologies that might be implemented to achieve the proposed groundwater and soil remediation goals. NASA will use the DEIS to consider the potential environmental, economic, and social impacts of proposed remediation actions.

Pursuant to RMA's request, the Integrated Waste Management Division (IWMD) has reviewed NASA's July, 2013, DEIS pertaining to the proposed demolition and environmental cleanup at the SSFL. The IWMD appreciates this opportunity to provide our comments.

The following contract specifications pertain to all **uncontaminated** materials generated during demolition and environmental cleanup activities on NASA's portion of the SSFL site. The IWMD requests that NASA comply with Ventura County Ordinances 4445 (solid waste handling, disposal, waste reduction, and waste diversion) and 4421 (the diversion of construction and demolition debris from landfills by recycling, reuse, and salvage) to assist the County in its efforts to comply

with the waste diversion mandates of Assembly Bill 939 (AB 939) which mandates all cities and counties in California to divert recyclable solid waste from landfills. Both of these Ordinances may be viewed in their entirety on the IWMD's website at: www.wasteless.org/landfills/ordinances.

Pursuant to IWMD review and responsibilities, the following contract specifications shall apply to uncontaminated materials generated by this project:

Recyclable, Uncontaminated Construction & Demolition (C&D) Debris

Contract specifications for this project must include a requirement that C&D debris generated by the demolition of uncontaminated buildings on the project site must be diverted from the landfill. Recyclable C&D materials include, but are not limited to, concrete, asphalt, rebar, wood, and metal. These materials must be recycled at an appropriate, permitted C&D debris recycling facility. A complete list of permitted C&D debris recycling facilities in Ventura County is available at: www.wasteless.org/construction&demolitionrecyclingresources. All uncontaminated, non-recyclable, materials shall be disposed of at a permitted disposal facility.

Uncontaminated Soil - Recycling & Reuse

Contract specifications for this project must include a requirement that uncontaminated soil that is not reused on-site during the C&D phase(s) of this project shall be transported to an authorized and/or permitted organics facility for recycling or reuse. Illegal disposal and landfilling of uncontaminated soil is prohibited. A complete list of facilities in Ventura County that recycle uncontaminated soil is available at: www.wasteless.org/construction&demolitionrecyclingresources.

Uncontaminated Green Materials - Recycling & Reuse

The Contract Specifications for this project must include a requirement that uncontaminated wood waste and vegetation removed during the C&D phase(s) of this project must be diverted from the landfill. This can be accomplished by on-site chipping and land-application at the project site if deemed appropriate by NASA, or by transporting uncontaminated materials to an authorized and/or permitted greenwaste facility in Ventura County. A complete list of authorized greenwaste facilities is located at: www.wasteless.org/greenwasterecyclingfacilities.

Recyclable, Uncontaminated Construction & Demolition (C&D) Debris – Required Reports

Per Ventura County Ordinance 4421:

1. Contractors selected to demolish uncontaminated buildings/structures at the Santa Susana Field Laboratory site are required to submit a completed ***Form B – Recycling Plan*** to the IWMD for approval. The ***Form B – Recycling Plan*** must specify how uncontaminated, recyclable C&D debris generated by the project (e.g., concrete, asphalt, wood, soil, greenwaste, metal) will be diverted from the landfill. A copy of IWMD's ***Form B – Recycling Plan*** is available at: www.wasteless.org/recycling/greenbuildingCD.

2. Contractors selected to demolish uncontaminated buildings/structures at the Santa Susana Field Laboratory site are required to submit a completed

Form C – Recycling Report to the IWMD at the conclusion of the project. The ***Form C – Recycling Report*** must have original recycling facility receipts and/or other documentation attached to verify that recycling, NASA approved on-site reuse, or salvage of uncontaminated C&D debris occurred. A copy of IWMD's ***Form C – Recycling Report*** is available at: www.wasteless.org/recycling/greenbuildingCD.

Should you have any questions regarding this memo, please contact Pandee Leachman at 805/658-4315.

PUBLIC WORKS AGENCY
TRANSPORTATION DEPARTMENT
Traffic, Advance Planning & Permits Division

MEMORANDUM

DATE: August 20, 2013

TO: RMA – Planning Division
Attention: Laura Hocking

FROM: Transportation Department

SUBJECT: REVIEW OF DOCUMENT 13-019 Draft Environmental Impact Statement (DEIS) for Proposed Demolition and Environmental Cleanup Activities for NASA-administered portion of the **Santa Susana Field Laboratory (SSFL).**
Simi Hills, Ventura County (State)
Lead Agency: **California Department of Toxic Substances Control (DTSC)**

Pursuant to your request, the Public Works Agency – Transportation Department has completed the review of the Draft Environmental Impact Statement (DEIS) for Proposed Demolition and Environmental Cleanup Activities for the National Aeronautics and Space Administration (NASA)-administered portion of the Santa Susana Field Laboratory (SSFL) located in the Simi Hills south of the City of Simi Valley and west of the Ventura and Los Angeles County jurisdictional boundary.

Site activities at the 2,850-acre SSFL have included research, development, and testing of liquid-fueled rocket engines and components for various governmental space programs. Rocketdyne (predecessor to Boeing) began operations in the late 1940s for the Air Force and then NASA. NASA gradually discontinued testing in the 1980s, with final tests conducted in 2006. The site consists of four administrative areas known as Areas I, II, III, and IV and two undeveloped areas or buffer zones.

This project proposes a demolition of approximately 100,000 CY of debris (tests stands and other structures) and 500,000 CY of soil in the NASA-administered areas, approximately 41.7 acres within Area I and all 409.5 acres of Area II. The Boeing company manages the remaining area of the property (2,398.8 acres). This project will generate approximately 39,000 trucks over an estimated 650 working days. The project will require 34 construction workers during the 150-day demolition phase and 15 construction workers during the 500-day excavation and disposal phase.

The California DTSC oversees the comprehensive environmental investigation, monitoring, and cleanup program of contamination at the SSFL. The process for actual cleanup includes: (1) Resource Conservation Recovery Act (RCRA) Facility Investigations (RFI) Reports; (2) a Feasibility Study; (3) a Risk Assessment; (4) a draft Remedial Action Plan (RAP); (5) a draft Environmental Impact Statement (EIS); (6) final RAP; and (7) final EIS.

We have reviewed several documents in regard to the SSFL cleanup. Our previous comments are still valid and applicable.

We offer the following comments on the DEIS for the demolition and cleanup activities in the NASA-administered areas of the SSFL:

1. According to the Truck Route Map (Figure 4.5-1), the project proposes to access the SSFL via Santa Susana Pass Road and Box Canyon Road in the County of Ventura and Woolsey Canyon Road in the County of Los Angeles.

    a. The project proponent should be aware that Santa Susana Pass Road from Katherine Road to Rocky Peak Road has a "No Trucks Over 2 Axles" Truck Restriction adopted by the Ventura County Board of Supervisors (BOS) February 4, 1986.

    b. The project proponent should be aware that Box Canyon Road from Santa Susana Pass Road to the Ventura County and Los Angeles County jurisdictional boundary has a "No Trucks 3 Or More Axles" Truck Restriction adopted by the BOS September 28, 1999.

    c. If the project proponent plans to use trucks that are not restricted on Santa Susana Pass Road or Box Canyon Road, then please include these roads in the survey of road conditions as described in Traffic MM-2 on Pages 6-3 of the DEIS.

        i. Proper precautions should be taken to protect all County road facilities in the unincorporated areas.

        ii. If, in the opinion of the Transportation Department, any portion of a County road is damaged by the project's operations, then it should be repaired in accordance with current standard construction details and/or in a manner acceptable to the Transportation Department.

        iii. An Encroachment Permit is required for any work in the public right-of-way.

    d. The Transportation Department will not allow/permit hauling on Black Canyon Road north of the project site.

2. Please notify the Transportation Department when the Final EIS is ready for review and comment.

Our review is limited to the impacts this project may have on the County's Regional Road Network.

ec: Anitha Balan, Permits, Transportation Department

From:	Christine Rowe
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01); Fellows, Merrilee (HQ-LD000)
Subject:	Letter to Senator Boxer re: NASA EIS
Date:	Tuesday, October 01, 2013 7:26:07 PM
Attachments:	Senator Boxer re NASA DEIS September 22nd, 2013.pdf

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Dear Mr. Elliott,

As per the request of NASA, I have not submitted this letter directly to NASA Administrator Bolden even though the CC says to NASA Administrator Bolden.

At this time, I believe that I have sent it to both Senator Boxer and Senator Feinstein, to Congressman Waxman and Congressman Sherman. It will be sent to the others I have cc'd ASAP.

Respectfully submitted,

Christine L. Rowe
West Hills resident

Dear Senator Boxer, **September 22,2013**

October 1st, 2013, the public comments are due for the NASA Santa Susana Field Laboratory Draft Environmental Impact Statement.

Last year you met with California Department of Toxic Substance Control Director Debbie Raphael regarding the NASA Environmental Impact Statement. I believe you also met with NASA Administrator Bolden, and you may have communicated with Nancy Sutley of the Council on Environmental Quality.

While I know that you have been hearing from many constituents over the past twenty years regarding the Santa Susana Field Lab site, the site is not as contaminated today as it was when you first became involved with this project.

At about the same time that you were having these meetings in Washington, D.C., I was the Environment Committee Chair and the Public Health Chair of the West Hills Neighborhood Council. We voted last May to write to NASA Administrator Bolden and to request a full scope Environmental Impact Statement (EIS).

NASA has complied with your request and the request of Director Raphael to do a Draft EIS with only two alternatives - a cleanup to the Administrative Order on Consent (AOC) and the required No Further Action.

This document is over 1000 pages, and I have skimmed all of those pages, and studied many others.

The conclusion that I have is this remediation action will have a tremendous impact on the communities of West Hills - where I have lived for more than 35 years, as well as the communities of Chatsworth, Canoga Park, and Woodland Hills.

DTSC has a Community Advisory Group, and it is my expectation that this group and many others including the Chatsworth Neighborhood Council will be asking DTSC and NASA to change their Administrative Order on Consent to a risk based cleanup. <u>The majority of the people who understand the technical aspects of the site cleanup support a risk based clean up to a suburban residential standard</u>.

The cleanup deadline for soils is 2017. There is no way for all three Responsible Parties to achieve their demolition and soil remediation by 2017, and do so in a safe manner. The roads that these trucks must traverse while they are highways in West Hills and the neighboring communities - they also cross many school crosswalks, and they drive through many minority and low income census tracts. Furthermore, you are taking soil that is not being cleaned up based on risk to other communities that are also Environmental Justice Communities.

I respectfully request that you ask the federal EPA, DTSC, and the California Department of Health to appear before your committee and tell you if the AOC level

of cleanup is necessary to protect public health offsite, and to protect people who would use the site in the future.

DTSC has already sent a letter to the Mayor of Simi Valley that indicates that they do not know of any offsite risk to the community at this time.

However, at recent meetings, it was brought up that the more soil that is removed, the greater risk that may be caused to the community from dust and spores that can cause Valley Fever and other illnesses. You will also risk releasing more naturally occurring radionuclides and other metals into the environment. Furthermore, the cleanup could possibly cause enough erosion that could lead to flooding in the area should we have a hard rain during the remediation period.

The loosened soil will most likely enter the streams which lead to the L.A. River and other blue line streams and they will most likely exceed the NPDES permits as a result of this remediation.

I have contacted the South Coastal AQMD regarding the truck emissions to and from the site and their impact on my community's health. I was told that they only monitor stationary sources, and that the Santa Susana Field Laboratory is in Ventura County, and outside of their jurisdiction. They have no control over the mobile sources.

The impact of greenhouse gases is also spelled out in the NASA Draft Environmental Impact Statement. Los Angeles has the worst air quality in the Nation, and now we are adding these trucks to our load for possibly the next 10 or more years.

I respectfully request that you find people in the government who can give you the real truth regarding how best to clean up this site to protect the public health and safety of my community, the wildlife corridor, the protected Endangered Species, and the global environment.

Thank you.

Respectfully,

Christine L. Rowe
***Former West Hills Neighborhood Council Board member – for identification purposes only**
6732 Faust Avenue
West Hills, California 91307

cc: Senator Diane Feinstein
cc: Congressman Brad Sherman
cc: Congressman Henry Waxman
cc: Governor Jerry Brown
cc: DTSC Director Debbie Raphael
cc: Senator Fran Pavley
cc: NASA Administrator Bolden
cc: Nancy Sutley, Chair of the Council on Environmental Quality
cc: Mayor Eric Garcetti

From:	Christine Rowe
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01); ZORBA, PETER D. (HQ-LP040); Fellows, Merrilee (HQ-LD000)
Subject:	NASA DEIS - Schools, Parks, and Open Space
Date:	Monday, September 09, 2013 4:38:00 AM
Attachments:	CANOGA-PARK-NEIGHBORHOOD-COUNCIL-Small.jpg ChatsworthNeighborhoodCouncil-map.jpg West-Hills-East-Neighborhood-Council-small (1).jpg Woodland-Hills-Warner-Center-Small.jpg

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Dear Mr. Elliott,

I am making reference again to your Figure 3.12 - 3. This time I am referencing the locations of parks in West Hills.

One of these parks is Shadow Ranch Park - which has historical status in the City of Los Angeles. It is used by the New Community Jewish High School football and other athletic activities; it also still has preschool programs to the best of my knowledge. It is across the street from the New Community Jewish High School to the north. It is also most likely in your Region of Influence Roadways.

Other parks that are in West Hills that I do not see located are closer to Valley Circle. Some of these may fall into your Upper Las Virgenes Canyon Open Space Preserve?

But they include:

1. Castle Peak Park
2. El Escorpion Park
3. West Hills Baseball
4. Knapp Ranch Park West

In Woodland Hills on Topanga and Oxnard is Warner Ranch Park. You also missed a major park in Woodland HIlls on Shoup which is south of Oxnard and north of Burbank I believe).

I have attached the Neighborhood Council maps for the four communities that will be potentially impacted by your trucks.

I have done this for a number of reasons:

1. I think that all of these Neighborhood Councils (NC) need to be made aware of the NASA DEIS and the potential for all of this future traffic. This is particularly true for the Canoga Park NC which may not have been as actively engaged in the project. A second NC which should be consulted is the Woodland Hills Warner Center NC.
2. Both Canoga Park and Chatsworth have census tracts that have a higher minority population and lower income populations than census tracts in other locations. Your census tract documents seemed to focus on those Environmental Justice communities - Section 4.8 Environmental Justice.
3. As you look at Table 4.8-2 : Schools Near Local Roadways Affected by the Proposed Action - please review my previous comments on schools that were missed on your school map on Figure 3.12 - 3.

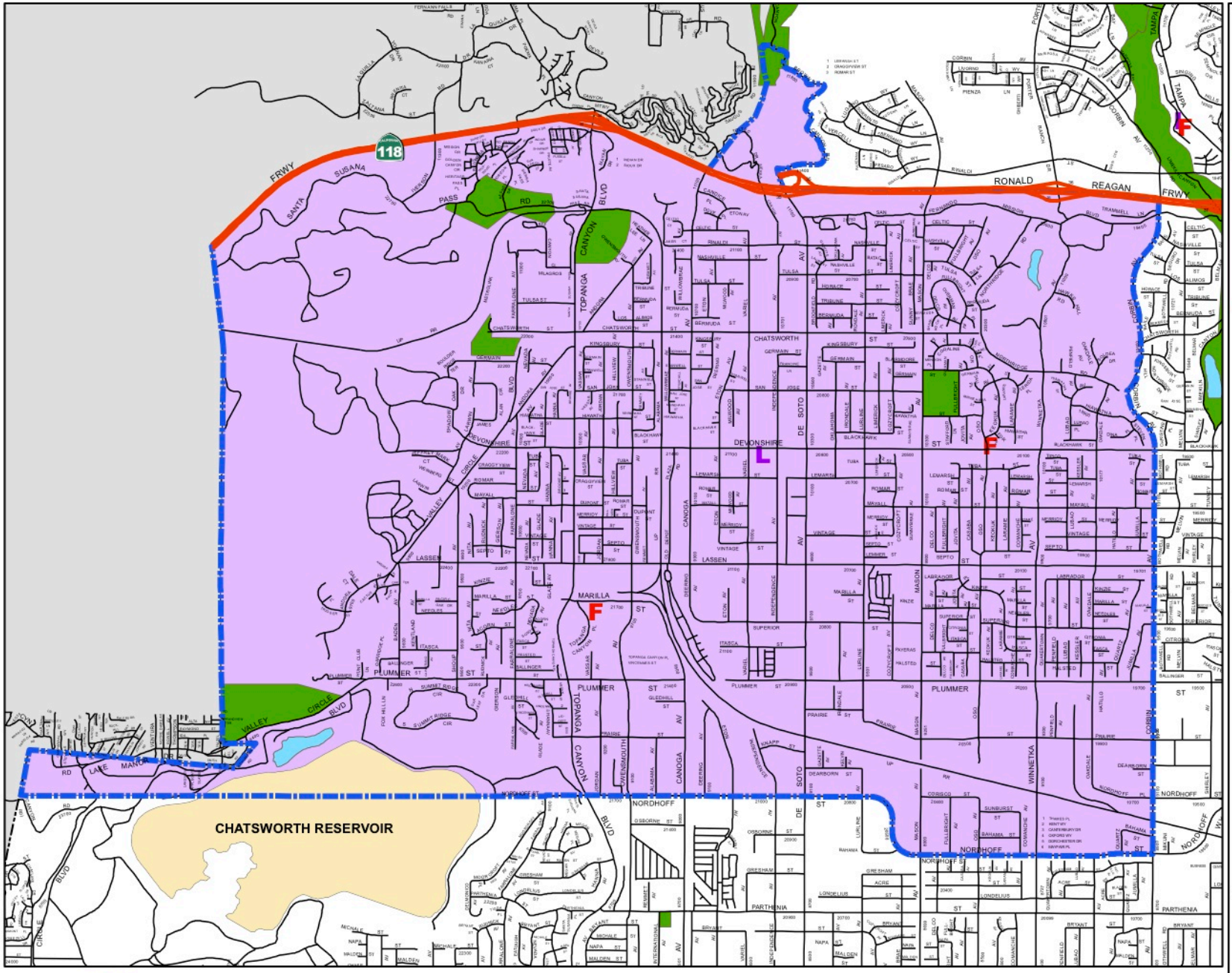
4. Your census tract data is referenced on Figure 3.12- 2 and on Tables 3.12 - 1 and 3.12 -2.
5. Another reason for submitting these maps is to show that you can show primary streets on a small map which is necessary for someone to understand locations of schools, approximate distances, etc.
6. Open spaced are shown on these map attachements as well.
7. Your Final maps - you may want an acrylic overlay for hard copies to show some locations. Another option is to put a number on a map - and have the map fold over to reveal the legend of the school locations. By putting the full names on the maps - with maps as small as roughly 7" x 10" - your words overlay other features. I recommend the school symbol with an associated number.
8. You must also consider that not all schools have the same hours of operation. Some schools have after school programs; other schools may close for specific religious holidays - or they may be open on days that you may not expect.

In all of your truck traffic scenarios, you must be considering summer activities which are a really important aspect of Lanark Park in Canoga Park.

I do not see any notations for major parks such as Chatsworth Park South, Santa Susana Pass State Historic Park, or Stoney Point Park in Chatsworth (which is exactly where the trucks queue to get on the 118 freeway going east).

Respectfully submitted,

Christine L. Rowe



NORTH VALLEY AREA

COUNCIL DISTRICT: 12

CHATSWORTH NC

CERTIFIED: 04/29/2003

Department of
Neighborhood Empowerment
(213) 485-1360 or dial 311
www.lacityneighborhoods.com

- P Police Station
- F Fire Station
- L Library
- Park
- Recreation Area
- Water
- Freeway
- Street

N

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CHATSWORTH

NEIGHBORHOOD COUNCIL

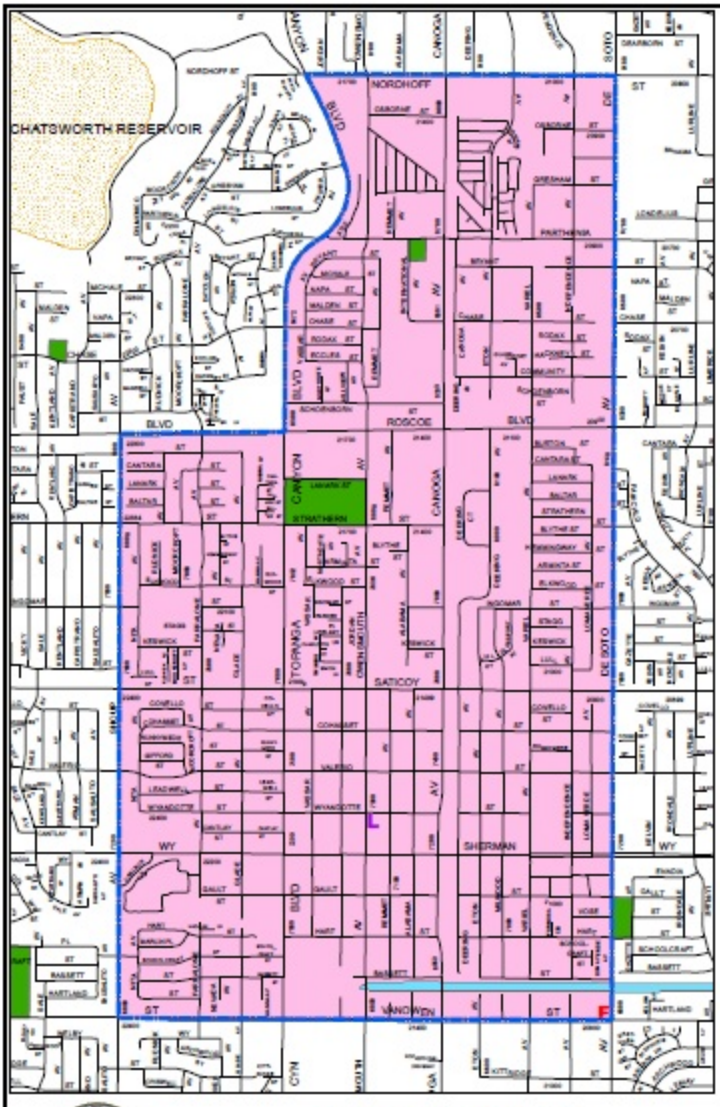
DEPARTMENT OF NEIGHBORHOOD EMPOWERMENT

CITY OF LOS ANGELES

ANTONIO R. VILLARAIGOSA
MAYOR

LA DPW ENGINEERING
Serving the Present; Designing the Future

GARY LEE MOORE, P.E.
CITY ENGINEER



SOUTH VALLEY AREA

COUNCIL DISTRICTS: 3 & 12

CANOGA PARK NC

CERTIFIED: 06/18/2002

Department of Neighborhood Empowerment
(213) 485-1360 or dial 311
www.lacityneighborhoods.com

- P Police Station
- F Fire Station
- L Library
- Park
- Recreation Area
- Water
- Freeway
- Street

N

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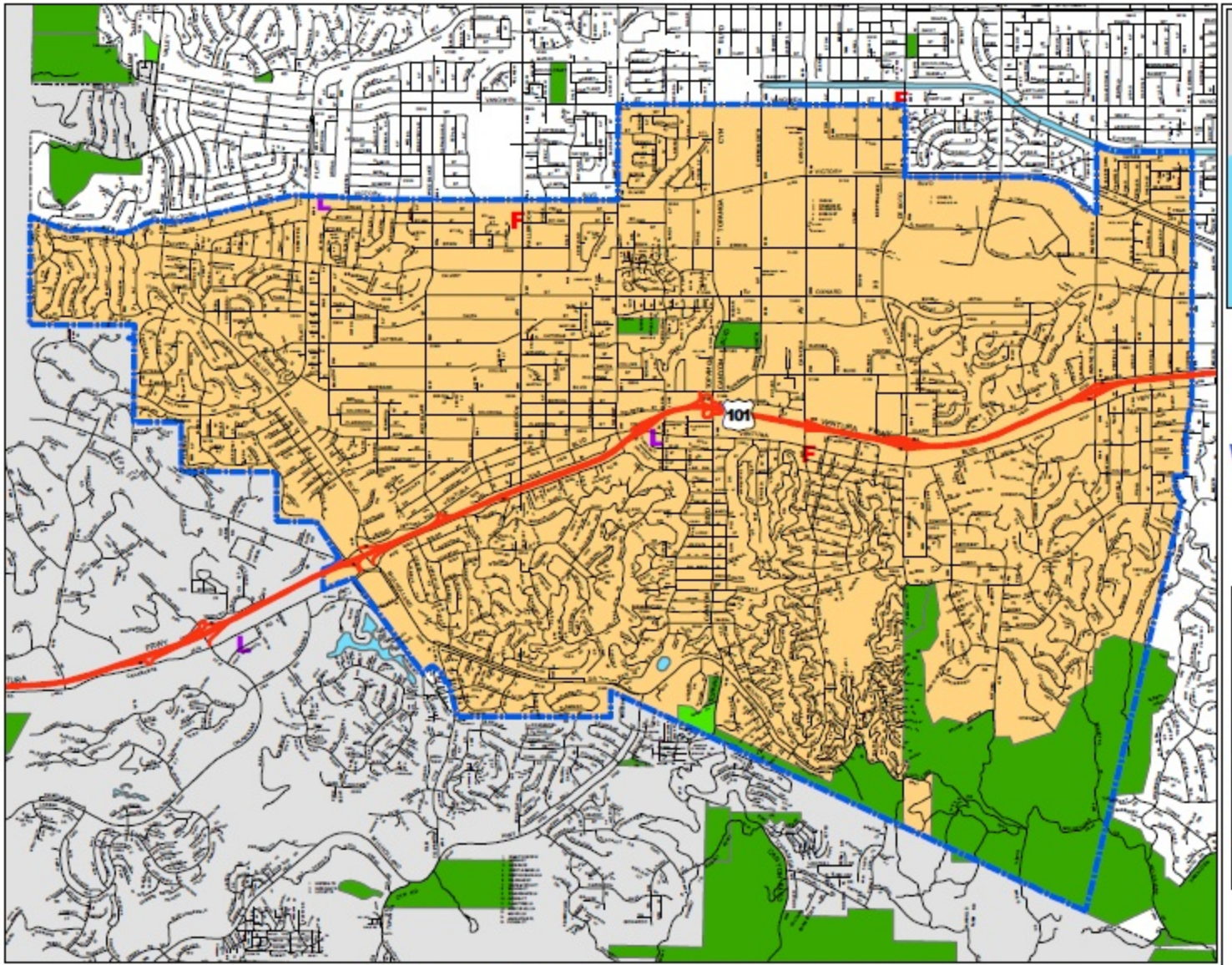
CANOGA PARK

NEIGHBORHOOD COUNCIL
DEPARTMENT OF NEIGHBORHOOD EMPOWERMENT
CITY OF LOS ANGELES

ANTONIO R. VILLARAIGOSA
MAYOR

LA DPW ENGINEERING

GARY LEE MOORE, P.E.
CITY ENGINEER



SOUTH VALLEY AREA

COUNCIL DISTRICTS: 3 & 11

WOODLAND HILLS-WARNER CENTER NC

CERTIFIED: 03/06/2002

Department of Neighborhood Empowerment
(213) 485-1360 or dial 311
www.lacityneighborhoods.com

- P Police Station
- F Fire Station
- L Library
- Park
- Recreation Area
- Water
- Freeway
- Street

N

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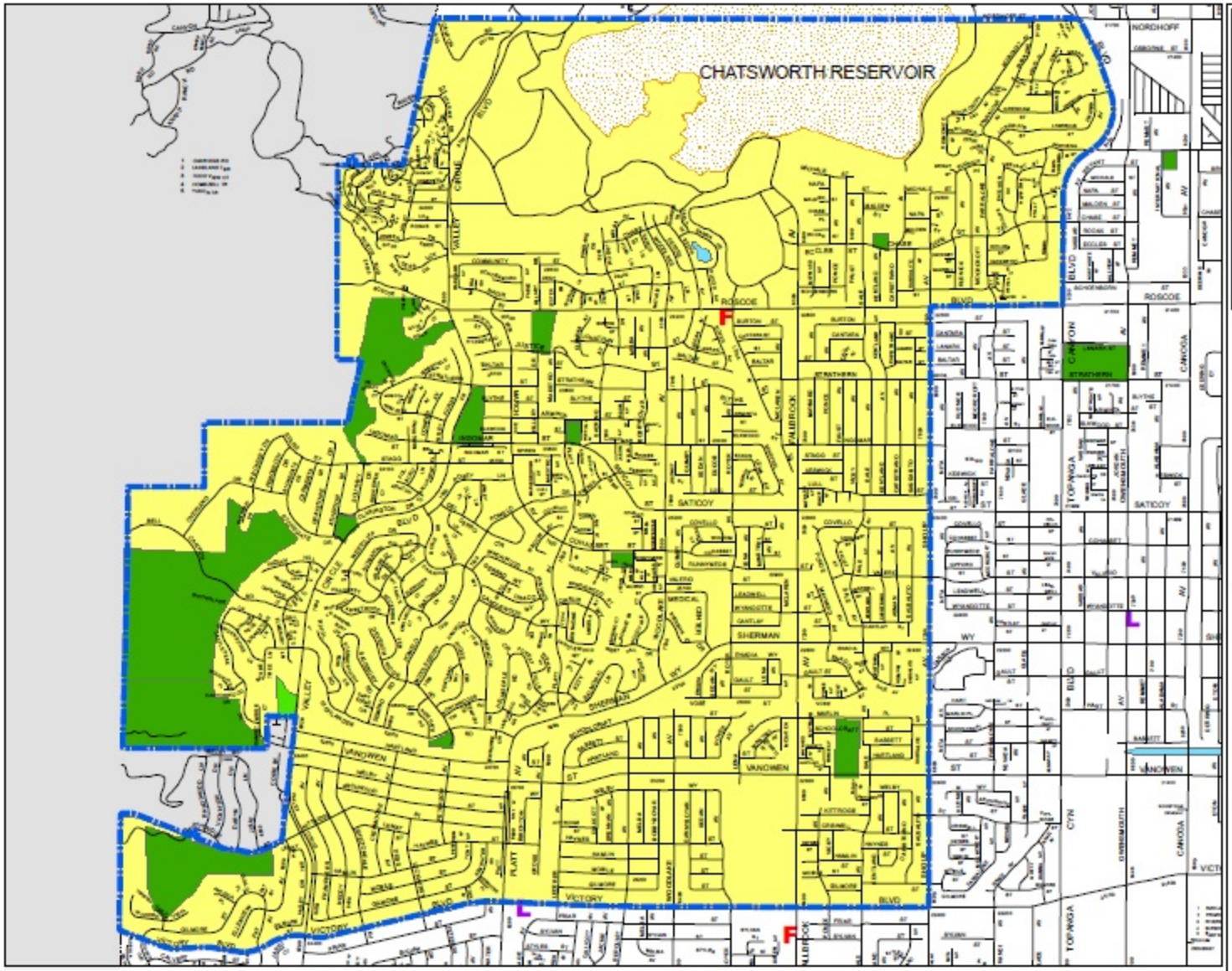
WOODLAND HILLS-WARNER CENTER

NEIGHBORHOOD COUNCIL
DEPARTMENT OF NEIGHBORHOOD EMPOWERMENT
CITY OF LOS ANGELES

ANTONIO R. VILLARAIGOSA
MAYOR

LA DPW ENGINEERING
Service, the Present; Designing, the Future

GARY LEE MOORE, P.E.
CITY ENGINEER



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3 & 12

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GARY LEE MOORE, P.E.
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From:	clark Stevens
To:	MSFC-SSFL-EIS
Cc:	John Hendra; Rosi Dagit
Subject:	NASA DEIS comment letter
Date:	Tuesday, October 01, 2013 2:23:48 PM
Attachments:	131001 NASA DEIS.pdf

Dear Mr. Elliot

please find attached our comment letter regarding the NASA draft EIS

Thank you for the opportunity to provide this comment.

Best regards,

clark stevens, architect
executive officer
resource conservation district of the santa monica mountains
(rcdsmm)
(310) 614-6636
www.rcdsmm.org

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SANTA MONICA MOUNTAINS

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1 October 2013

Allen Elliott, SSFL Project Director
Marshall Space Flight Center
National Aeronautics and Space Administration
AS 01, Building 4494
Huntsville, AL 35812
E-mail: msfc-ssfl-eis@mail.nasa.gov

RE: Comments on the Draft Environmental Impact Study (DEIS) for Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California

Dear Mr. Elliot,

On behalf of the Resource Conservation District of the Santa Monica Mountains (RCDSMM), thank you for the opportunity to submit comments on the DEIS for the NASA-administered portion of the SSFL. The RCDSMM is a non-regulatory, locally-led Special District of the State of California that fosters the conservation and enhancement of local natural resources through research, watershed and community-based planning, education and on-the-ground restoration, demonstration, landscape-infrastructure and architectural design projects. The RCDSMM is uniquely chartered by Division 9 of the CA Natural Resources Code to be responsive to the needs of our community, public and private land stewards alike. RCDSMM's expertise is in the specific resource conservation issues of the Wildland-Agricultural-Urban interface. RCDSMM is uniquely positioned to liaise between public/private landowners and regulatory/enforcement officials and agencies toward achieving sustainable communities and resource conserving land use approaches.

As a non-regulatory reviewing and resource agency in the Santa Monica Mountains, as well as portions of the Simi Hills, including the subject property and the Bell Canyon and Chatsworth Reservoir areas, the RCDSMM is actively involved in monitoring resources and local restoration efforts in the area. We prepared the 2011 *Upper Bell Creek Subwatershed Plan* for the Bell Creek Headwaters Council of Bell Canyon, the majority of which subwatershed is SSFL land. Since completion of that plan, RCD staff have continued study of the SSFL property, watersheds, and adjacent lands, including submission of a Conceptual Area Protection Plan (CAPP) of the critical Habitat linkage lands immediately adjacent to SSFL in the Simi Hills for the California Department of Fish and Wildlife. We acknowledge and appreciate the cooperative involvement of the various land stewards and stewardship groups of the region, including NASA, who have

given their time in support of those various study efforts. The RCDSMM is currently a consulting party to the Section 106 process for the subject property.

We provide the following comments and considerations relative to the DEIS:

Summary and Context

Overall, we applaud the clarity and organization of the DEIS, wich states its assumptions and findings clearly. We appreciate its direct and thorough description of the analysis completed to date. The DEIS provides analysis of a required "no action" alternative, and one alternative proposing demolition and clean up of the 451-acre site to "background levels" as established in a previous agreement made between government agencies- referred to in the documents as "2010 agreement on consent" (AOC) for which no formal, public study of the environmental impacts of the agreement was completed. The first and overarching comment of the RCDSMM therefore is that after completion of this first draft of the EIS, given the single action proposed at only the most stringent standards levels of contaminant removal, the environmental impact documentation and analysis remains incomplete. **We request a revision of the DEIS that includes more true alternatives for cleanup including an approach that gives primary consideration to the protection of critical natural and cultural resources while protecting human safety at a level appropriate to the anticipated future land use**.

One Action Proposed

By providing only a no-action alternative and clean-to-background alternative analysis, the DEIS proposes a type of circumlocution in which an agreement established on the basis of contaminant measurement, without adequate study or public review of the environmental consequences, is cited as the sole reason for not providing an adequate study or public review of a full range of alternatives. The RCDSMM suggests that a place of such critical ecological and exceptional cultural resource value merits consideration of a full suite of reasonable alternatives.

We recognize that the no action alternative leaves the site unsafe for human use, so to leave the existing contaminants at the site at current levels is unacceptable. However, by providing only one proposed action, no actionable "alternatives" have been provided at all for consideration, but a single action alone. "Alternatives" implies more than one action be provided which it the analysis approach that follows the spirit, intent and purpose of the public environmental review process.

We understand that NASA is working to comply with AOC-established timelines and internal "directives", and that a number of elements of the analysis lack clear definition which we understand to be in the purview of the DTSC and their own as yet incomplete

environmental analysis. Nevertheless the even the impact of the single (and insufficient) proposed action cannot be completely analyzed until such time as the DTSC/NASA provides more specific information. We request that a revision of the DEIS not only provide the DTSC components, but also provide:

- Complete and balanced analysis of various reasonable cleanup scenarios.

Please note that RCDSMM fully supports reduction of human health risk as the highest priority consideration, and recognizes that the current condition of SSFL does not provide an appropriate environment for any public or private end-use of the property. Reduction of contaminants to safe levels must be achieved according to measurable standards. However, “background” is a measure that requires a qualitative decision on the point in time and specific location in which such a condition could have existed, and as such the choice of quantitative determination drives significant impacts. Given that this background level will not be found in the majority of the metropolitan region that surrounds this site and in which millions of people now live full time, and that the negative ecological and cultural impacts at the site may increase exponentially with increasing quantitative standards of “safe”, other reasonable alternatives should be provided for analysis- as has been requested by numerous commenting parties during the scoping process.

- Identification of specific outcomes for cultural resources, archeological as well as structural.

We find the description of the end condition of the cultural landscape to be lacking specificity in the DEIS. The likelihood of finding archeological elements within contaminated soils is possible, and the outcome of that situation is not sufficiently defined

- Identification of replacement material for soils of sufficient quality to meet the AOC standards.

We understand that a number of sources for replacement material have been studied and none have been as yet identified as meeting the standards now required in the single proposed action. The replacement soil values, if not matching the lookup tables, will drive a different cleanup approach and excavation quantities than is described in the DEIS

Integrated Cultural and Natural Resources

The relatively undivided and sparsely developed Simi Hills and Santa Susana Mountains (SHSSM) are of great importance to the people and land managers of the region, as

they represent the core areas of a primary habitat linkage that provides the Santa Monica Mountains (SMM) with the source of its sustainable biodiversity. However, the connectivity between core habitat areas in the SMM, Simi Hills (SH), Santa Susana Mountains (SSM) and the Los Padres National Forest (LPNF) has been severely degraded by intrusive "fingers" of development, fenced off freeways and railroads, etc. Mitigation for these environmental impacts that occurred prior to the California Environmental Quality Act has been the primary driver for 20 years of wildlife corridor studies, the most recent being the South Coast Missing Linkages Project (http://www.scwildlands.org/projects/scml.aspx). It is important to note that a habitat linkage is more that a "wildlife migration corridor", but is rather a contiguous area connecting significant habitat patches (sources or sinks) within which species can feed, breed and adapt over time to changes in the ecosystem, and through which genetic diversity can flow over generations to maintain species health and viability. As such, the definition of "corridors" is only part of the consideration of ecological importance of the NASA property and SSFL. The subject parcel is the heart of the habitat linkage that is most critical to maintaining the ecological health of the entire Santa Monica Mountains ecosystem, as well as the Simi Hills ecosystem it currently anchors.

As such, the several acknowledged "significant, negative, regional and long-term" impacts of the single action proposed by the DEIS must be understood in this context. To excavate 100 acres of this key watershed, removing all of the soil and replacing less than 20% of that- and even that not with soil, but "backfill"- as currently proposed in the action will leave a significant concavity in the Bell Creek upper catchment. Downstream impacts to the miles of Oak Riparian woodlands downstream have not been adequately studied, but replacement of a positively draining 100-acre surface with a non-draining concavity will certainly devastate the local hydrological cycle. The DEIS cites only the removal of impervious surface and corresponding increase infiltration to establish a claim of beneficial impact. But a critical analysis of the sectional gradient of the resulting hydrology- that is, the loss of positive flow within the riparian corridor resulting from the impoundment created by the unrestored topography- is missing from the DEIS. Clearly, the costs and number of truck trips proposed are contributing factors rationalizing the proposed action, but this extraordinarily unbalanced cut-fill has impacts we ask be fully recognized and evaluated and the claims of beneficial impacts corrected.

The DEIS does not note that the subject property is part of the Rim of The Valley Special Resources Study (ROTV) area for which an Environmental Assessment (EA) is currently being drafted. The ROTV in its completed initial stages has identified and described the natural and cultural resource value and connectivity of the area, noting the critical importance of the region in which the subject property is located. In our letter of comment at the Feasibility stage of the ROTV study the RCDSMM noted that "some important resources that are not yet designated National Historic Landmarks" and commented that:

The 50-years of relative isolation of this [SSFL] site afforded by its use as a rocket-engine testing facility has resulted not only in contamination that is now in the process of remediation, but also in preservation of some remarkable cultural and natural resources. As fellow providers of interpretive design and environmental education, the RCDSMM urges NPS to work internally or with the current SSFL landowners to ensure completion of the "additional research and analysis needed" referenced in the current study documents as required to validate and conserve the exceptional cultural resources that exist on the SSFL site. These artifacts include not only those of indigenous origin, but also uniquely preserved ecosystems that supported these original cultural sites, as well as some modern-era architectural elements such as the Coca Test Stands remaining on site that are among the most significant remaining historic structures related to the American Space Program. NPS through the ROTV process may soon expand its stewardship role to the 2,800-acre SSFL landscape, so working with other agencies and owners before then to ensure that a careful consideration of its critical cultural and ecological resources is part of any and all environmental studies is crucial. The connecting link across the centuries between the paleo-astronomical and modern-era exploration of the heavens is an overlay of unprecedented interpretive significance, and an educational resource worthy of conservation within the context of appropriate remediation.

The sole action described in the DEIS would forever sever this nationally significant connection between the highest aspirations and technological feats of two historic cultures, and create impacts for which no mitigation may be possible, but certainly for which no adequate mitigation has been proposed in this document.

As rare as this convergence of aspirations from widely separated eras and cultures is the opportunity to interpret Native American cultural resources within the largely intact ecological systems that supported their activity and sourced their cosmology. It is a contemporary mistake to compartmentalize the physical characteristics of an historic cultural site from its spiritual and cultural significance. The oak woodlands, the horizontal and sectional geometry of the exposed rock formations and the converging valleys all contributed to the inevitability of this site as the Chumash place of solstice observation, of the human effort to support the cause of Coyote in his yearly contest with Raven to bring the sun back from its journey south and diminishing day-life. The "artifacts" of the human hand ought not be separated from the "artifact" of the ecosystem and space that directed the hands and supported the ceremony. To remove the soil and the ecosystems would be to remove the Sacred Landscape identified by the federally recognized Santa Ynez Band in support of all Chumash people. These are protected resources for which no mitigation is possible.

The co-location of ethno-astronomical technology with modern-era technology created in order to explore the heavens reaching presents an extraordinary inspirational value and interpretive opportunity**.** Nine eligible historic structures exist at the site. We suggest that demolition of most of these historically significant structures can not be mitigated by retaining only one of them. We will provide section 106 comment under separate cover,

but propose that the remaining Coca and Alfa district test stand structures have the greatest potential for interpretive, educational, and inspirational value at the site and at least one test stand at each site should be preserved along with its critical contextual structures, such as the associated blockhouse. We suggest that appropriate mitigation for the historically significant structures that are to be demolished not only be 3-dimensional documentation of their pre-destructed state, but also an endowment for the maintenance and interpretation of all of the "structures" both indigenous and modern and the absolutely unique co-location at *Hi'im* (mystery valley), also known as SSFL.

Preparation for Disposition

In addition to creating negative, significant and long-term impacts to rare riparian and oak woodland areas and their supporting hydrology, removal of nearly a quarter of the surface soils and much of their underlying topography to a depth of up to 20 feet, and replacing that with a small fraction of "backfill", the removal of up to 100% of the modern era historic structures and protection of only the "artifacts" found within a destroyed context- even that of the Burro Flats Cave site- will limit not only the not only the number, but the type of recipients who will take interest in assuming ownership. The GSA disposition process cannot force a preferred steward to take on the property, so it must be left in a state that is suitable for some end-use. Public open space managers with stressed budgets and very clear missions may be hard-pressed to justify obtaining a 451-acre property with 100 acres of un-restored excavation area, a weed, erosion, and surface water management problem, stripped of all cultural resource and interpretive value, with only fragile artifacts remaining without context yet still in need of protection. The disposition process does not guarantee any public or open-space/recreational end use. Should no such stewards accept the property, others will evaluate the "highest and best use" of a former development site, now free of contaminants, within a fully accessible100-acre graded area. The potential for losing the site to development is a potential unintended consequence of look-up tables and timelines rather than Purpose and Need driving the choice reasonable alternative approaches to cleanup. The stated Purpose and Need to remediate the environment and prepare the property for disposition is not met by the single action proposed.

Environmentally Superior Alternative

Discussion of the environmentally superior alternative is absent from the DEIS. Perhaps this is because "no action" is clearly not what the community has been working toward for 30-plus years. Nevertheless, this section should be completed, as it is not a foregone conclusion that the single action studied would be superior to "no action", or that the action proposed meets the standards required for the significant long term benefit claimed. The RCDSMM notes that the minimum amount of on-site remediation techniques proposed, and the 500,000 cubic yards to be removed to another site do not together represent true cleanup so much as contaminant relocation and concentration.

The offsite impacts of concentrating low levels of contamination in a single site such as Kettleman to create an area of significant contamination ought be considered when this required discussion and identification of the environmentally superior alternative is completed- as well as in the environmental justice analysis. The environmental impact and justice of taking soil of "background" level quality from another location should also be taken into consideration. It stands to reason that such soils, if available, would come from areas minimally impacted by surface or atmospheric deposition of environmental contaminants- that is, primarily natural and relatively pristine sites. What environmental permit process would allow such a taking? And, if material of such quality is physically or legally unobtainable, as may be the case if it can only be found in another community's treasured open space, then what quality of material would be provided as a substitute? If that quality allows for a higher measure of contaminants within a safe standard, then why remove the existing soil that meets that elevated level of acceptability in the first place? The result would be a new alternative, one that would be possible within the constraints of available material.

We do not agree with the conclusion that the single action proposed will result in a moderate improvement to the biological resources of the site in the long term. 100 acres of soil is to be removed, and far less returned as backfill, which is not of course soil. The net loss of native soils cannot be considered a benefit under any time frame or standard of objective measurement. With that correction, the reports tables seem to suggest that the no action alternative is the superior alternative. This result of course cannot stand, as there is a recognized need for contaminant removal at the site, and yet we do not have an action yet that has less than significant negative impacts in critical categories.

In conclusion, we request that NASA, with DTSC's full involvement and assistance, provide a revised DEIS evaluating a full suite of safe alternatives that recognize not only the critical ecological and cultural context that exists on site, but also the environmental "background" reality of the city in which this damaged but storied and sacred landscape is improbably located. We urge the agencies to take the long view, and extend the deadlines and clarify or renegotiate the agreements that appear to be driving this understudied environmental analysis. Section 2.4 of the DEIS is particularly helpful, revealing, and provides a potentially valid framework for analysis of just such a complete suite of alternatives, as presented in earlier public meetings and truly useful for engaged public comment.

Thank you for the opportunity to comment, and for the NASA staff's sincere public engagement efforts and exceptional availability up to this point in the process. If you have any questions about this letter please feel free to contact me at the 818-587-8627, ext. 105.

Respectfully submitted,

Clark Stevens, Architect
Executive Officer

From:	Christine Rowe
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01); Fellows, Merrilee (HQ-LD000); GROMAN, JENNIFER A. (HQ-LD020)
Subject:	NASA DEIS Comments
Date:	Tuesday, October 01, 2013 7:36:53 PM
Attachments:	Allen Elliott WHNC Former Member Comments for DEIS October 1 2013.pdf NASALtr.pdf West Hills Neighborhood Council Resolutions regarding the Santa Susana Field Lab.pdf

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Dear Mr. Elliott,

As a former Board member of the West Hills Neighborhood Council, and as their Public Health and Environment Committee Chair at the time that these letters were voted upon, I am submitting them to you as a reminder of actions that were taken by former WHNC Board members - some who still reside in West Hills.

Respectfully submitted,

Christine L. Rowe
October 1st, 2013 5:36 PM

Allen Elliott,
SSFL Program Director,
NASA MSFC AS01,
Building 4494,
Huntsville, AL 35812

Dear Mr. Elliott,

The West Hills Neighborhood Council (WHNC) is an advisory body to the City of Los Angeles per its Charter. Neighborhood Council Board members are elected by the local stakeholders to represent them on issues related to land use, public health, public safety, and the environment. In fact, the WHNC has committees that address each of these issues.

The West Hills Neighborhood Council has been addressing the Santa Susana Field Laboratory cleanup for more than 10 years. As former members of this Board, we have been to the Santa Susana Field Laboratory, and we have been to see some of the NASA test stands and other facilities at the site.

When NASA and the DOE signed the 2010 Administrative Order on Consent (AOC) with the DOE, the WHNC considered potential conflicts between the AOCs with the DOE's need to comply with an order to perform an Environmental Impact Statement.

We also considered that the cleanup plans under DTSC's authority was being based on their authority under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). (1)

"California State Senate Bill SB 990 was codified as California Health and Safety Code Section 25359.20, effective January 1, 2008. As a result of this new direction from the State legislature, the California Department of Toxic Substances Control (DTSC) is transitioning their oversight of the SSFL cleanup from the State's RCRA Program to the California State CERCLA Program. A new Consent Order is being negotiated to finalize this transition. Cleanup at the SSFL will continue to be overseen by the DTSC and will meet strict federal and state cleanup standards. NASA is committed to cleaning up Area II and its Area I parcel to a level that is protective of public health and the environment and that meets regulatory processes and requirements."

DTSC did a presentation on the Agreements in Principle which are a part of the 2010 Administrative Order on Consent in September 2010. (2)

As a result of that discussion, the WHNC later discussed at their August 13 2011 Board meeting what CERCLA means, and the Nine Balancing Criteria among other issues. (3)

The letter which was addressed to the City Attorney of Los Angeles is attached. I believe that this letter was also generated to NASA after that meeting.

In May 2012, the West Hills Neighborhood Council called a "Special Meeting" to address the issue of the NASA Environmental Impact Statement. A letter was subsequently generated to NASA Administrator Bolden requesting that a full Scope Environmental Impact Statement be performed by NASA. West Hills will be one of the most impacted communities due to the NASA remediation. Minutes of that meeting are linked below. (4) The letter to NASA Administrator Bolden is attached.

As residents of West Hills and former members of the West Hills Neighborhood Council, we would like to reiterate our concerns related to the limited Draft Environmental Impact Statement that NASA has just produced, and we support the votes of the West Hills Neighborhood Council that we submitted in resolution approved on August 3rd, 2011 and May 17, 2013.

For the protection of our community, we respectfully request that NASA do an Environmental Impact Statement that addresses all of the alternative scenarios as was presented at NASA's March 27, 2012, NASA Environmental Impact Study Meeting. (5)

Please also consider our comments in our letter to the City attorney including:

- the request for the U.S. Government property to not be used for residential use; the use of the Nine Balancing Criteria of CERCLA;
- the need to monitor airborne emissions and dust from remediation;
- the need to monitor surface water and groundwater;
- to monitor soils at the Santa Susana Field Laboratory site until DTSC deems that the site is cleaned to all relevant and applicable laws;
- the future use of the site should be parkland or open space based upon the final characterization of the site;
- the WHNC recommended preservation of some of the test stands on the NASA property if it can be done in a manner that is protective of public safety and will not impede the cleanup beneath the test stands;
- the WHNC supports all environmental laws that are applicable to this site that were protective of endangered species and wildlife that uses the site as a major wildlife corridor;
- the WHNC supports all laws that are applicable for the protection of the Native American community and the archaeological sites that are on the National Register of Historic Places.

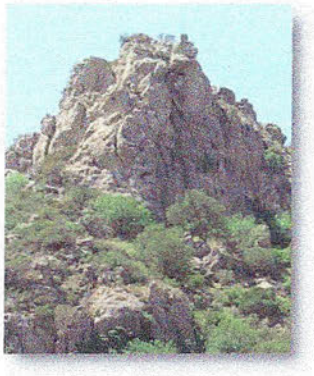
Respectfully submitted,

Christine L. Rowe
*West Hills Neighborhood Council former Board member

*Former WHNC Public Health and Environmental Committee Chair
* For identification purposes only
October 1st, 2013

1) State CERCLA: http://ssfl.msfc.nasa.gov/environmental-cleanup/default.aspx
2) Agreements in Principle: http://www.dtsc-ssfl.com/files/lib_pub_involve/meeting_agendas/64728_AgreementsInPrinciple09-22-10.pdf
3) WHNC August 3, 2011 Minutes: http://www.westhillsnc.org/uploads/WHNC_Minutes_8-3-11.pdf
4) WHNC May 17, 2012 Minutes: http://www.westhillsnc.org/uploads/WHNCMinutes20120517.pdf
5) NASA Environmental Impact Statement (EIS) Informational Meeting Presentation: http://ssfl.msfc.nasa.gov/documents/presentations/201203_EIS_Informational_Meeting/NASA_EIS_Presentation_March_27_2012.pdf

West Hills Neighborhood Council



May 25, 2012

NASA Administrator Charles F. Bolden, Jr.
NASA Headquarters
Washington, D.C. 20546

First in the Valley

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Dear Administrator Bolden,

As elected officials of the community of West Hills in the City of Los Angeles, we have an obligation to address issues that could have an impact on our community.

We, the members of the West Hills Neighborhood Council, believe that NASA should comply with NEPA and CEQA, and NASA should perform a complete full scope Environmental Impact Statement (EIS), and that NASA should consider all alternatives under the EIS with regards to the cleanup standards of NASA's property at the Santa Susana Field Laboratory.

Very truly yours,

STEPHEN A. LENSKE
President/Co-Chair
West Hills Neighborhood Council

SAL: mlr
cc: West Hills Neighborhood Council Board

RESOLUTIONS FOR THE REMEDIATION OF AND FUTURE USE OF THE SANTA SUSANA FIELD LABORATORY

WHEREAS the West Hills Neighborhood Council is an advisory body to the City of Los Angeles under the City Charter and is the nearest community in the City of Los Angeles to the Santa Susana Field Laboratory site; and

WHEREAS West Hills is the community in Los Angeles that is most likely to be affected by contamination from the Santa Susana Field Laboratory site and by cleanup efforts that include truck traffic to and from the site, airborne contamination and emissions, potential groundwater contamination, and contaminates in the groundwater that may have a potential for vapor intrusion;

LET IT BE RESOLVED that:

[1] The West Hills Neighborhood Council respectfully requests that the future use of the Santa Susana Field Laboratory not be used for residential purposes;

[2] The West Hills Neighborhood Council encourages the use of the Nine Balancing Criteria for the remediation of the Santa Susana Field Laboratory;

[3] The West Hills Neighborhood Council recommends ongoing monitoring of airborne emissions and dust from remediation, monitoring of surface water and groundwater, and monitoring of soils at the Santa Susana Field Laboratory site until it [DTSC]* deems that the site is cleaned according to all relevant and applicable laws;

[4] The West Hills Neighborhood Council recommends the future use of the Santa Susana Field Laboratory as parkland or open space based upon the final characterization of the site;

[5] The West Hills Neighborhood Council recommends the protection of some of the test stands on the NASA property if it can be done in a manner that is protective of public safety and will not impede the cleanup beneath the test stands;

[6] The West Hills Neighborhood Council supports all environmental laws that are applicable to this site that are protective of endangered species and wildlife that uses the site as a major wildlife corridor; and

[7] The West Hills Neighborhood Council supports all laws that are applicable for the protection of the cultural and archaeological aspects of this site, which is considered sacred to the Native American community and has archaeological sites that are on the National Register of Historic Places.

The West Hills Neighborhood Council recommends to the City Council and the City Attorney that this resolution be recorded as part of a Community Impact Statement for West Hills. The West Hills Neighborhood Council also requests that the City Attorney present this resolution with any other letters from elected officials and community groups when submitting any recommendations to the City Council or to Judge Samuel Conti or his peers relating to *NRDC, Committee to Bridge the Gap, and the City of Los Angeles v the Department of Energy*.

*the word DTSC was placed for clarification because the previous paragraph in the original resolution which mentioned the California Department Of Toxic Substance Control (DTSC) was voted upon by the West Hills Neighborhood Council to be removed from the resolution.

Respectfully submitted by:
Chris Rowe
West Hills Neighborhood Council
Environment Committee Chair and Public Health Committee Chair

August 3, 2011

From:	Christina Walsh
To:	MSFC-SSFL-EIS; Elliott, Allen (MSFC-AS01); GROMAN, JENNIFER A. (HQ-LD020); Fellows, Merrilee (HQ-LD000); ZORBA, PETER D. (HQ-LP040)
Cc:	Ray@DTSC Leclerc; Mark@DTSC Malinowski; draphael@dtsc.ca.gov; Kelly.ThomasP@epa.gov; dempsey.gregg@epamail.epa.gov; matthew.rodriquez@calepa.ca.gov; ssflcaginside@yahoogroups.com; ssflcag@yahoogroups.com; louise.rishoff@sen.ca.gov; William.Craven@SEN.CA.GOV; linda.parks@ventura.org; damon.wing@ventura.org; Cherie Shanteau-Wheeler; Sam Cohen; Alec Uzemeck; Marina@DTSC Perez; susan.abram@dailynews.com; Elizabeth.Fenton@SEN.CA.GOV; David Dassler; Stephanie Jennings; John Jones
Subject:	NASA Draft EIS SSFL Comments from Christina Walsh
Date:	Friday, September 27, 2013 6:59:26 PM
Attachments:	Comments on Draft EIS submitted by Christina Walsh.pdf MIP-finaldraft Attachment A.pdf SEPTEMBER 23pressrelease.pdf

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Enclosed please find our letter of comment, a draft proposal of modification, and a copy of the press release sent out after the SSFL CAG voted on the concerns raised by the DEIS presented. I appreciate the opportunity to comment on this process as I have been long involved in the substantive details including the background study(s) required to determine the lookup tables. It should be understood that the locations chosen were absolutely pristine and considering the lookup table list of hundreds of constituents of concern, it is likely that any replacement soil will be very difficult to find that will qualify under these cleanup requirement numbers. The proposed 105 acres of removal of soil and vegetation is beyond extreme and goes far beyond health protection. It is therefore necessary to consider health risk and utilize the toxicological resources so needless disturbance of soil and devastation of habitat can be avoided. Please reconsider your proposed alternatives of action and make them real. Not all (crazy) or nothing. That is unimaginable.

This comment letter is comprised of information based on the agreements themselves, as well as input from various members listed herein. I will be pleased to provide any confirmation information necessary to substantiate their signatures.
Thank you in advance,
Christina Walsh
8189225123
cleanuprocketdyne.org

Date: September 18, 2013

Administrative Order on Consent for Remedial Action [AOC]
In the matter of Santa Susana Field Laboratory
Simi Hills, Ventura County, California
CA1800090010 (NASA)

And

United States National Aeronautics and Space Administration

Draft Environmental Impact Statement [DEIS]

Health and Safety Code Sections
25355.5(a)(1)(B), 58009 and 58010
Docket No. HAS-CO 10/11 -038

Modification in Principle [MIP]

Modifications needed to create an agreement that is implementable, and that addresses the concerns and needs of the surrounding affected public are as follows:

Basis:

1. Draft EIS submitted by NASA fails to provide legitimate solutions by framing alternatives be either: devastating to the natural ecosystem and sensitive habitats, the sacred Native American sites, as well as failing to conserve American History by suggesting demolishing historic rocket test stands and indicating that the mandating mechanism for these actions is aforementioned AOC.
2. The AOC driving the project goes beyond EPA recommended requirements for human health and safety.
3. SB990 (Kuehl2007) was later struck down by Federal District Court decision, of which the AOC was originally based. A health protective cleanup is what the communities have always wanted.
4. Section 5.26 Severability of AOC Order [2010] provides that "…should a court determine that any federal or State law or regulation incorporated into, referenced in, or authorizing this order is invalid or unenforceable in

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whole or in part, NASA shall comply with each and every remaining part."[1]

5. 6.0 Modification This Order may be modified by the mutual agreement of the parties. Any agreed modifications shall be in writing, shall be signed by both parties, shall have as their effective date the date on which they are signed by DTSC, and shall be deemed incorporated into this Order.[2]
6. Agreement in Principle (attached) which AOC is based, indicates that "scheduled completion of soils cleanup *remains* as 2017" yet original specifies that alternative method in situ treatments shall only require completion of construction (not of remedial soil completion) by 2017 and by omitting "construction" language, the responsible parties do not have adequate time to comply with Order as written, despite directive to use said alternative methods "to the maximum extent possible"[3]
7. 2.8 Soils Remedial Action Implementation Plan does follow clear directive to use alternative in situ methods "to the maximum extent possible" as the DEIS proposes zero alternative solutions on the basis that adequate time to achieve objective is not provided.
    a. The purpose of this directive is to minimize the potential impact on sensitive habitat, eco systems, flora and fauna, migratory species protection that use this sensitive corridor, protect historic structures and sacred Native American cultural sites, yet the DEIS describes a solution that in its declaration states all of the above will be potentially impacted by the large magnitudes soil removal being mandated.
8. 1.6 Agreement in Principle is defined the guiding document that shall govern the AOC process and lists specific exceptions that include the Native American cultural resources, yet the DEIS continues to ignore this primary promise as it is found in the secondary document. NASA has to follow the Agreement in Principle, which clearly stipulates a 5% volume exception, which could assist in prioritizing and the protection of sacred areas currently known. Due to the likelihood of additional sites being discovered, it is recommended that these boundaries be drawn wide and use of native monitors throughout excavation and alternative method efforts be present.

Modifications needed:

1 1.7.2.1 "cleanup to background levels" shall be modified to include a risk-based PRG table of suburban residential risk levels which shall be compared to background "LUT" table for purpose of establishing a risk

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[1] 5.26. Severability (page 38 AOC)
[2] 6.0 Modification (page 38, 39 AOC)
[3] 2.8 Soils Remedial Action Implementation Plan Section 5 (page 11 AOC)

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quotient for the purpose of avoiding removing near-background soils which do not present a risk to human health or the environment. Remediation decisions should be based on EPA protocols.

2 1.7.2.2 "Cleanup background levels does not include land-filling alternatives, but in situ treatments to achieve PRG standards shall not be defined as land-filling, but as *alternative treatment of soils*.

3 1.7.4 Soils shall include language to address and compare *Soil Environmental Condition* by regional cleanup zone. Screening evaluation shall also be applied in matrix decision-tree to be reviewed by State Toxicologists where undisturbed soils would be prioritized for alternative in situ methods, where clearly (building footprints) disturbed soils would use in situ methods such as soil sorting technologies for the purpose of reducing soil volumes for excavation and to minimize burden on existing landfills by filling them with near-background soils.

4 2.0 Remediation Goal shall be modified to include suburban residential PRGs to enhance [LUT] Lookup Table process by comparing to soil condition and risk standards established by USEPA as public remediation goals.

5 2.5 Treatability Studies shall be enhanced to consider all potential mechanisms to reduce soil volume impacts to landfills, traffic, noise, dust, roads, sensitive habitat destruction, cultural resources destruction, migratory species pathways impaired, etc. by using the established EPA objective of Suburban Residential PRGs as a weighted balancing mechanism to create achievable programs of remediation.

6 2.8 Soils Remedial Action Implementation Plan shall be enhanced to follow the directive from AIP and subsection 5 of 2.8 to use in situ treatment to the "maximum extent possible" by modifying objectives to construction in place language.

7 2.10 Contaminated Soils shall be modified to use existing standards for waste classification instead of referencing a local background number that is of little value or relevance to the landfill in question.

8 2.12 Modifications to Soils Remedial Action Implementation Plan acknowledges the need for the above prescribed changes which are now quite clear considering the potential impacts identified by the DEIS if no modifications to occur.

9 5.1 Project Director has been changed several times since the signing of this order, further demonstrating the need for revisiting these changes before the process of damage and irreversible impacts begins.

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Administrative Order on Consent for Remedial Action [AOC]
In the matter of Santa Susana Field Laboratory
Simi Hills, Ventura County, California
CA1800090010 (NASA)

And

United States National Aeronautics and Space Administration (Respondent)

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Modification in Principle [MIP]

Talking points about an ALL or NOTHING losing scenario and how to change the document to address what is needed now:

1. DEIS is rejected by surrounding affected communities.
2. NASA's DEIS put's sacred cultural and archeological resources at risk. THE AOC as written is unworkable and unacceptable to unnecessarily put these resources at risk as proposed in this draft EIS.
3. We want a real cleanup that is doable, not a paper version that has no hope.
4. We don't want to destroy the natural environment and ecology we are trying to save.
5. The law does not require this, so we must revisit the AOC to make it workable, feasible, realistic, practical and health protective.
6. Adding PRGs to compare risk to the LUT (look up tables) and grade soil environmental condition (sensitivity from disturbed to undisturbed/pristine)
7. The AOCs allow for modification in the event of legislative changes, which have occurred.
8. The AOCs prescribe and direct use of alternative in situ methods to reduce soil volume and other impacts. We must follow this clear point in the AOCs and AIP (original Agreement in Principle)
9. This gives the affected communities and the important resources protection from a cleanup that isn't sensible or practical.
10. Let's do everything we can to protect the important human history that is part of the Santa Susana Field Lab Story. The AOCs provide for the answer, please consider the following limited modifications to make the right solution possible….for all the affected communities and for native and national history which should be preserved and honored, not used as a bargaining tool.

Santa Susana Field Laboratory affected communities represented by individuals signed herein:
Prepared by: Christina Walsh, with collaborative contributions from individuals listed
8463 Melba Avenue, West Hills, CA 91304 8189225123
This letter is digitally signed by the distribution of individuals listed on the signature pages 44-46 where contact information is available upon request for verification purposes, but omitted here from public copy for privacy purposes that this is part of a public document process.

Substantive Comments on Draft EIS submitted to

Mr. Allen Elliott
Program Director, NASA
Marshall Space Flight Center
MSFC AS01, Building 4494,
Huntsville, AL 35812

And via email to: msfc-ssfl-eis@mail.nasa.gov

Related to:
NASA Portion of the Santa Susana Field Laboratory
Potential cleanup impacts based on current mandate according to guiding AOC [Administrative Order on Consent for Corrective Action 2010]

Presented to: SSFL CAG September 18th, 2013
Community Advisory Group
as appointed by State through H&S Chapter 6.8

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Dear Mr. Elliott,
Please find my comments related to the DEIS describing the proposed actions:

Primary concerns regarding presentation of DEIS document:

We want a real cleanup, not a paper solution that never happens…

1. DEIS Provides too narrow of a range of alternatives, allowing for only an "all or nothing" approach that is certain to either devastate the environment we are supposed to be protecting, or fails to complete a cleanup of any kind. Neither of these approaches are acceptable to the surrounding affected public or to the surrounding natural environment according to CEQA. Why are these decisions being made now, ***before*** CEQA review is done by the State?
2. NASA proposing destruction of an entire habitat and state they will potentially impact the Sacred Cave Paintings site and other existing artifacts, as well as the test stands that represent a significant part of our National Space History.

a. <u>This is unnecessary and goes far beyond the requirement by law</u> to protect human health and the environment. In fact, it further threatens to impact human health and the environment by proposing to move unnecessary volumes of soil that go far beyond EPA health risk requirements. It is also likely to be difficult to find replacement soils that will qualify under the currently written specifications of "local background."

3. <u>NASA fails to employ all parts of the AOC</u> by failing to acknowledge the exception clauses designed to protect and address these issues specifically which qualify under the stated exceptions.
   a. By choosing to ignore one directive of the AOC while also over-simplifying others, **<u>demonstrates a need for limited modification to the AOC agreement</u>** so that a workable, implementable cleanup may be achieved that is measurable. People want to be protected from added risk.
   b. <u>AOC Severability and Modification</u> clauses provide for a limited modification to allow for a responsible cleanup that maintains human health protection as defined by <u>US EPA Suburban Residential</u> PRGs and <u>existing health-risk data</u> being completed for a health-risk assessment on the same deadline ('07 Consent Order for Corrective Action).
4. <u>We thank NASA for showing what "Background Bright-line Cleanup" really looks like:</u>
   a. This is NOT what surrounding affected-residents want as this solution causes unnecessary impacts to the surrounding communities, the ecology and puts the archeological and historic sacred assets at risk without benefit of a measurable improvement to public health. This is not what we can afford to consider when responsible health protective solutions that don't add these unnecessary impacts are available and should be considered.
      i. An approach that does not consider health-risk, fails to consider the impact of removing/disturbing soils that ***<u>do not</u>*** present a health risk.
      ii. Why fill landfills with soils that do not present a health risk?
      iii. What is the impact of that disturbance in the way of trucks, traffic, dust, and unnecessary impacts on these sacred sites?
      iv. Why is mitigation of these potential impacts not being more closely evaluated and presented?
      v. How can these considerations be made if health-risk is not considered in the process?
   b. As pointed out by Dr. Ronald Ziman's comments, "there is nothing in the letter you received from CEQ requires you to exclude other

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> alternatives. It simply states alternatives need not be mandatorily included. I have to believe that [Senator] Barbara Boxer, who has fought both for the environment and at the same time, the "strictest cleanup ever" in the interest of public health, has been misled and is not working at odds with her own core environmental principles."[1]

Primary concerns regarding communication of NASA decisions affecting the cleanup process and impact on historical and archeo-astronomy related and cultural sacred sites:

We don't want to destroy the natural environment and ecology and sacred archeological sites we are trying to save…

The purpose of CEQA and NEPA are to prevent the solution from being worse than the problem it proposes to solve. There are ways to do this right, responsibly, and protective of human health and the environment without destroying the site. Using *traditional risk-based parameters* to weigh and compare with LUT values will provide for removing only what presents a risk, and thereby reducing the soil excavation burden significantly and being compliant with the law.

1. This "**all or nothing**" proposal goes far beyond protection of human health and the environment and therefore cannot be considered an adequate analysis of reasonable and implementable alternatives.
2. We can see that modification of these specific parameters [outlined in MIP] is needed.
3. Adding PRG comparison and risk assessment standards of suburban residential remediation goals used throughout the regulatory world, will adequately protect human and ecological health, and will provide a solution that is consistent with an existing programmatic agreement in place (for the Record of Decision to follow), which is proven.
    a. Using AOC without modification insists on a process that is not consistent with any programmatic agreement ever used to address a site of this magnitude and is inconsistent with the way these assessments are done by the experts regulating the process.
    b. Adding a comparison matrix to soil environmental condition (undisturbed pristine natural environment would score higher

[1] Dr. Ronald Ziman, DEIS Comment letter from Bell Canyon Association, p. 2

than a debris pile within a former building footprint) so that undisturbed stays as such, wherever feasible based on risk assessment analysis by State Toxicologists to consider those inputs.

4. The AOC provides for limited modification based on change in referenced law[2] ***The Modification In Principle [MIP***][3] articulating the limited proposed changes is provided as "Attachment-A" of this document.
5. **The AOC explicitly defines severability** so that portions can be modified by mutual agreement of the parties without causing the agreement in its entirety to be null and void. In fact, the agreement is severable and can therefore be modified to provide for these additional analysis comparisons to inform the LUT [look up table] decision-tree process for better-informed decisions that consider health-protection as well as ecological protection of existing habitats.
6. **AIP specifically directs** the use of alternative in situ treatments to reduce soil movement impacts, yet the DEIS fails to address any alternatives that utilize this directed, proven, and more sustainable method of action.
7. **DEIS should provide multiple alternatives** that describe specific efforts to minimize those impacts instead of this devastate-all approach.

Important Context not adequately presented in the DEIS or to the public in general:

The *Federal Declaration of Excess* that took place in 2009 did not require a Section 106 process because they "didn't know" at that time, what future use would entail and set that as a future decision to be made. They just put it up for bid to other federal agencies and pushed that question aside.

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[2] SB990 was declared unconstitutional by a Federal District Court, and is the law referenced as the basis for the agreed deal in the Agreement in Principle, which the AOC is based.

[3] MIP Modification in Principle provides for examples of the basis of which changes can occur, and examples of limited modifications on a severable basis that provide for a workable solution that is health protective, as well as protective of the natural environment including all the ancient sacred native American sites, as well as the test stands that mark man's early travels to another world.

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- Now: **they are not looking at future use**, but deciding on up to 100% demolition of all structures for the purpose of a clean site for future disposition, even though they don't know the purpose OR if it will stay within, or leave federal jurisdiction. Yet, these decisions propose to remove all valuable assets ***before*** future-use is determined.
- They claim that GSA wasn't required to consider future use when declaring the site excess and now they state that those considerations needed to be commented on in the prior process [Excess Declaration] essentially leaving all public consideration without mechanism to be heard or considered.
- **This NEPA and Section 106 process must slow down for CEQA** considerations, otherwise the process fails it's purpose entirely.
- This process as proposed, ***removes the assets before evaluating the potential*** value of those assets, and then later, when DTSC does their "Soils" EIR, there won't be anything to consider because the test stands will already be gone. NASA and DTSC have stated publicly that their CEQA process will not consider demolition. This is possibly why they are choosing to have the CEQA process follow this process instead of working in tandem as recommended by CEQ [White House Council for Environmental Quality].
- This inappropriate failure to consider future use potential, which is part of the "*purpose and need*" as defined by the DEIS results in an all or nothing approach that threatens the future use that has been defined by the surrounding public as being most appropriate and beneficial to past, present and future generations.

With this kind of backwards thinking, how on earth did NASA ever get to the moon or inter-stellar space?

GSA and NASA defend this decision because it allows for NO ONE to take responsibility. It just happens, and everyone throws up their arms in dismay and points to someone else. This is the ultimate failure in analysis of the actions and solutions proposed. **This is unacceptable**.

The future disposition is in the "*Purpose and Need*" of the DEIS yet NASA chooses to consider that process separately. WHY? Because then, they never really consider it; It just happens.

- 100% demolition of the Test Stands Structures is **NOT** required by the AOC as they are located in un-weathered bedrock and therefore do not require cleanup below the test stands structures. **Any decision to remove the Test Stands, is strictly a NASA decision, not an AOC decision.**

The fact that they separated the process between the NEPA [federal] and CEQA [state] process makes it possible to lose the assets in Demolition phase and then

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later, **having nothing to evaluate because nothing is left** by the time the "soils" evaluation comes up for review.

> We cannot allow this "cart before the horse" process to destroy human space history which are considered valuable on many levels in the way of future education as well as honoring our past.[4]

As stated by many experts about the proposed actions outlined in the DEIS:

> ***"I believe important and irreplaceable monuments of America's heritage in technology and space exploration are going to be lost .. and we need to know about this imminent threat to these relics of the watershed event in the planet's history, the travel of men from earth to another world."***
>
> ***~Dr. E.C. Krupp***
> ***Director***
> ***Griffith Observatory***
> ***Author, "Echoes of Ancient Civilizations"***

DEIS Comments from Senator Fran Pavley

It is greatly appreciated that Senator Pavley, who has been a long involved voice for cleanup and protection of human health and the environment has emphasized the importance of protecting the communities surrounding SSFL. The impacts described in the DEIS include the concerns described in the DEIS about ***"soil disturbance, changes in surface and groundwater hydrology, displacement of migratory birds and wildlife, and air emissions and fugitive dust, as well as traffic impacts to surrounding communities as contaminated materials are moved off the site to approved landfills." She further emphasizes as we are requesting that protection of human health and safety of the residents who have lived in close proximity to the site, many for decades, while activities were taking place with little or no information about contaminants being disbursed into the air, soil and water from the activities being conducted. I am also concerned about minimizing impacts to other residents during the cleanup of the site."***

[4] Dr. Ronald Ziman [co-signer of this letter] statement on Section 106 Consulting Party meeting held September 18, 2013

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Senator Fran Pavley, September 11, 2013
eNews Bulletin

We need to consider the impact on the existing environment/habitat as well as the current residents who will be exposed to potential impacts of the proposed action. It is crucial that the State's EIR consider these issues and do so in concurrence with NASA's investigation so that important considerations are not missed along the way.

<u>Following is the SSFL CAG's press release related to their concerns about the proposed actions outlined in the DEIS:</u>

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SANTA SUSANA FIELD LABORATORY COMMUNITY ADVISORY GROUP REJECTS NASA'S DRAFT ENVIRONMENTAL IMPACT STATEMENT [DEIS].

RECOMMENDS NASA AND CAL EPA'S DEPARTMENT OF TOXIC SUBSTANCES CONTROL [DTSC] MODIFY CLEANUP AGREEMENT TO A LESS DESTRUCTIVE, MORE HEALTH-PROTECTIVE SOLUTION.

BELL CANYON, CALIFORNIA - SSFL Community Advisory Group [CAG] voted Wednesday night to reject Draft EIS (Environmental Impact Statement) by NASA, which proposes to limit actions to either an "all or nothing" action that either destroys the environment, or fails to clean up the site. The SSFL CAG further agreed to send a cover letter that includes substantive comments from its members who represent many perspectives from the surrounding communities, but agreed here, that the DEIS proposal went far beyond what is needed to protect human health, and proposes to destroy the existing environment and even potentially impacting the sacred Burro Flats Cave area and historic districts. The CAG had consensus that a modification is needed to the agreement outlining the cleanup requirements,

and are proposing a "Modification in Principle" [MIP] as one example of how limited modifications can allow for a protective cleanup that considers health-risk, so that soil is not needlessly disturbed that does not present a risk to humans OR the environment, and further prevents potential impacts to the sacred cultural sites as well as honoring our nations history of Space Exploration.

Deadline for comments is October 1st to NASA at:

Mr. Allen Elliott
Program Director, NASA
Marshall Space Flight Center
MSFC AS01, Building 4494,
Huntsville, AL 35812
or via email to: msfc-ssfl-eis@mail.nasa.gov

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SSFL CAG and many surrounding community members ask that the responsible parties [NASA] and DTSC consider meeting and consult on these topics and potentially include toxicological expertise from within the agency to determine of the proposed changes to the AOC might provide for more reasonable solutions that are implementable to protect the surrounding public health and existing environment?

ES-5.2.2 Air Quality and Greenhouse Gas Emissions

Question not addressed in document:

How many trucks of the estimated number described as 142 truck trips per day will carry steel from test stands for recycling? [please provide these details as the numbers provided in Section 106 process are acknowledged to include all demolition and do not specify the costs/revenues associated with the test stands and control houses (of highest historic value)]

These truck trips are not based on an AOC requirement, but rather on NASA financial decisions that also unnecessarily burden surrounding communities with the dust, traffic, noise, and hazard impacts that are not for the

purpose of health protection or the natural environment. ...Just a Business Decision.

The estimate of truck-trips per day will likely triple and will occur simultaneously as all three Responsible Parties are conducting their soil removal at the same time to accommodate the same deadline. The number when tripled and calculated over the course of daylight hours equates to more than one truck per minute for all daylight hours over the course of several years. This is not only unacceptable, but also impossible when considering the loading and staging requirements that will be needed.

If the steel is not necessary to remove, why add that burden to these already impossible traffic and operational challenges as currently proposed in the Action? This agreement must be revisited to consider these short-comings that make implementation so difficult.

This reminds us of the decision made by DOE to fail the originally proposed Area IV cleanup action by declaring a potential of 1.4 fatality traffic accidents which is the reason for the community rising up and proposing a law that would require cleanup to an "EPA level cleanup" [SB990].

- **Please consider modifying the AOC agreement to allow that in situ remedies be considered, and allow the deadline to be described as "completion of construction"** as was the case, in all prior versions of the agreement so that the time required to achieve cleanup goals allows for treatment time.
- By using health-risk to guide in determining remediation requirement, the alternative in situ treatment methods become achievable and protective of human health. This will reduce truck trips, traffic, and dust impacts significantly as "removal" won't be necessary. It further eases the pressure on landfills that need to focus on soil that DOES present a health risk and therefore requires removal because alternative treatment methods are not possible or achievable.
- A "treat first" approach will significantly minimize the impacts that require mitigation, and that cause damage to the current environment.

We wanted the responsible parties to be accountable to cleanup the site as required to protect human health and the environment. Not different from what we are asking for now. That was reasonable then. Instead we got nothing.

> It was the State and Responsible parties who decided to take health risk out of the equation, and by this long and endless block of each

action, the equation of time is part of that process and these communities have waited long enough.

<u>time</u> v <u>concentration of COC</u> v <u>pathway to receptor</u>

Without considering these scientific facts, the State and Responsible Parties fail to protect human health and the environment as promised by these agreements.

We must not make the solution worse than the problem it proposes to address. Let's allow risk assessment parameters being prepared under the same deadline, to inform this process so that we don't remove soil that does not present a risk to human health or the environment. Let's be the stewards of the site we always wanted and make these decisions now, before it's too late.

We can make more informed and responsible decisions by evaluating risk *so that soil that does not present a risk, is not unnecessarily removed, excavated, and burdening another community.*

The State has Toxicologists on staff studying this site, who can assist in making informed risk-based recommendations on how to best protect human health and the environment within this cleanup objective if it can be modified to consider traditional risk-based decision-making.

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Recommended steps to mitigate impacts, avoid unnecessary impacts and provide a sustainable solution moving forward:

Limited Modification in Principle [MiP] of the signed AOC (2010) by mutual agreement of existing parties for the purpose of making the AOC signed, workable, achievable, protective of human health and the environment, and implementable as long promised to the surrounding

communities. Time is part of the equation to risk for the surrounding residents and ecological environment. We have waited long enough.[5]

How will we be protected if <u>nothing</u> ever happens?

How will we be protected from unnecessary impacts of trucks, traffic, fugitive dust pulmonary impacts to surrounding residents where the body burden is already very high.

How will we be protected from unnecessary impacts to this unique ecological habitat when such drastic soil excavation (the top two feet of everything is essentially all living things) **<u>when these actions are not required to protect human health based on risk assessments currently understood?</u>**

How will irreversible impacts and possible destruction of our nation's Space History as well as irreplaceable ancient sacred Native archeological sites that can never be replaced be addressed? **How will NASA explain this decision** after fifty years of keeping these treasures behind locked fences?

We cannot believe that this is the current attitude after so many years of a long involved community clearly communicating otherwise.

We ask NASA and DTSC to please reconsider these decisions and contemplate this minor modification to provide toxicological parameters for the purpose of informed decision-making and best protecting human health and the environment.

How is it possible that NASA is not more proud of these beginnings as we are? This is truly a travesty failing to seriously consider implementable solutions that are <u>*health protective and protective of the environment*</u> we are trying to save and protect.

Santa Ynez Band of Chumash Indians has requested a "treat first" to avoid impacts where possible, approach. We support this methodology and echo the need for this approach and effort.[6] There needs to be a real effort here as the AOC mandates this

[5] MiP Modification in Principle as described in [Attachment-A]
[6] Santa Ynez Band of Chumash Indians letter September 30, 2013, page 12, para. 12 "Exhaustion of non-excavation methods of remediation…"

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approach according to page 11, paragraph 5. If the AOC is an enforceable document, then **all portions of the AOC must be adhered to.**

ES-5.2 Water Resources

This section describes a moderate negative, local and long-term impact based on water resources where demolition would remove impervious surfaces (which would also allow for percolation and recharge of groundwater). Additionally, current impacts to groundwater pump and diversion actions as required to prevent discharge is having a negative long-term impact on the receiving mesic riparian habitat (1.4 miles of riparian habitat is now bone dry and being ignored by these same reviews)

> *Background:* Current measures to pump down groundwater levels to prevent seeps from emerging are ***not analyzed or recognized*** for these impacts despite continued requirement to manage these emergences due to existing VOC contamination. This is an action that is being required by DTSC, and is resulting in a long-term loss of ecological water resources, and has already been described to have dried a perennial stream that feeds Bell Creek[7] according to many residents, a mesic-riparian habitat, and is a primary water resource for the wildlife corridor, migratory species and has been severely impacted as a result for two years now. Why are these current impacts not being analyzed when they have been observed to already be happening by hundreds of residents?
>
> Why does this environmental analysis only occur to benefit the polluter?
>
> *Why is the responsible party not accountable for these current impacts that have been communicated for more than a year by residents?*

[7] Bell Creek impacts include 1.4 miles of riparian perennial habitat described as "rare, high-quality, pristine habitat" which is now dry.

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<u>Key comments provided and concerns highlighted during Section 106 process</u>
(including recent consulting members call on 9/11/13:

- SHPO asked for clarification that Demolition of the test stands is to prepare the site for cleanup, and then a separate action is to prepare the site for excess to another agency. Is it true that transferring of the site is not being considered in this DEIS. We aren't considering what we are going to do with the site.
- Allen Elliott, NASA confirmed that the costs presented are for everything, not just for the test stands. "it is my opinion that you can clean up around them to meet the AOC. That may not be true of the control houses (alfa specifically).
- Transfer out of federal government, IF that happens and we don't know of that is happening. If they do transfer it out of the federal government, GSA would have to do another 106 at that point. This means that efforts to save anything will not be heard when considering demolition separately.
- "So, where is consideration of saving the test stands part of the evaluation?"

[GSA] Biederman: The issue of excess is long past and they did a NEPA analysis for that action and now they are doing this action.

- So NO ONE considers what to do with the property for this decision to be an informed decision, and this means that
- NASA says that it's in the purpose and need, so how can it be a separate action?
- This is truly piece-mealing and artificially segmenting the process to essentially avoid any proper analysis or "decision" being made by anybody.

Native cultural considerations of the Coca area as being appropriate for demolition and any historic preservation of test stands or portions thereof for museum preservation, should be focused on assets from Alfa and Bravo districts.

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- As stated by Santa Ynez Band of Chumash Indians, "official recognition in the DEIS need to be made of the areas surrounding Burro Flats" according to according to EO 13007[8]

Key points understood from the call based on the comments by many:

NASA stated that they *could* go around the test stands, and this certainly emphasizes the need to modify the look-up table section of the AOC to accommodate for risk considerations which seem to be what everyone wants: protective of human health and the environment.

NASA also stated the AOC as reasoning when we have shown that the AOCs are not the reasoning (blame assigned to deflect from NASA as a decision).

Now they are stating cost, but in the costs they present, are the costs of remediating the drainages as well – which is NOT what we are trying to prevent or save. Encapsulation should be necessary in either action of they are claiming it to be a mandate for the purpose of liability issues. Those issues exist whether you choose either alternative since the Test Stands are not required to be demolished in order to comply wih the agreement. Those issues need to be clearly understood and presented by the responsible parties and regulatory reports presented to the public.

ES-2.1 Public Involvement:

- While comments included an effort to politically limit the range of alternatives, the letter from US Senator Barbara Boxer that NASA uses to justify this decision, provides only one alternative (… or nothing) and does not provide for a reasonable cleanup, or a rational basis to destroy such a large eco-system that includes removing soils that do not present a risk to human health or to the environment according to US EPA Public Remediation Goals.
- During the course of the two years of meetings, multiple options were presented as a mechanism for defining "how to achieve project

[8] Letter from Santa Ynez Band of Chumash Indians dated September 30, 2013 page 10, para. 9. Entire southern half of Area II District needs to be protected. Sec. 3.3.3.4, p. 3-17.

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objectives" meaning to provide for meaningful alternative in situ methods to reduce soil volumes and in fact, goes so far as to direct the process to use alternative in situ methods "**to the maximum extent possible**"[9] within the AOC agreement, yet the DEIS flatly dismisses this entirely and provides ZERO effort to comply with this directive while simultaneously claiming to comply "to the letter of the AOC."

- The surrounding affected public attended dozens of meetings to discuss alternative options, to educate themselves on these technologies and weigh in, because of the importance to protect the environment, and NASA has dismissed all of these methods leading the public to wonder if the entire process is really sincere.
- The 756 comments referenced in this section ask to preserve the valuable natural, historical, and cultural resources at the SSFL yet the DEIS says plainly that all of these valuable resources will be impacted and potentially destroyed.
- CEQ comments as presented " CEQ encourages agencies to carry out robust alternatives analysis that consider all reasonable alternatives including those that are not within the agencies authorities. The real focus, however, must always be on a meaningful consideration of alternatives. In this particular situation, where NASA has signed the Agreement and committed to a cleanup standard to "background," nothing under NEPA or CEQ regulations constrains NASA from looking beyond cleanup to background, even though some may consider the analysis unnecessary and inconsistent with the agreement NASA signed with the State…"
    - Yet the DEIS presented for comment directly ignores CEQs directive and the comments by the public, and only considers two scenarios: all or nothing (no action alternative) providing no potential for a responsible cleanup.
    - All effort to minimize soil movement through alternative in situ treatment are ignored despite this directive being contained within the AOC signed by NASA and the State.
- Based on CEQ analysis of these letters submitted, it states that NASA is not compelled to consider less comprehensive cleanup measures…
- But nothing ***prevents*** NASA from doing so. NASA is ***choosing*** not to.
- **Follow the AOC to the letter, but ignore page 11?** How is this reconciled or justified?

[9] using alternative in situ treatment methods "to the maximum extent possible" (page 11, section 5 of AOC final agreement)

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ES-2 The statement that NASA will analyze only the alternatives of (a) cleanup to background and (b) the no-action alternative fails to protect the areas specifically directed by CEQ and the AOC itself.

Multiple comment letters were also received that question this decision and ask that NASA reconsider its decision to limit the alternatives including a legal memorandum prepared for the Santa Ynez Band of Chumash Indians that questions the legality of limiting the scope of an EIS to only a Proposed Action and a No Action Alternative. Further, the Chumash legal memorandum and other comments specifically state that every effort should be made to reduce soil impacts, and ground disturbance where possible (consistent with the AOC) by employing alternative in situ methods yet NASA dismisses these directives entirely. Making claims of strict compliance is disingenuous at best.

Statements made by NASA that "DTSC will only review soils impacts" during their review which will occur a year after the decisions of demolition may remove any/all structures prior to an evaluation to save them. This makes the entire process **invalid and indeed illegal** as it fails the purpose and intent of the California Environmental Quality Act as well as the National Environmental Policy Act.

CONCLUSION of Alternatives Evaluated:

- Following the AOC so stringently, while dismissing specific segments of the signed agreement that provide for this protection fails to follow a Programmatic Agreement [PA] without justification and instead chooses to follow a process that is NOT consistent with existing programs such as RCRA and Superfund and this bright-line AOC approach is unproven and not consistent with any existing programmatic agreement for a site of this size and complexity according to US EPA staff involved in this process throughout Radiological Survey that was recently completed.
- The National Historic Preservation Act requires that Section 106 consultation process [under NHPA regulations 36 CFR 800] be followed, but in this process, the same limitations by presenting too narrow a range of alternatives, prevents the process from being followed effectively for the purpose of historic preservation.
- Separating the NEPA and CEQA processes instead of proceeding in tandem, provides for deadlines to be missed and unnecessarily dismisses primary directive of "how" to achieve the objective from the process.
- It is inappropriate to assign a single ROD Record of Decision to apply to the entire site without additional considerations such as the range of exceptions designed to protect sacred and historical sites, and without providing a graded range of "soil environmental condition" so that undisturbed areas that have had no operational impacts are preserved instead of destroyed.

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- All mechanisms and tools available to reduce soil excavation and disposal quantities should be employed so that all impacts to the aforementioned categories (traffic, noise, fugitive dust impacts on pulmonary receptors, greenhouse gas emissions, and most importantly, the complete destruction of 105 acre habitat), as well as, burden on existing landfills.
- Instead, we are seeing complete dismissal of all mechanisms to reduce impacts as promised over the course of years of meetings and presentations to the public.
- These alternative mechanisms (including soil sorting for impacted excavation areas to reduce removal and disposal volumes on a significant basis) are dismissed by blaming the very document that directs these actions to be considered "to the maximum extent possible".

ES-3.0 Alternatives Evaluated

Demolition and soil cleanup to background levels are separated in evaluation process, yet cost estimates provided to the public and consulting parties includes cost of both demolition and soil cleanup (unfairly presenting an inflated apparent cost for saving "test stands"

- The public has asked for specific costs associated with saving only test stands and control buildings and should therefore exclude the cost requirements associated with soil cleanup, and demolition of structures, piping, utility poles, water tanks and drainage ways (the most impacted should not be included in test stand cost)
- With NASA's long history of being the protective stewards of the Native Chumash sacred sites, it is truly unconscionable to fail to protect them now.
- We request specific cost recovery mechanisms to be detailed publicly including the cost/benefit of the potential steel recycling revenues that may counter the other costs. These are important for the public to understand clearly.
- Given the legal memorandum submitted by Santa Ynez Band of Chumash Indians, a stewardship solution that provides sustainability mechanisms through museum preservation, open air tours and education of cultural resources and national space history monuments could easily provide the required revenues to fund maintenance and should be considered here, prior to a short sighted decision to gut our history.

We want the forward thinking that did get NASA to the moon beyond, and now into inter-stellar space which all began at this site.

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Alternatives evaluated as presented in DEIS states that "up to all structures will be demolished including test stands" even though the test stands are located in weathered and un-weathered bedrock and therefore are not part of the AOC requirement. **It must be made perfectly clear that the decision to demolish history is a NASA decision that may be based on financial and liability decisions, but should not be stated as having an AOC basis.**

> This idea that we are supposed to interpret All or Nothing to equate to mean a range from ***nothing => anything*** fails the purpose of this analysis, which is to consider logical and rational responsible solutions and find the best one so that we don't make the solution worse than the problem.
>
> We have outlined here, a method to inject reason and health protection providing the basis for a green, sustainable, long lasting and health protective solution that honors the past and recognizes the existing wildlife habitat and provides for a sound future and minimize negative impacts of the actions proposed. Please consider.

ES-3.1.2 Proposed Soil Cleanup Activities

All non-treatable soils should use "soil sorting" for the purpose of identifying the particle sizes associated with the COCs driving the soil excavation so that a portion sent for disposal and burden on other communities can be reduced. Native Cultural Monitor for all such process should be required.

Limited modification to AOC to utilize risk-based limits so that alternative methods are achievable (Suburban residential health risk standard as prescribed by USEPA) making the action protective of human and ecological health, and also provides for many alternative in situ programs to be employed to drastically reduce the impact to the current environment.

The designation of "treatable" also fails to be employed on the basis of a change to the deadline from all prior agreements upon which the 2017 deadline is based. All versions of this agreement including the 07 Consent Order for Corrective Action, and all versions of the AOC through 1.9 include the requirement of all in situ treatment to be "constructed by 2017" not completed, as it is understood that these methods that require time for degradation processes to occur, cannot be completed by 2017. This modification of the AOC is necessary to make for a workable sustainable solution that the AOC itself directs.

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The AIP which the AOC is written from specifically states that the "2017 deadline shall remain the same" which demonstrates the fact that this deadline is driven from the prior agreements and therefore cannot be made shorter, while also making the requirement (background) larger.

<u>This AOC path forward [unchanged] is designed to fail and therefore must be modified.</u>

The alternative soil treatment technologies as outlined in ES-3.1.2.2 are all dismissed based on an internally defined conjured deadline and therefore fails to follow the AOC it of which it claims to be based.

In the definition of "treatable" it states that excavation is the only "proven" method despite a decade of proven technology data available. These are not new and emerging technologies, but rather existing and already proven effective at residential standards and therefore should not be flatly dismissed here.

<u>ES-3.2 No Action Alternative -- Unacceptable</u>

This analysis fails to protect human health or the natural environment. This analysis proposes that no demolition of test-stands would occur and does not require an encapsulation as described by NASA when pushed to answer the questions about the test stands.

> Why are liability requirements used to justify demolition not required under the no action alternative?
>
> This appears to show that this is a false claim with no real basis according to the AOC, but rather a decision by NASA.

Evaluation Criteria for Analyzing Environmental Impacts and Region of Influence are incorrectly characterized and described. These categories fail to address the underlying issues we request to be addressed further.

Why doesn't 'leave in place' solution under the "no action alternative" also impose maintenance costs for encapsulation and annual maintenance an paint fees when these requirements are being imposed to respond to an effort to save the test stands. Further, why are the costs provided and presented to the community also including the encapsulation of the "entire district" which includes contaminant

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impacted drainages. **We aren't trying to save the contamination, but the history.**

This can be done as it is acknowledged that the problem is in the drainage, not in the rock below the test stands. Please provide these numbers separately by district structure for Alfa, Bravo and Coca and provide costs by structure, so that test stands can be differentiated from the cost of remediating the soils, concrete, and support structures that do not represent historic value.

ES-5.1 Significant Impacts

This describes erosion impacts to be short term despite the proposed action only includes a 30% replacement of excavated soils. Considering the existing steep topography, it is unclear how this impact will be temporary since these topographic changes will be long term by definition. The soil won't grow back. Most importantly, the living biota, flora and fauna will all be destroyed to which there is no legitimate or adequate mitigation presented.

The proposed action calls unnecessarily for the demolition of historic structures on NASA administered land at SSFL having significant negative local and long-term impacts, yet the AOC does not require this. **Why is NASA not making any effort whatsoever to save the national history that it is capable of saving through the more accurate and protective interpretation of the AOC.** These historic structures are not located in soils but in rock and therefore do not require removal. NASA staff has acknowledged that these can be worked around, so why is there no acknowledgement provided with in the ROD process that is intended to protect the site by evaluating the solution to be sure it isn't worse than the problem. **The AOC MUST be modified on a limited basis to account for these very real details that can provide for a responsible cleanup that honors both the past and the future.**

1. Soil prior disturbance is NOT dispositive:
2. Disturbed sites are not valuable is not necessarily correct.
3. Disturbed sites may still contain valuable information.
4. Disturbed sites may still have spiritual significance.
5. Disturbance may only be on the surface. Some excavation will be much deeper.
6. Need to analyze for cumulative impacts to cultural resources.

As described by the Chumash letter, deferral of mitigation until Record of Decision [ROD] is problematic as it prevents meaningful comment, and fails to consider

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impacts of demolition that are within the "purpose and need" as described in the DEIS. How can this be artificially segmented?

ES-5.1.2 Cultural Resources

This section fails to acknowledge the specific exceptions written in the AOC. These exceptions are designed and written for the purpose of protecting the Burro Flats Cave Sacred Site as well as other smaller sites. NASA fails to acknowledge that the word "artifact" includes sacred cave paintings, which are considered among the most well-preserved in North America and estimated to be 1,000 years old. This failure demonstrates an unwillingness to use the portions of the AOC intended to protect the past, to do so. This is of great disappointment and is indeed inexcusable. NASA must acknowledge the purpose and intent behind each and every point within the *Agreement In Principle* [AiP] which the AOC was based upon, to include the specific sections written by and agreed to for the specific purpose of protecting these important sites.

This kind of finger-pointing and refusal to take responsibility is a violation of the AOC principals signed and agreed to. The idea was "to stop trading paper and get to work." Not trade paper forever. Proper mitigation for the cultural impacts proposed by the action:

1. NEW MITIGATION: Cultural Interpretive Center.[10]
2. NEW MITIGATION: Native American monitoring during any ground disturbing activities.
3. NEW MITIGATION: First Native Chumash National Park[11]

It is inappropriate for NASA to choose to define "artifact" now as something limited to exclude this ancient sacred site that indeed inspired the need for this clause in the *agreement in principle*[12] which the AOC is based.

[10] as proposed by Native Chumash comments from Santa Ynez Band of Chumash Indians [September 30 letter] as well as other local tribe representatives and native cultural organizations.
[11] As proposed by many Native Chumash as consideration as best stewards of this land.

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For example, the National Register defines a "site" as "the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archeological value regardless of the value of any existing structure." Further, a culturally significant landscape may be classified as a site, as may be the specific location where significant traditional events, activities, or cultural observances have taken place. There are many books written that reference this culturally significant site for this reason and must be acknowledged here that clearly define this site as significant within our human history. [13]

- Significance should also include that of religious history, scholarly secular recognition as defined by the National Registry.
- The fact that a property may have gone unused for a lengthy period of time, with use only beginning again only recently, does not make the property ineligible for the Register, especially since non-use is associated here with lack of access provided.

This section describes the burro flats site as being 0.65 acres and certainly any proposed soil removals would be under the "5% exception clause" since 5% of the proposed soil removal of 500,000 cubic yards is 25000 yards and it is clearly known that the soil in this area (even if you were to remove all of the top two feet of soil in the 0.65 acres would not exceed this limit, so it is confusing to see NASA threaten this impact when it can clearly be handled within the agreement as currently written. This points to an underlying political pressure being exerted and really driving these decisions making promised transparency somewhat of a charade.[14]

In addition to the sites listed in the report, there are other native sites both in Area IV and to the north and south of the NASA owned area, which indicate a strong likelihood of additional sites to be located within the boundaries of the proposed action. This demonstrates a need to take the utmost care in making these decisions and political strategy that puts these sacred areas in potential harms way should not be allowed.

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[12] Agreement in Principle is a supplemental attachment to the final signed AOC and lists the principles, which were agreed to that allowed for, and provided the decisions made by the AOC.
[13] Dr. E.C. Krupp, Echoes of Ancient Civilizations, Dr. Al Knight Archeological study incl. other studies: Clive Ruggles; Dan Larsson, ….
[14] Letter from US Senator Barbara Boxer mandating that this "all or nothing" approach be pursued without a range of more reasonable health protective alternatives that also protect the environment be made available for discussion and debate.

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SSFL has been formally identified by the Santa Ynez Band of Chumash Indians as an Indian Sacred Site under Executive Order 13007 and the proposed action seems to dismiss this Executive Order and the importance of this consideration by the limited range of alternatives that are artificially imposed on the surrounding affected public.

ES-5.3.3 Hazardous and Nonhazardous Materials and Waste

Demolishing the test stands is acknowledged to be a long-term negative impact, and is not required by the AOC and therefore should be mitigated by acknowledging their historic preservation value and eliminating this impact. A large majority of the 3000+ truck trips for demolition, can be eliminated by saving these historic sites as is being requested by nearly the entire surrounding affected communities.

ES-5.4 Summary of Impacts, Best Management Practices, and Mitigation Measures

It is strongly recommended that the summary of cumulative impacts be addressed to consider the obvious mitigations so that a reasonable solution can be attained. This emphasizes the need to revisit the negotiating process to modify the AOC in a limited manner so a workable and reasonable, and health protective solution can be achieved.[15]

- DEIS fails to consider cumulative impacts of other remedial activities ongoing at the site by the other responsible parties all working based on the same deadline and will be engaging in these activities concurrently.

Section 4.2 Soils, landslide potential, topography, and paleontological resources:

Significant, negative, long-term for action, and negligible, negative, local, and short term are how no action alternative is described. This incorrectly assumes that a total lack of cleanup of contaminated soils that represent health risks potentially for centuries moving forward will carry a negligible impact? This fails to analyze and evaluate the no action alternative as a viable possibility when it is indeed the only alternative provided, other than total destruction of the site.

[15] Specific exclusions addressed within the AiP which the Administrative Order on Consent for Corrective Action was based. These include a 5% soil volume to allow for protection of the 0.65 acre Burro Flats Cave site. Ignoring these exceptions provides for an unrealistic message and in fact potentially unnecessarily puts these areas at risk.

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Section 4.3 Cultural Resources

This table summary describes the impacts as significant despite the fact that no sampling data proposes that these soils require removal. Pending Consultation, significant mitigation will be required to address this unnecessary destruction of native history and culture.

What sort of mitigation could possibly come even close to comparison to the damage to irreplaceable sites this action proposes to destroy?

Section 4.4 Biological Resources

Moderate regional long-term impacts from failing to address the contamination impacts that present a health risk to either the environment or human health of the surrounding communities which will never be resolved if no actions to protect human health are taken. The purpose of CEQA is to protect the site from a solution that is worse than the problem itself. NEPA is also supposed to evaluate alternatives to avoid such impacts for the same reason. In this case, the processes are separated so that cumulative impacts are not evaluated and therefore missed. The damage to the environment will be devastating and for no measurable increase in protection of public health**. Then for what purpose are these extreme and unnecessary actions really being considered?**

Political??

Section 4.5 Traffic and Transportation

Significant impacts as described are also likely to be impossible considering the proposal that puts hundreds of trucks in the same place at the same time. During daylight hours this would likely equate to mean one truck leaving every single minute for years at a time. This proposal is with out merit in the real world.

Section 4.6 Water Resources

No action on the impacts to water resources will continue to present a health risk to the surrounding environment and public health as well as degradation to the California resource, which requires protection according to California's non degradation policy for groundwater resources.

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Section 4.7 Air quality and Greenhouse Gas Emissions

Mitigation to these impacts can be partially achieved by using in situ alternative treatment methods to the maximum extent possible to avoid and reduce required truck trips and traffic emissions.

Section 4.9 Health and Safety

Impacts to a no action have significant long term impacts on the local environment and therefore emphasizes the requirement for health risk to human health and ecological health risk be considered.

Section 4.10 Site Infrastructure and Utilities

It is advised to maintain water storage resources to maximize opportunities for sustainable solutions to address soil treatment and needed groundwater treatment plans that protect local habitats during treatment cycles. Why build it if it already exists?

Section 4.12 Hazardous and nonhazardous Materials and Waste

In addition to this moderate negative long-term impact by failing to act and protect the surrounding public, the answers and uncertainties will never be addressed making any potential for a real future for the site to be negligible at best.

Section 2.10 of the AOC as described in the MIP should be modified to reflect current waste disposal classifications and directives to prevent problems with disposal needs required by the implementation of the proposed action. Enhance this section by specifying that alternative methods of in situ treatment to reduce and minimize burden on landfills, truck trips, etc. will be employed "to the maximum extent possible" as prescribed in the AOC[16]

[16] AOC Administrative Order on Consent for Corrective Action signed December, 2010, Page 11, paragraph 5.

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Table ES-5 Summary of Cumulative Impacts without Mitigation or Best Management Practices

> ES-5 presents the cumulative impact on cultural resources as significant and negative and specifically references the "cave site" as being impacted long-term when there is no specific sampling data that supports this claim. Further given the size of the specific "cave site" referenced, the exceptions defined, would appropriately be able to protect this area to the maximum extent possible. The summary is in fact inaccurate, and unfairly presents a picture of certain destruction and "nothing" as the only possibilities.
>
> This is inappropriate and irresponsible to put these areas at risk in this way when it is not necessary to meet health-risk requirements by law, and there is no existing programmatic agreement used to guide such cleanups that DOES NOT consider risk as the primary means to measure needed remedial actions and mitigation.

ES-7.0 Summary of proposed mitigations:

No adequate mitigations are proposed in this action where ***complete-destruction*** or ***no-action*** are the only alternatives.

Most of the analysis of impacts presented in the aforementioned table [Table ES-5 Summary], do not consider more reasonable and health protective as well as legally compliant methods of considering risk inputs [as prescribed in examples shown in Attachment-A (MiP)] which would prevent these areas from being put at such risk. In this proposal of action, 62 acres of open-space is proposed to be devastated, "…requiring complete removal of all existing vegetation such as shrubs, plants, and trees. Additionally, removing large volume of soil would change soil profiles creating soil instability, decreased vegetative biodiversity and increased spead of invasive weeds"[17]

Reasonable alternatives that are protective of human health and the environment need to be presented, and for that to be measurable, risk comparisons need to be made. Please consider a modification to the AOC that allows for this risk information at Suburban Residential, using state toxicology expertise to weigh with current lookup tables and provide alternative methods to be used to achieve these similar objectives (based on health-risk).

[17] Shown in ES-11.0 "Unavoidable Impacts" are unnecessary to comply with law, or to measure protection of public health and the environment.

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Consideration of current environmental soil condition is necessary to employ best management practices in protecting that which is undisturbed open-space wherever possible.

Proposed mitigation should include ceremonial areas for use by local Tribes to encourage outreach and education about their traditions for the future. According to [40CFR 1508.20, replacing or providing substitute resources or environments" by "compensating for an impact" is where the first alternative proposed should be to prevent impact to these resources, and because these resources have not been available for scholarly secular research or religious or ceremonial purposes to allow for that education within the local community to exist, every effort should be made here to provide ceremonial areas in addition to and nearby cultural resources so that presentation of these cultural traditions can be made for the future.

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ES-8.0 Incomplete and Unavailable Information

"Should substantial new information become available that conflicts with the EIS and indicates significant increases in potential environmental impacts from the proposed action, the environmental impact analysis would be updated as needed."

NASA has demonstrated that the actions proposed are unacceptable as are the alternatives presented and therefore, the environmental impact analysis should be updated upon modification of the Look up Table [LUT] requirements so that a feasible, implementable, and effective alternative can be presented for analysis with multiple technologies acknowledged to be feasible, presented as alternative methods to achieve the objective to a health protective and environmentally sound cleanup goal.

- New sites have been discovered throughout the SSFL site including in Area IV through the RAD survey, as well as in other areas in the undeveloped areas. This indicates that there is much that is not known and great care must be taken when considering disturbance of these soils. A proposal to devastate the top two feet of everything living on 105 acres cannot be justified and must be reconsidered.

ES-9.0 Required Permits, License and Approvals

Completion of CEQA evaluation prior to Record of Decision is necessary BEFORE any demolition decisions are made on historic or sacred areas. It is inappropriate to move forward without CEQA full evaluation, which should be happening in tandem

so that NEPA and CEQA processes can best inform one another to ensure that protection of the existing environment is maintained.

Since the Section 106 process referenced here separates the review of demolition of assets from review of soils (during the later CEQA phase) the purpose of these requirements is NOT met, therefore failing CEQA, and NEPA and providing an inappropriate record of decision [ROD] that allows for only one solution that fails the purpose, or no action at all. These permit requirements must be coordinated so that CEQA and NEPA are done and considered during the same review time-period.

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ES-10.0 Agency Consultations

We ask that NASA consult with DTSC decision-makers and to consult using mediator if useful, to attempt to see if these limited modifications (or similar ideas of limited modification) to utilize the existing work and provide a better, more traditionally measured, risk-based solution path forward, that allows for an environmentally sound cleanup plan that meets health-risk standards and is compliant of the law. Using health-risk standards as a measurable tool to determine level of safety provided to the surrounding communities, and is in keeping with the regulatory decision processes utilized by the regulatory agencies to be most effective at achieving water and soil quality standards.

Please also consult with US Senator Barbara Boxer's office to see if these efforts to protect the existing environment, the sacred sites and our nation's history can be attained by considering risk so that measurable, and better-informed remedy decisions can be made.

Please consult with the Santa Ynez Band of Chumash Indians to see if they would be willing to steward this process to see if a future use consideration can include an open space open air cultural and historical museum park. Many experts have spoken about these valuable assets being protected and we ask that those discussions be given real consideration.

Please consult with other local tribe cultural representatives [both federally recognized as well as non-recognized native cultural groups] as several tribes are expected to have history with the site.

Please consult with Department of Wildlife and consider their long-term concerns and we ask that their staff be given a full presentation and review of the impacts as proposed.

Please consult with Ventura County to consider the Oak Tree ordinance and how it will be navigated considering the proposed action seeks the removal of all trees

and vegetation in a 105 acre area that includes steep drainages where erosion considerations and streambed modification must be considered.

Please consult with Los Angeles Regional Water Quality Control Board about their interim measures, long term effects of the actions proposed as well as the impact on the discharge permit [NPDES][18] held by the responsible parties.

ES-11.0 Unavoidable Adverse Impacts

- "Implementing the proposed action to meet 2010 AOC would result in the excavation of non-treatable soils to the depth of 2ft (and in some places 20ft) from approximately 105 acres" yet they are claiming this mandates impacts of the native burro flats site, (where no samples have been taken to support this claim) and the 5% exception clause could easily accommodate this and all other sites (0.65 acres) but NASA chooses to put them in harms way despite the **fact that the AOC DOES NOT REQUIRE IT**
- This is a NASA decision and it is dishonest to blame the AOC for this very irresponsible decision that in fact betrays the long involved communities.
- This is truly the worst idea ever. There is no legitimate reason to consider this level of destruction that does not protect human health any more, and destroys an entire eco system and creates serious adverse impacts to the surrounding communities. This must be re-thought to consider passive treatment systems, sustainable treatment systems that consider long range solutions and not just the short term compliance of a law that has already fallen.
- A proposal to devastate the top two feet of everything living on 105 acres cannot be justified and must be reconsidered.

ES-12.0 Relationship between Local Short-term Use of the Environment and Long-term Productivity.

- If NEPA requires this analysis, why has NASA failed to present this analysis within the DEIS material and why is NASA not providing for a range of alternatives to provide opportunity to save these historic structures and sense of place sacred areas in Burro Flats and other designated areas.

[18] NPDES: National Pollutant Discharge Elimination System Permit as held by The Boeing Company and NASA and DOE as the dischargers of storm and surface water.

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- It is inappropriate for NASA to claim that cleanup of soils to LUT values reduces risk when risk is not considered. In order to make such a claim, RISK ***must*** be considered on a prominent basis.

ES-13.0 Maintenance and Enhancement of Irreversible and Irretrievable Commitments of Resources

Based on the statements made in the Section 106 consultation, it seems that no effort to protect these resources is being made because the process is being split where demolition is not examined and future use is not considered. This is a complete betrayal of the process we have all committed to follow.

We request that this information be made available and clearly define the costs that relate to disposal of materials, versus recycling revenues associated with steel from the test stands and concrete from the drainages, roads, and building footprints. The goal is to save what is most feasible, most presentable and is able to help tell the story of our Nations Race to Space.

Section 1 – Purpose and Need

Since future use is described as being part of the defined "purpose and need", why does the DEIS fail to analyze for these potential decisions within the process. By artificially segmenting this decision-making process, the DEIS fails to inform it's primary purpose: **to protect the site solution from being worse than the problem it proposes to address.**

1.4 Decision to be Made

Modification of AOC to provide for reasonable alternatives for an updated DEIS to present and analyze, is necessary.

Record of Decision should be examined for each of the regions of influence (ROI) and should evaluate multiple methods of reaching a health protective legally compliant cleanup that protects the current natural, cultural and historical features and assets currently present within the site boundaries as well as within the bordering areas of the Santa Susana Field Laboratory. These decisions need to be responsible for addressing the complexities that arise by the differences in land ownership and requirement for action.

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ROD needs to be done in detail, by area using alternative non-excavations methods first (within the Decision-tree process).

Non treatable areas should employ soil sorting for the purpose of reducing soil movement and disposal (burden on landfills) and long term phyto sequestration solutions for the groundwater challenges that will span many generations.

All treatable soils should be considered for alternative in situ methods so that truck traffic, burden to landfills, greenhouse gas emissions and fugitive dust impacts can be minimized to the maximum extent possible. Limited modification of AOC to allow for completion of construction so that these technologies may be prominently considered based on human and ecological health-risk levels.

Test Stands are not in soils and therefore should not be part of the "requirement" but rather, to be discussed and debated so that reasonable and rational and sustainable decisions can be made to protect our national history.

Sacred Cultural Areas should not be part of this decision, as nothing based on science (sampling or otherwise) requires this potential harm to take place. It is clear that these areas should be declared protected from impact by this record of decision and all related decisions in this complex process moving forward.

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2.2.1 Groundwater

GETS system must be modified to discharge treated water in a balanced manner so that the drainages that have historically been riparian, remain so. Current impacts as a result of this effort by NASA and Boeing has resulted in adverse impacts to 1.4 miles of Bell Creek from the water diversion to outfall 19. Please consider moving this discharge to outfall 2, and to balance with pumping that may occur to the north where similar mitigative measures will be necessary to protect those watersheds and habitat.

Deeply concerned that demolition seems to include these long term treatment systems that are acknowledged to be needed for decades and possibly centuries. How can we be pulling them offline now? Especially

given that the biggest challenge to be addressed is the groundwater impacts and how that will affect surface water impacts in the future.

The groundwater responsibility by the parties, MUST be acknowledged by NASA and Boeing as we will not accept any more "wait and see." As previous promises have not been kept.

Comprehensive groundwater solutions are primary to achieving the objectives presented in the cleanup agreements and they must be modified to be workable and implementable. A site-wide seep and stream study to best understand all potential migration pathways of existing contaminants must be more clearly understood and presented to the surrounding affected public.

2.2.1.2 Pre-demolition Activities

Standard Operating Procedures must include a sample per bin (not multiple bins) policy to ensure that adequate health protection is achieved. This is especially important given the impacts in many of these areas are of multiple COCs that co-exist within the same soil profile requiring action.

Table 2-2-1 NASA Administered Structures proposed for Demolition and their NRHP and Biological Considerations:

1. 2727 Alfa 1 Test Stand is individually NRHP eligible and also has potential as bird nesting and bat roosting area. Contributes strongly to America's space history.
2. 2729 Alfa 3 Test Stand is individually NRHP eligible and also has potential as bird nesting and bat roosting area. Contributes strongly to America's space history.
3. 2729a Alfa 3 control station shack is individually NRHP eligible and also has potential as bird nesting and bat roosting area. Contributes strongly to America's space history.
4. 2739 Stand talker Shack contributes strongly to the story of America's space history.
5. Road to test facility should be maintained for access and infrastructure purposes. This otherwise adds unnecessarily to the negative impacts felt by neighboring communities that serves no real purpose.
6. 2730 Bravo 1 Test Stand is individually NRHP eligible and also has potential as bird nesting and bat roosting area. Contributes strongly to America's space history.

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7. 2214 Bravo Terminal House is individually NRHP eligible. Contributes strongly to America's space history.
8. 2731 Bravo II Test Stand is individually NRHP eligible and also has potential as bird nesting and bat roosting area. Contributes strongly to America's space history.
9. 22 Bravo Observation Structure (pill box) is individually NRHP eligible. Contributes strongly to America's space history.
10. 2733 Coca 1 Test Stand is individually NRHP eligible and contributes strongly to America's space history.
    a. Perhaps the "dance floor" can be disassembled and moved to NASM or other facility designed to honor our national space history.
11. ELV should be re-used to provide mitigation for Chumash Interpretive Center to provide for additional ceremonial areas for Chumash assembly and presentation and continued education centering around the ethnography and presentation of historically rooted beliefs, customs and practices allowing for local native groups to present their history and culture to the interested surrounding public.
12. Skyline Area should be considered for re-use for water storage capacity for the purpose of supplying irrigation and groundwater recharge for alternative soil treatability programs employed at the site. Why build it if it's already built?

Proposed liability reduction actions and potential presentation, preservation and cultural opportunities that can ensure a sustainable future that regards the accomplishments achieved at Santa Susana. A Chumash National Park that honors the history of the site. Other examples of preservation and education of history referenced for research in this process:

- Griffith Observatory
- Smithsonian Institute, Washington, DC
- Reagan Museum, Simi Valley
- National Aeronautic Space History Museum, Smithsonian Institute
- The Boeing Company
- Volvo, Gothenburg Museum, Sweden "the history of safety" and the corporate thinking.
- NASA Space Flight Center, Huntsville
- JPL
- VASA Museum, Stockholm, Sweden – and erected ship and archaeological findings presented from many view points.
- Ale Stones, Sweden – a ship shaped "stone henge" like monument estimated to be from the bronze age and available for visitors to see up close and be a part of history.

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- Stads Huset Torn, Stockholm Sweden. Daily tours of climbing the stairs of the tower provide for maintenance revenue.

Opportunities as listed above provide examples of successful revenue funding from tours, parking, and gift-shop marketing opportunities, which would enhance Human Space History as well as Human History regarding Indigenous Peoples.

Table 2-2.2 Proposed Demolition Hauling

Hundreds of truck trips can be avoided by considering creative re-use onsite programs to avoid unnecessary damage to the environment and unnecessary impacts to the surrounding communities due to the traffic, noise, dust associated with these activities. Treat first approach should be used to the maximum extent possible as prescribed by the Agreement in Principle and AOC (page 11)

Demolition truck schedule should include hiatus between 7 and 8am and 3-4pm to avoid school hours.

2.2.2.1 Cleanup of Soil to Background

Modification in Principle to modify this requirement to consider risk based objectives as outlined in MiP[19] to ensure that surrounding residential human and ecological health is protected, and unnecessarily removing soils that do not present a health risk can therefore be avoided.

2.2.2.2 Preliminary Remediation Areas

In addition to Table 2.2-3 screening values, Suburban Residential PRG and risk based recommendations from Staff Toxicologists as well as soil zone grading system to avoid disturbing undisturbed areas and protecting what needs protecting including natural habitat, sacred sites, sensitive species, migratory species pathways, and water resources for surrounding ecology.

2.2.2.3 Soil Cleanup Technologies

All technologies that were dismissed based on deadline issues related to achieving objectives by 2017 should be revisited. This can be accommodated

[19] MIP Modification in Principle, Attachment A

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by adding back in the requirement that alternative methods construction must be completed, and that the final objective of cleanup goal would have additional time to become effective as presented in all previous versions of this agreement including the signed '07 Order agreed to by all parties.

Ex situ Treatment Technologies using Land Farming have proven successful on the site in the past (including Happy Valley treatment of Perchlorate onsite) and should be considered here as a viable potential alternative that is very effective.

Sustainability presentations stewarded by local Universities including Grant projects should be considered as alternative opportunities that provide a consistent message that supports the sites place in technological history advances.

In Situ Anaerobic or Aerobic Biological Treatment methods should also be seriously considered as detailed above.

Pump and Treat is most effective for specific targeted areas, and needs to have more attention to long-term negative impacts so that effective treatment can be attained without the negative impacts as observed at Bell Creek. We therefore recommend that groundwater that is treated be redistributed to the location closest feasible to where it was extracted from the site.

In situ Chemical Oxidation is currently being tested and it is hopeful that it will prove very effective at the site and certainly should be considered here.

Pump and treat should also be considered from mid-plume so that unintended drawing toward communities does not occur further.

Enhanced Bioremediation and vapor extraction to prevent additional impacts to groundwater resources should be seriously considered and implemented wherever feasible throughout the site, especially at high-VOC impacted areas.

Monitored Natural Attenuation occurs today, but is not adequate as a solution and must only be considered in tandem with other working solutions to protect future generations and seep impacts that potentially bring those impacts to ecological receptors as well as surrounding communities.

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2.4.1.1 Alternative 1-Demolition, Soil Cleanup to Suburban Residential Cleanup Goals and Groundwater Cleanup as described by limited modification is supported by an overwhelming portion of the surrounded affected communities and should be considered here as proposed throughout this and accompanying documents [MiP]

Table 2.4-2 Alternative Comparison of Offsite Waste Type

This comparison illustrates clearly the need for limited modification so that continued efforts of injunction by the very people insisting on the impossible cleanup will cease. We need a workable solution that uses current regulatory standards for waste classification in a protective and responsible way. Limited modification of AOC in Section 2.10 related to waste classification is necessary as proposed in MiP.

2.4.2 Remedial Technologies Eliminated

Phyto Remediation can achieve long-term health protective objectives in a less damaging matter and can also provide longevity to the solution (especially when considering the challenges related to the groundwater impacts at depth and those migration pathways) With limited modification these solutions can prove very effective in the drainages.

Table 3-2-1 Summary of Existing Utilities and Infrastructure at SSFL by area:

Concrete removal where infrastructure roads are concerned should be minimized to keep access feasible and prevent unnecessary hauling of concrete.

Water conveyance and storage infrastructure should be maintained and enhanced to suit the water needs related to alternative treatment methods.

3.3 Cultural Resources

Listed in the criteria articulated that is used under NHPA to evaluate properties for NRHP eligibility include to "embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, possess high artistic values, or represents a significant and distinguishable entity whose components might lack individual distinction (criterion C)" where the burro flats cave site is estimated to be ancient in its' origin and depicts religious and spiritual significance

Draft

in portraying the Chumash Rainbow Bridge creation story that has been handed down for centuries as astronomical events, are depicted in layers of artwork exhibited in the burro flats cave site that may span decades or even centuries between the layers. By experts, who have studied this particular solstice site for decades, it is described as being among the most well preserved representation of Chumash Ancient Sacred Rock Art in North America.

Traditional Culture Landscapes must also be included in the 106 Consultations yet here, the process puts these sacred areas in harms way on the basis of a very limited view of how "artifact" is defined in this context. No single defining feature or set of features that comprise a traditional cultural landscape. Such places could be comprised of natural features such as mountains, caves, plateaus, and outcroppings; water courses and bodies such as rivers, streams, lakes and bays and inlets; views and view sheds from them, including the overlook or similar locations, vegetation that contributes to its significance [soap lily, native cucumber used for paint, etc], and manmade features including archaeological sites; buildings and structures; circulation features such as trails, land use patterns, evidence of cultural traditions, such as petroglyphs and evidence of burial practices, and markers or monuments such as calms, sleeping circles and geoglyphs"[20] **Record of Decision must consider all reasonable alternatives.** [21]

Deferral of mitigation DOES NOT comply with NEPA.[22]

At the very minimum, all effort to use the exceptions provided to absolutely protect the areas we know about, and every effort must also be made to proceed with extreme caution so that currently unknown sites that may be located within the region must be considered as likely and therefore cultural monitoring of this process should be mandatory every step of the way, with an immediate "stop work" for any potential finding and assessment of said finding by local cultural monitors and stewards of the site.

The tribe has already designated all of the NASA administered property as a sacred site under E.O. 13007.

Echoing the concerns detailed in the comments from the tribe, we believe that NASA must complete the eligibility process for protection in the National Register.

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[20] http://www.ahcp.gov/natl-ga.pdf
[21] Record of Decision [ROD] must mitigate any impacts and identify all alternatives considered and identify alternatives that are environmentally preferable.
[22] Santa Ynez Band of Chumash Indians letter September 30, 2013 points out that Deferral of mitigation does not comply with NEPA
[http://www.npi.org/NEPA/impact]

UN Declaration on the Rights of Indigenous Peoples must now be followed after December 2010

In December of 2010, the United States announced support for the United Nations Declaration on the Rights of Indigenous Peoples [UNDRIP] in announcing this support, President Obama stated: "The aspirations it affirms – including the respect for the institutions and rich cultures of Native peoples—are one we must always seek to fulfill…[W]hat matters far more than any resolution or declaration – are actions to match those words." The UNDRIP addresses indigenous peoples' rights to maintain culture and traditions (Article 11); and religious traditions, customs, and ceremonies (Article 12); to participate in decision making in matters which would affect their rights (Article 18); and to maintain spiritual connections to traditionally owned lands (Article 25).

> The ACHP will now incorporate UNDRIP in the Section 106 review process:
>
> While the Advisory Council on Historic Preservations (ACHP) work already largely supports the United Nations Declaration on the Rights of Indigenous Peoples, additional deliberate actions will be taken to more overtly support the Declaration. The Section 106 review process provides Indian tribes and Native Hawaiian organizations (NHOs) with a very important opportunity to influence federal decision making when properties of religious and cultural significance may be threatened by proposed federal actions" [23]

Executive Order 13007

On December 10, 2012, the Santa Ynez Band of Chumash Indians, a federally recognized tribe ("Tribe"), hereby designates the NASA portion of the SSFL as an Indian sacred site pursuant to Executive Order 13007. This Indian sacred site also includes the former Rocketdyne and now Boeing portion of SSFL and the Tribe is open to discussing he exact boundaries at a later date.

EO 13007 requires Federal land managing agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. It also requires agencies to develop procedures for reasonable notification of proposed action or land management policies that may restrict access to, or ceremonial use of, or adversely affect sacred sites."

[23] http://www.achp.gov/docs/UN%20Declaration%20Plan%203-21-13.pdf

Draft

Sacred sites are defined in the executive order as "any specific discrete narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." There is no review of such determinations by a Federal agency.[24]

Deferral of boundary research as to VEN-1072 and VEN-1803 is inappropriate and not allowed. Additional boundary research is needed to conclude that any avoidance of excavation within the boundaries of burro flats (CA-VEN-1072) and CA-VEN-1803 to diminish or eliminate adverse effects to known archaeological sites

3.3.3 Cultural Resources identified

While several studies have occurred over recent years, the entire site has not been adequately studied due to limited access for such scholarly and field research opportunities. Additional sites have been identified in nearby locations and indicate the potential for additional sites being present and yet to be discovered is extremely high. [25][26]

3.3.3.1 Sacred Sites

Executive Order (EO) 13007 (1996) states that, for land designated as sacred sites, agencies managing federal lands shall: "Accommodate access to and ceremonial use of Indian Sacred Sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies shall maintain the confidentiality of sacred sites." This certainly should be interpreted to mean that the proposed action of removal of the top two feet of soil and all living species should be strictly avoided.

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[24] http://www.achp.gov/eo13007-106.html

[25] Interview and photographic review recently submitted for expert analysis by draft author of this technical comment proposal document.
[26] 56-1072/CA-VEN-1072, Burro Flats Painted Cave; 56-1800/CA-VEN-1800 Rock Shelter; 56-1803/CA-VEN-1803 Lithic Scatter; Alfa Test Area, Historic District; Bravo Test Area, Historic District; Coca Test Area, Historic District, Undesignated to date sites in Area IV and Bufferzone area(s),

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3.3.3.4 Architectural Resources

The DEIS fails to provide adequate proposal for mitigation of architectural resources. Assembly pieces from Alfa, Bravo and Coca should be considered for preservation under the stewardship of Smithsonian Institute NASM and/or other scholarly institutions for the preservation of American history.

3.4 Biological Resources

Table 3.4-2 Sensitive Plant Species potentially located within SSFL

According to the DEIS, page 3-24 it states that the California red-legged flog (Rana draytonii) is federally listed as threatened and known to occur in the vicinity of SSFL, and that no evidence of California red-legged flog occurrence was found during the 2010 or 2011 surveys (NASA, 2011b; 2011d). and that limited potential suitable frog habitat for this species primarily around R-2 Ponds and the Coca Skim Pond. It should be noted that this species was found in and around Bell Canyon Creek, but due to impacts from previous groundwater pumping, those area (as with the R-2 and Coca skim ponds) are completely dry now, and therefore no longer suitable habitat due to these actions being take to "control discharge." These actions were taken without CEQA or NEPA review and makes clear the need for such a review so that these sensitive species are protected before decisions make it too late (as we are seeing here, if limited modification to the decisions moving forward are not considered).

With such a severe proposal of soil replacement, it is likely that different vegetative species will grow from different soil, thereby further impacting the wildlife currently supported by the habitat.

Activities not considered in DEIS

Pumping occurring at WS9a in the recent two years has exacerbated the current drought conditions and has limited the potential habitat significantly as 1.4 miles of riparian habitat now has no water source.

Draft

All of the plant species listed on Table 3.4.2 should be considered further threatened with recharge water source conditions continue to be changed as a result of unmitigated water diversion that has occurred since 2010 for this purpose.

Additionally the Humboldt Lily (lillium humboldtii) has been found both within the sacred cultural resource district, as well as to the immediate south of the property boundary.[27]

Figure 3.4-2 Wildlife Migration Corridor depicted on page 3-25 is inaccurate in that it does not adequately acknowledge the use by wildlife to transverse the property following water resources. Cattle, horses, mule deer, and even mountain lions have been spotted in Area IV during our site visits guided by Responsible Parties so it is truly ridiculous to ignore those occurrences here, when we've viewed these species migrating and feeding across the entirety of the site, including the southern bufferzone, northern bufferzone, and areas 1, 2 and 3 (including the NASA owned LOX area where horses have been photographed drinking from the pond and feeding on the grasses there. The currently existing use of this corridor (which clearly includes Area 2 and other NASA owned portions) must be considered as an impact, especially given that the play presented states that the top two feet of all living vegetation will be removed.

The very idea that such extreme actions (to devastate all living things in an open space area of more 50 acres) is being considered while presenting a map on Figure 3.4-2 that doesn't even include the NASA owned portions as being part of that corridor is UNACCEPTABLE. This must be corrected as you will be advised of such by every expert writing in as well.

What will be the mitigation for all the oak trees removed? The report says "up to 100% of all vegetation" and includes trees in that category.

1. How many oak trees will be replanted to mitigate this?

---

[27] Lilium Humboldtii *Lilium humboldtii* There are two subspecies:

Lilium humboldtii subsp. *humboldtii* (syn. Lilium puberulum)[2]

Lilium humboldtii subsp. *ocellatum*

Both are on the California Native Plant Society Inventory of Rare and Endangered Plants and described as "fairly endangered in California".[3]

http://en.wikipedia.org/wiki/Lilium_humboldtii

Draft

2. And how will the Ventura County Oak Tree Ordinance be considered in such a plan that needlessly devastates the environment, or fails it entirely?
3. What will be done to mitigate the damage done to the habitat that supports several hundred diverse species?

Figure 3.4-4 Sensitive Wildlife Species

Why is the mountain lion not included here since they are all tagged and have such a large roaming need? The corridor presented can only mean that the "safest crossing" allows only for a narrow corridor, making that even more important to protect.

Listed is the Two-striped garter snake which I have personally photographed in the endangered area of Bell Creek where the habitat is being damaged, and reduced as a result of actions related to the groundwater proposed action and should be considered here.

The ring-tailed cag (Bassariscus astutus) as also been cited by comment author in the riparian drainage immediately to the south of NASAs Area II (Figure 3.4-4).

Table 3.4-4 Biological Species of Native American Concern

Included in this list, are both milkweed species (Asclepias eriocarpa, and asclepias fascicularis), Wild Cucumber which have been further identified and photographed throughout the riparian drainage receiving the potential impacts of this action (Bell Canyon Creek).[28] As well as the salvia columbariae. This area is also contains several culturally recognized significant sites.

Section 4 Environmental Consequences

The most disturbing part of this proposed action is the limited alternatives of only providing for total biological destruction of the site, or no action at all. We ask that the DEIS be modified to include reasonable alternatives that are protective of human health and the environment and that the necessary changes to the AOC signed, as agreed mutually by the parties, so that traditional health risk assessment can properly inform this process to avoid the unnecessary removal of so much soil, habitat destruction and destruction of cultural and historic assets.

We have learned from this evaluation, what a non-risk-based cleanup looks like and many proponents of cleanup (myself included) did not believe that it would result in such extensive soil disturbance. Especially given the directive in the AOC that states that alternative methods should be used to the "maximum extent possible"

[28] Photographs of Humboldt lily, wild cucumber, two striped garter snake and ring-tailed cat will be provided separately as color attachments to submission.

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We can now see the startling consequences of an action using the AOC proposed "background" as the objective when no such [PA] exists that does not consider health risk. We ask that NASA and DTSC revisit this decision and work with their toxicological resources within the department to establish sound health-risk based parameters to bring this back to a reasonable solution.

I do not agree with the idea that we "must abide by the AOC" while ignoring the primary directive stated on page 11 of the AOC that says alternative in situ methods should be used. I think that a strict adherence of the agreement needs to include all 46 pages, and not exclude such a primary tool to reduction efforts made and intended to minimize all the consequences outlined throughout this document.

The response from both NASA and DTSC is that the final signed version does not include the language that "construction shall be completed" for alternative in situ methods as it was always understood that such methods would require more time for completion. The removal of that line in the final document can only mean a purposeful intent to make strict adherence of this portions of the AOC impossible and therefore requires modification.

Was the AOC intended to not be possible? Because as proposed action that does not follow any existing programmatic agreement as requirement for the federal government to follow, it therefore creates it's own programmatic agreement that we can see here cannot be fulfilled by the very limitations it also provides. This is additional basis that makes clear the necessity of modification of the AOC agreement in order to make it feasible, possible, and something beyond the paper it is written. If protection of the surrounding communities is the intent, then TIME must be part of that consideration and creating fictional programs that do not have a reasonable basis to be implemented cannot be used as an excuse to fail those communities now.

Draft

<u>Section 5 Agencies, Organization and Individuals Consulted</u>
This section proposes that the meetings used to present alternative in situ methods to reduce soil volumes were legitimate. I would argue that there was never any intent (based on this DEIS where any such consideration fails at the first deadline), and instead, these meetings were used to fill in this portion of the report though no real or sincere consideration of any alternatives was ever made.

During Section 106 call that occurred last week, it was stated that exceedingly false data has been provided in the media on a substantial political level in an effort to sell the idea that nothing short of full destruction of the site would be protective. This was acknowledged to be untrue, yet no effort to counter those very real messages in the media, has been made. We ask that added media coverage that includes the realities of these issues be done.

5.4.1 Consultation Process for National Historic Preservation Act (Section 106 Consultation) indicated that the review of demolition activities would not be done by CEQA in that those processes will not occur until after demolition has already occurred. This fails the purpose of the "historic preservation" objective, and therefore ask that this proposed action/evaluation be halted until full CEQA review of all activities including those that potentially impact historic structures, districts, and sacred sites receive complete review and consideration.
Artificial segmenting of the process (Piecemeal) should not be allowed.

We recommend that limited modification occur to make a workable feasible and effective cleanup solution that is health protective and measurable and ask that DTSC and NASA re-visit these issues and attempt to find solutions that can make this possible.

Thank you for your consideration and appreciate the opportunity to provide substantive comment to the process of formulating these decisions moving forward.

Sincerely,

Christina Walsh
Cleanuprocketdyne.org
SSFL CAG Member, Communications Committee Co-chair
West Hills, CA 91304

Additional signatures following:

Draft

Christian Kiillkkaa
California Native Plant Society Boardmember
SSFL CAG Member, Communications Committee Co-chair
West Hills, CA 91307
SSFL CAG Member

Brit and Russell Burton
Thousand Oaks, CA 91320

Mary Weisbrock
Save Open Space, Oak Park, CA 91320
SSFL CAG Member

Anee Churchill
Futurity Farms/Bell Canyon Equestrian Center Equine Trainer
Chatsworth CA 91311

Cris De Graf
Bell Canyon Equestrian Center Manager
Bell Canyon CA 91307

Andrea De Tourney
Bell Canyon, CA 91307

Ms. Virginia Kiillkkaa (former Staff West Hills/Canoga Park Chamber of Commerce)
West Hills, CA 91307

Mr. Allan Kiillkkaa
Retired Senior Industrial Engineer, Rocketdyne Canoga Park
West Hills, CA 91307

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Cheryl Dorsey
Equine Trainer/Body work – Bell Canyon Equestrian Center
Bell Canyon, CA 91307

Lisa Pincus
West Hills, CA 91304

Dr. Ronald Ziman, MD, FACP, FAAN,
Associate Clinical Professor of Neurology
David Geffen School of Medicine, UCLA
Vice President Bell Canyon HOA
Bell Canyon CA 91307
SSFL CAG Member

Draft

NEWS RELEASE

September 24, 2013
FOR IMMEDIATE RELEASE:

CONTACT: CHRISTINA WALSH
818.922.5123
Via email: cleanuprocketdyne@yahoo.com
cwalsh@cleanuprocketdyne.org

SANTA SUSANA FIELD LABORATORY COMMUNITY ADVISORY GROUP REJECTS NASA'S DRAFT ENVIRONMENTAL IMPACT STATEMENT [DEIS].

RECOMMENDS NASA AND CAL EPA'S DEPARTMENT OF TOXIC SUBSTANCES CONTROL [DTSC] MODIFY CLEANUP AGREEMENT TO A LESS DESTRUCTIVE, MORE HEALTH-PROTECTIVE SOLUTION.

BELL CANYON, CALIFORNIA - SSFL Community Advisory Group [CAG] voted Wednesday night to reject Draft EIS (Environmental Impact Statement) by NASA, which proposes to limit actions to either an "all or nothing" action that either destroys the environment, or fails to clean up the site. The SSFL CAG further agreed to send a cover letter that includes substantive comments from its members who represent many perspectives from the surrounding communities, but agreed here, that the DEIS proposal went far beyond what is needed to protect human health, and proposes to destroy the existing environment and even potentially impacting the sacred Burro Flats Cave area and historic districts. The CAG had consensus that a modification is needed to the agreement outlining the cleanup requirements, and are proposing a "Modification in Principle" [MIP] as one example of how limited modifications can allow for a protective cleanup that considers health-risk, so that soil is not needlessly disturbed that does not present a risk to humans OR the environment, and further prevents potential impacts to the sacred cultural sites as well as honoring our nations history of Space Exploration.

Deadline for comments is October 1st to NASA at:

Mr. Allen Elliott
Program Director, NASA
Marshall Space Flight Center
MSFC AS01, Building 4494,
Huntsville, AL 35812
or via email to: msfc-ssfl-eis@mail.nasa.gov

###

From: Christine Rowe
To: MSFC-SSFL-EIS
Cc: Elliott, Allen (MSFC-AS01); Fellows, Merrilee (HQ-LD000); GROMAN, JENNIFER A. (HQ-LD020)
Subject: NASA Santa Susana Field Laboratory comment
Date: Saturday, September 07, 2013 8:05:48 PM
Attachments: SSFL-P~2 c.pdf
3865_draft_consent_order_version_2_0_doe_and_nasa_proposed_changes.pdf

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September 7th, 2013

Dear Mr. Elliott.

I attended two meetings on the NASA Draft Environmental Impact Statement which I find to be insufficient for the members of my community to make informed decisions related to the cleanup.

I participated as a NASA Section 106 consultant in a meeting at the NASA facilities at Santa Susana.

We learned in the NASA Draft Environmental Impact Statement that all of the Santa Susana Field Laboratory was declared Sacred Lands under an Executive Order.

In looking through the thousands of documents on my computer related to Santa Susana, I found a presentation given to members of DTSC's Public Participation Group - of which I was a member.

I have attached that Power Point given by DTSC employees.

As a result of the NASA DEIS related meetings, the Section 106 consultation meeting, and many meetings with NASA and DTSC, these are some of my comments for the record:

1. It is my understanding that the Federal Department of Justice consulted with the Federal Agencies - I assume with NASA. It is my interpretation of the DOJ's conclusion that the Administrative Orders on Consent (AOC) was not signed to comply with SB 990. **(1)** - (page 20 Adobe)
2. As a technical stakeholder at many DTSC meetings on the 2009 Proposed Consent Order - I respectfully disagree with that interpretation. The 2010 AOCs were written, in my opinion, to comply with the 2007 Consent Order and SB 990. See page one of the Power Point by DTSC. (And please see the attachment called the 2.0 version of the 2009 Draft Consent Order - page 7 Adobe)
3. If the 9th Circuit Court upholds the lower courts ruling on SB 990, in my opinion, then SB 990 should be null. NASA therefore should consider renegotiating the AOC for a number of reasons.
4. According to the Power Point by DTSC, CEQA review should have been started in 2011 - we are almost into 2014. (page 13 of the Power Point by DTSC) We have not started a CEQA review.
5. With three Responsible Parties all cleaning the SSFL site at one time, it will be detrimental to my community and the environment to send so many trucks down one route over a very short period of time.

6. The AOC's will not bypass CEQA, the Endangered Species Act, and **Historic preservation. (**page 10 of the Power Point by DTSC)
7. The first thing that a scientist or an educator does is to define a term that they are going to use. The term: "Historic preservation" is not defined in this Power Point, therefore, it can refer to historic structures or archaeological sites - in my opinion. (see page 10 of the Power Point by DTSC)
8. In the NASA AOC with DTSC, under possible exceptions, this line discusses the cultural aspects of the site: "Native American artifacts that are formally recognized as Cultural Resources ". This term **artifact** is not defined. (page 43 Adobe of the NASA AOC).(2)
9. Please refer to my email regarding the definition of an artifact and other similar terms dated September 5th, 2013.
10. In our Section 106 Consultation meeting, someone that is much more knowledgeable than me asked "Who did a NEPA and a Section 106 Review prior to NASA signing the AOC". That is my interpretation of that question. We were not given an answer.
11. There is a new NEPA CEQA Handbook dated March 2013.(3)

In conclusion, I respectfully request that NASA renegotiate the agreements with DTSC. I respectfully request that NASA consider the NASA OIG's comments in terms of this not being a risk based clean up when almost every other comment that I heard at the NASA DEIS meetings were related to offsite risk and future risk.

- **Please go back to the 2007 Consent Order and do a risk based clean up based on future use or to a maximum of a suburban residential standard**.

- I respectfully request that your NEPA / Section 106 Department review any other agreements with the State of California before they are signed.
- I respectfully request that NASA review the new March 2013 NEPA CEQA Joint document from CEQ.(3)
- Finally, I respectfully request that NASA continue its original EIS process that considered five alternatives - not just one. We now have much more to consider than just the clean up of the site.

We all want this site to be cleaned up. But at the Section 106 meeting, I believe the key words that I was hearing were **preservation** - preservation of historical resources and cultural resources. **Protection** - protection of the wildlife, the oak trees, and the Native Species.

If NASA can put a "Science Lab" on Mars, if NASA can launch LADEE to the moon; then NASA ***can*** renegotiate a contract with DTSC that protects public health and safety, preserves historical and cultural assets, and protects both the local and global environment. Please help me to preserve and to protect.

Respectfully,

Christine L. Rowe
West Hills resident
NASA Section 106 consultant

(1) Brief for the United States as Amicus Curiae Supporting Affirmance:
http://www.dtsc-ssfl.com/files/lib_pub_involve/other_docs/66002_US_DOJ_Brief_re_SB990.pdf
(2)Administrative Order on Consent for Remedial Action:

http://ssfl.msfc.nasa.gov/documents/governance/NASA_DTSC_Final_AOC_Dec_2010.pdf
(3) NEPA CEQA Handbook - March 2013:
http://www.whitehouse.gov/sites/default/files/nepa_and_ceqa_draft_handbook.pdf

DRAFT FOR DISCUSSION PURPOSES ONLY

Note: This is an alternative version of the draft order, containing changes that DOE and NASA have proposed to the version of the agreement previously posted. While these changes have been discussed among the representatives of DTSC, DOE, and NASA, this version of the Order has not been agreed to by the three parties. In the interest of transparency, DTSC is making this alternate version available to the public. Comments submitted on both versions will inform the negotiations between DTSC, DOE and NASA as we move towards finalizing the consent cleanup order.

DRAFT 2.0

STATE OF CALIFORNIA
ENVIRONMENTAL PROTECTION AGENCY
DEPARTMENT OF TOXIC SUBSTANCES CONTROL

In the Matter of: Santa Susana Field Laboratory Simi Hills Ventura County, California CA1800090010 (NASA) CAD000629972 (Boeing/DOE) CA3890090001 (Boeing/DOE) The National Aeronautics & Space Administration and The U.S. Department of Energy, (Respondents)	Docket No. CONSENT ORDER FOR RESPONSE ACTION Health and Safety Code Sections 25187, 25355.5(a)(1)(C), 25359.20, 58009 and 58010

INTRODUCTION

1.1. Parties. The California Department of Toxic Substances Control (DTSC), the National Aeronautics & Space Administration (NASA), a federal agency, and the U.S. Department of Energy (DOE), a federal agency (Respondents) enter into this Consent Order for Response Action.

1.2. Background. Respondents are the owners and/or operators of hazardous waste management units and facilities at the ~~approximately 2,850-acre~~ Santa Susana Field Laboratory (SSFL), an approximately 2,850-acre location also referred to under this Order as "the Facility" and "the Site," ~~located~~ situated in the Simi Hills ~~in~~ of southeastern Ventura County, California as shown on Attachment 1. The Simi Hills are bordered to the east by the San Fernando Valley and to the north by the Simi Valley. The SSFL is located approximately three miles south of the San Fernando Valley Freeway (118) and approximately five miles north of the Ventura Freeway (101). The SSFL was established in 1947. Activities at the SSFL have included but were not limited to rocket engine testing and research and development of fuels, propellants, nuclear power, and lasers. The SSFL is divided into four administrative areas – Area I, Area II, Area III, and Area IV - and two undeveloped areas. A 41.7-acre portion of Area I and all of Area II, which is 409.5 acres, are owned by the federal government, administered by NASA and operated by Boeing or its predecessors. Historical operations in Area II and the government-owned portion of Area I included rocket engine testing, propellant and fuel storage and loading, and non-hazardous waste incineration (Area II) and production of liquid oxygen (Area I), Additional information about the history of these operations is available at http://www.nasa.gov/ssfl. The Department of Energy (DOE) owns facilities on a 90-acre site within Area IV, which ~~is~~ are collectively known as the "Energy Technology Engineering Center" (ETEC)~~, while~~. Boeing owns the underlying land. The 90-acre ETEC consists primarily of ~~facilities and~~ structures built and owned by DOE and operated by Boeing or its predecessors. Area IV was used for nuclear power research. The history of these operations is described at various places, including DOE's ETEC Closure Project web site at

http://www.etec.energy.gov/ and in the "Historical Site Assessment of Area IV, Santa Susana Field Laboratory, Ventura County, California", May 2005 at http://www.etec.energy.gov/Cleanup/Historical-Site-Assessment.html.

The postclosure permit for Areas I and III addresses five surface impoundments and five groundwater treatment systems or towers. The postclosure permit for Area II addresses four surface impoundments and three groundwater treatment systems or towers. The RCRA closure process for these units was initiated in 1985. Evaluations of the surface impoundments continue as part of the investigative work described in this Order. The Thermal Treatment Facility (TTF) located in the southern portion of Area I, in the eastern portion of the Area I Burn Pit, is subject to RCRA closure. Closure requirements may be addressed through the characterization and remediation procedures specified in this Order.

In Area IV, DOE-owned/Boeing-operated facilities include the Hazardous Waste Management Facility (the HWMF) and the Radioactive Materials Handling Facility (RMHF). DTSC issued a permit for the HWMF in 1993 to DOE as owner and Rockwell International Corporation as facility operator (Permit Number: 93-3-TS-002), EPA I.D. Number: CAD000629972). This permit authorized the continued operation of a treatment unit (the Building 133 sodium burn facility) and a storage unit (the Building 29 sodium storage facility). The HWMF is inactive and remains subject to closure requirements. DTSC has approved DOE's closure plan for the HWMF; however, implementation of the closure plan is on hold. The RMHF is a mixed waste facility for which Interim

Status authority first went into force with the March 22, 1989 Part A submittal to the U.S. Environmental Protection Agency (Interim Status Document EPA I.D. Number: CA3890090001). In September 1997, DTSC required DOE and Boeing to submit a revised Part A application to clarify the hazardous waste operating units at the RMHF eligible for Interim Status and to include a closure plan and schedule for closure. A revised Part A application and Closure Plan for the RMHF were submitted on October 24, 1997. DTSC determined the Part A application complied with the administrative requirements for Interim Status. The RMHF consists of two hazardous waste management storage units (Building 4022, and Building 4621 and its accompanying yard) and a mixed waste treatment unit (Building 4021). Closure of the RMHF is on hold. ~~In each of the Areas I, II, III, and IV described above, and in both of the undeveloped areas described above, t~~There have been releases or potential releases of hazardous substances into the environment that require response actions in each of the Areas I, II, III, and IV described above, and in both of the undeveloped areas described above.

1.3. Authorities.

1.3.1 DTSC issues and enters this Order pursuant to its authority and responsibilities under Health and Safety Code sections 25187, 25355.5(a)(1)(C), 25359.20, 58009 and 58010. Health and Safety Code section 25187 authorizes DTSC to issue an Order to require corrective action when DTSC determines that there is or has been a release of hazardous waste or hazardous waste constituents into the environment from a hazardous waste facility. Health and Safety Code section 25187 further authorizes DTSC, *inter alia*, to implement a response action pursuant to Chapter 6.8 (commencing with Health and Safety Code section 25300). Health and Safety Code

section 25355.5 (a)(1)(C) authorizes DTSC to issue an Order establishing a schedule for removing or remedying the release of a hazardous substance, or for correcting the conditions that threaten the release of a hazardous substance, and authorizes DTSC to enter into an enforceable agreement with a potentially responsible party that requires the party to take necessary response action to remove the threat of a release, or to determine the nature and extent of the release and adequately characterize the site, prepare a response action plan, and complete the necessary response actions as required in the approved response action plan. Health and Safety Code section 25359.20 authorizes DTSC to use any legal remedies available pursuant to Chapter 6.8 (commencing with section 25300) or Chapter 6.5 (commencing with section 25100) to compel a responsible party or responsible parties to take or pay for appropriate response action necessary to protect the public health and safety and environment at the SSFL site. Health and Safety Code section 25359.20(b) requires that any response action at the Site be taken in accordance with the provisions of Chapter 6.8.

Health and Safety Code section 58009 authorizes DTSC to commence and maintain all proper and necessary actions and proceedings to enforce its rules and regulations; to enjoin and abate nuisances ~~related to matters within its jurisdiction which~~ that are dangerous to health within its jurisdiction; to compel the performance of any act specifically enjoined upon ~~by~~ any person, office, or board by any law of this State relating to matters within its jurisdiction; or on matters within its jurisdiction, to protect and preserve the public health. Health and Safety Code section 58010 authorizes DTSC to abate nuisances related to matters within its jurisdiction.

Nothing in this Order shall be construed as a concession by DTSC regarding the Federal Respondents' statement of authorities in section 1.3.2 below, and DTSC expressly reserves all rights as specified under section 1.6 below.

1.3.2. NASA and DOE enter into this Order pursuant to their federal authority and responsibilities under sections 104 and 120 of CERCLA, 42 U.S.C. sections 9604 and 9620, the National Contingency Plan (NCP), 40 C.F.R. Part 300, Executive Order 12580, and section 6001 of RCRA, 42 U.S.C. section 6961. Nothing in this Order shall be construed as constituting submission by Federal Respondents to any State authority or jurisdiction under California Health and Safety Code sections 58009 and 58010 or any State authority or jurisdiction beyond the extent that Congress has expressly waived the sovereign immunity of the United States.

1.3.3. DOE's Additional Statement of Authorities. In addition to the authorities cited in Section 1.3.2 above, DOE also enters into this Order pursuant to its authority and responsibilities under the Atomic Energy Act of 1954, as amended (AEA), 42 U.S.C. 2011, et seq, the Energy Reorganization Act of 1974, 42 U.S.C. 5801, et seq., and the Department of Energy Organization Act of 1977, 42 U.S.C. 7101, et seq. It is DOE's legal position that California does not have regulatory authority over DOE with respect to radioactive material. DOE and DTSC agree that the cleanup of the SSFL needs to move forward and wish to cooperate to achieve this end. DOE believes that its legal position is not an obstacle to achieving a cooperative and timely cleanup of the site, including the radioactive materials, in a manner consistent with SB 990 due to factors unique to the site, including the fact that DOE is not the landowner. Without waiving its legal position or the rights reserved in this Order, and as an exercise of comity between DOE and the

State of California, DOE ~~agrees to cooperate with implementation of this amended Consent Order. Therefore, DOE agrees to comply with and be bound by the terms and conditions of this Order~~ shall provide DTSC with information required by this Consent Order in a timely manner, including information concerning radioactive contamination in Area IV, the northern undeveloped land, and any other radioactive contamination at the site that originated from DOE operations in Area IV that is required by this Consent Order. DOE shall also provide to DTSC all information developed by DOE in its preparation of the Environmental Impact Statement for Area IV when that information is available.

In order to complete a cooperative and timely cleanup of the site consistent with SB 990, DOE shall exercise its CERCLA and AEA authorities through a process to determine an appropriate remedy to clean up radioactive contamination in Area IV, the northern undeveloped land and in other areas where contamination exists that originated from DOE operations at the site. This process shall include the rural and suburban residential future land use scenario consistent with SB 990. DOE will involve the public in that process. If necessary, DTSC and DOE will engage in the dispute resolution process described in this Order, and, subject to that process, may also utilize such other informal dispute resolution procedures as the parties agree are appropriate in order to achieve the shared goal of moving the cleanup forward, and resolving any environmental or legal conflicts, without litigation.

1.3.4. No provision of this Order is intended to nor shall be construed to interfere with or supersede the authority of the Los Angeles Regional Water Quality Control Board or State Water Resources Control Board pursuant to the Porter-Cologne Water Quality Control Act, Water Code

Section 13000 et seq., or other provisions of law, or of the California Department of Public Health or other appropriate State and local agencies. No provision of this Order is intended to limit or interfere with the enforcement powers of the District Attorneys for the Counties of Los Angeles and Ventura for matters within their respective jurisdictions.

1.4. Definition of Terms. The terms used in this Order are as defined in California Health and Safety Code, Division. 20, Chapters 6.5 and 6.8, and California Code of Regulations, Title 22, Division. 4.5, except as otherwise provided.

"Chemical of Potential Concern (COPC)" shall mean a chemical that is present in the environment at levels that exceed background levels and may cause adverse human health effects and is a result of a release at the Site,.

"Chemical of Potential Ecological Concern (COPEC)" shall mean a chemical that is present in the environment at levels that exceed background levels and may cause adverse health effects in animals or plants and is the result of a release at the Site.

"Mixed Waste" shall mean a waste that contains both hazardous waste and radioactive waste, i.e., source, special nuclear, or byproduct material subject to the Atomic Energy Act of 1954, as amended.

"Radionuclide of Potential Concern (ROPC)" shall mean a radionuclide that is present in the environment at levels that exceed background levels and may cause adverse human health effects and is the result of a release at the Site.

"Radionuclide of Potential Ecological Concern (ROPEC)" shall mean a radionuclide that is present in the environment at levels that exceed background levels and may cause adverse health effects in animals or plants and is the result of a release at the Site.

"Respondent(s)" shall mean one or more of the Respondents identified in Section 1.1 of this Order.

"Remedial Investigation" or "RI" under Chapter 6.8 shall be the functional equivalent to "RCRA Facility Investigation" or "RFI" discussed in sections 3.4 through 3.4.4 of the Consent Order for Corrective Action issued August 16, 2007.

"Feasibility Study" or "FS" under Chapter 6.8 shall be the functional equivalent to "Corrective Measures Study" or "CMS" discussed in sections 3.5 through 3.5.4 of the Consent Order for Corrective Action issued August 16, 2007.

"Response Action Plan" or "RAP" shall be the functional equivalent to the corrective measures selection documentation discussed in sections 3.6 through 3.6.3 of the Consent Order for Corrective Action issued August 16, 2007.

"Remedial Design/Response Action Implementation" or "RD/RA Implementation" shall be the functional equivalent to "Corrective Measures Implementation" or "CMI" discussed in sections 3.7 through 3.7.3 of the Consent Order for Corrective Action issued August 16, 2007.

1.5. Attachments. All attachments to this Order are incorporated herein by this reference.

1.6. Denial of Liability; Reservation of Rights; No Admissions. By issuance of this Order, DTSC does not waive the right to take further enforcement actions. In addition, by entering into this Order, Respondents do not admit to any fact, statement, or recitation set forth in this Order, or to

any fact, fault or liability under any federal or State statute or regulation or other provision of law. This Order shall not constitute a release, waiver, covenant not to sue or limitation of any kind, and Respondents and DTSC expressly retain all rights, remedies, defenses, causes of action, powers and authorities, civil or criminal, that Respondents or DTSC have – with respect to any disputes or claims amongst each other or against any other parties – under any statutory, regulatory, constitutional or common law authority, nor shall it be construed or applied in any way to affect the ability of Respondents to seek or obtain relief in federal court or any other court of competent jurisdiction. Without limitation of the aforementioned reservation of rights, Respondents do not admit or consent to the constitutionality, legality, enforceability, or validity of California Health and Safety Code section 25359.20 in whole or in part. DTSC asserts that California Health and Safety Code section 25359.20 is constitutional, legal, enforceable and valid. To the extent that California Health and Safety Code section 25359.20 or any federal or State law or regulation incorporated into, referenced in, or authorizing this Order is subsequently modified, amended, repealed, invalidated, declared unenforceable or superseded, in whole or in part, Respondents' obligations under this Order shall be modified accordingly, including as further provided below in section 4.27 (Severability).

FINDINGS OF FACT

DTSC hereby finds:

2.1. Region IX of the U.S. Environmental Protection Agency (U.S. EPA) issued an Interim Final RCRA Facility Assessment Report (RFA) in July 1991 that identified 122 areas of the SSFL

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for designation as Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs). On November 12, 1992, DTSC issued a Stipulated Enforcement Order to Rockwell International Corporation (Rockwell International, predecessor to Boeing)[1] to impose corrective action requirements at the SSFL based on the 1991 RFA. The 1992 Order required Rockwell International to submit a Current Conditions Report analyzing each area identified in the RFA. The Current Conditions Report was to contain an in-depth investigation of waste generation and release that occurred at each area and a determination of necessary further actions for each area, with a basis for each conclusion. The 1992 Order also required Rockwell International, after submittal of the Current Conditions Report, to submit a draft RCRA Facility Investigation Workplan (RFI Workplan), including plans for each area identified in the Current Conditions Reports as areas appropriate for investigation. The parties contemplated that approval of the RFI Workplan would result in an RFI Report, Corrective Measures Studies and final cleanup of the areas identified in the final Corrective Measures Studies. A Current Conditions Report was prepared by ICF Kaiser Engineers in 1993, on behalf of Rockwell International.

In May 1994, U.S. EPA finalized the RCRA Facility Assessment Report (RFA). When finalized in 1994, the RFA identified three additional areas for a total of 125 SWMUs and AOCs at the SSFL that either have released or may release hazardous wastes or hazardous waste constituents into the environment. During the subsequent RFI phase, 10 additional AOCs were identified at the SSFL. All 135 SWMUs and AOCs are summarized in Attachment 4. They include all five of the Area I and III closed RCRA surface impoundments, the four Area II closed RCRA

[1] Boeing became subject to the Order through its 1996 acquisition of the Rockwell International Corporation, Rocketdyne Division after the Order was issued.

surface impoundments, the Area IV HWMF, and the Area IV RMHF. Leach fields are typically associated with individual SWMUs and not shown individually except in Area IV where they are independent units.

2.2. Based on the RFA, DTSC concluded that further investigation was needed to determine the nature and extent of releases of hazardous wastes or hazardous waste constituents in or from the SWMUs and AOCs listed in Attachment 4. Identified SWMUs and AOCs have been grouped by location for investigation purposes and the groups are called "RFI Sites." A total of 51 RFI Sites have been identified for investigation under the RFI process. The RFI Sites are listed in Attachment 5 and as of the effective date of this Order shall be deemed "RI Sites." A comprehensive description of tasks performed for the RFI surficial media investigation, RFI scope, workplans prepared, and expansion and changes to the RFI, are described in the RCRA Facility Investigation Program Report, Surficial Operable Unit, Santa Susana Field Laboratory dated July 2004 (Program Report). Laboratory information for samples collected through December 31, 2003 is provided in the Program Report.

2.3. Since the early 1980s, SSFL site characterization has proceeded along two parallel paths, one path for Chatsworth Formation groundwater and ~~the other~~ a second path for soils and related surficial media. This approach was formalized by defining the groundwater and surficial media as two Operable Units (OUs) for investigation and other response action purposes. The OUs at the Site are:

I. The Surficial Media OU comprising saturated and unsaturated soil, sediment, surface water, near-surface groundwater, soil vapor, air, biota, and weathered

bedrock. Near-surface groundwater is groundwater that occurs within the alluvium or weathered bedrock.

II. The Chatsworth Formation OU, comprising the Chatsworth formation aquifer, and both saturated and unsaturated unweathered (competent) bedrock.

A discussion of the RFI and OUs is presented in the Program Report.

2.4. Based on a September 1990 Comprehensive Monitoring Evaluation (CME) for Chatsworth Formation groundwater conducted by DTSC, Boeing and its predecessor were required to implement a DTSC-approved Site Characterization Plan under the corrective action program. Between 1990 and 2000, several groundwater monitoring wells were installed and sampled, rock core sampling was performed at two locations in the northeast and southeast portions of the site, site fracture data were analyzed, aquifer tests were conducted, and a hydraulic communication study was conducted. The results from these activities were presented in several documents submitted over this period. In September 2000, DTSC approved an investigation of the fractured bedrock and Chatsworth Formation groundwater at the SSFL (Workplan for Additional Field Investigations, Chatsworth Formation Operable Unit, Santa Susana Field Laboratory dated October 2000). Further site characterization is intended to provide an understanding of the complex fracture-dominated groundwater system at SSFL and the movement of constituents of concern (COCs) in the groundwater. As of February 1, 2009, more than 400 shallow and deep wells, and piezometers had been installed on and off the SSFL for the purpose of monitoring and characterizing the groundwater and COCs.

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2.4.1. On May 2, 2007, the U. S. Federal District Court of Northern California issued an order granting plaintiff's motion for summary judgment in the case Natural Resources Defense Council, Inc. et al. vs. DOE [Civ. No. 04-CV-04448 SC (BZ)]. On the following day the Court permanently enjoined DOE from transferring ownership or possession, or otherwise relinquishing control over any portion of Area IV until DOE completes an Environmental Impact Statement (EIS) for Area IV and issues a Record of Decision pursuant to the National Environmental Policy Act.

2.4.2. On November 1, 2007, DTSC issued an Imminent and Substantial Determination and Order and Remedial Action Order to Boeing and NASA requiring the removal of asbestos-containing material and other debris associated with SSFL operations from a stream bed on public property ("Sage Ranch"), located adjacent to SSFL, and removal of polycyclic aromatic hydrocarbon-containing clay pigeon fragments from a former shooting range ~~which~~ that was operated by the former Rocketdyne-Atomics International Rifle and Pistol Club, an organization that was separate and independent from Boeing and its predecessors, and also located on Sage Ranch. Soil and debris removal related to the aforementioned asbestos containing-material and other debris from Sage Ranch was completed on December 20, 2007. Although Rockwell International conducted voluntary cleanup of the polycyclic aromatic hydrocarbon-containing clay pigeon fragments and associated lead shot from the former Rocketdyne-Atomics International Rifle and Pistol Club shooting range in 1993, and Boeing conducted voluntary cleanups of these materials in 1998 and 2006, these materials are not the result of SSFL research activities or operations. In 2008, during the removal of the clay pigeon fragments from the former shooting range area, Respondent Boeing discovered 1,163 small rocket motor igniters, lab glassware, and

other debris beneath the surface. Some of the rocket motor igniters likely have resulted from SSFL research activities or operations.

2.4.3. In 2007, U.S. EPA conducted a Preliminary Assessment/Site Investigation under CERCLA to determine whether additional federal response at the Site was necessary. The Site scored above the threshold score for listing on the National Priority List (NPL). By letter dated December 6, 2007, U.S. EPA requested the State of California's position on placement of the Site on the NPL. In January 2009, the State of California notified U.S. EPA that it did not concur in placing the Site on the NPL, but reserved the right to change its position on this issue if circumstances change.

2.4.4. On August 16, 2007, Respondents, along with Boeing and DTSC entered into a Consent Order for Corrective Action. ~~Among other things, t~~The August 16, 2007 Order required, among other things, Respondents to submit a corrective action schedule~~,~~ and ~~to~~ take ~~other~~ steps necessary to complete the cleanup of all surficial media by June 30, 2017. As of the date of this Order, Respondents have met all obligations under the Consent Order for Corrective Action.

2.4.5. Pursuant to the provisions of the 2008 Consolidated Appropriations Act, 2008 (H.R. 2764, Public Law 110-161), on July 24, 2008, DOE and U.S. EPA signed an interagency agreement to conduct a comprehensive radiological site characterization for Area IV and a radiological background study for the SSFL. Under this Agreement, DOE transferred $1.5 million to U.S. EPA to fund a radiological background study for the Site and to develop a scope of work for the radiological characterization survey for Area IV. The DOE/EPA Interagency Agreement was amended on February 17, 2009 to reflect the transfer of an additional $1.7 million to U.S. EPA by

DOE. On April 23, 2009, DOE and U.S. EPA Region IX signed an amendment to the Interagency Agreement providing for the transfer of $38.3 million in DOE American Reinvestment and Recovery Act funding to U.S. EPA that fully met DOE's commitment to fund U.S. EPA's December 2008 estimate of costs to develop the radiological characterization survey for Area IV. EPA's radiological site characterization for Area IV will include a Historical Site Assessment and survey that will address not only the 290 acres of Area IV but also the 182 acre northern undeveloped land and any drainages that originate from Area IV and extend into adjacent downstream areas of SSFL potentially impacted by Area IV operations.

2.4.6. DOE's completion of the EIS mentioned in section 2.4.1 of this Order is dependent on and must follow U.S. EPA's completion of the radiological survey of Area IV mentioned in section 2.4.5 of this Order.

2.4.7. Senate Bill (SB) 990 (Health and Safety Code sections 25359.20 (a) through (e)) was signed into law on October 14, 2007 and became effective on January 1, 2008. Section 25359.20(b) requires that "[a] response action taken or approved at the Santa Susana Field Laboratory site shall be conducted in accordance with the provisions of [Chapter 6.8]." This Consent Order for Response Action incorporates terms specific to the response action procedures prescribed by Health and Safety Code, Division 20, Chapter 6.8 rather than the corrective action process carried out under Health and Safety Code Chapter 6.5. Section 25359.20(c) states: "A response action taken or approved pursuant to this chapter for the Santa Susana Field Laboratory site shall be based upon, and be no less stringent than, the provisions of Section 25356.1.5. In calculating the risk, the cumulative risk from radiological and chemical contaminants at the site

shall be summed, and the land use assumption shall be either suburban residential or rural residential (agricultural) whichever produces the lower permissible residual concentration for each contaminant. In the case of radioactive contamination, [DTSC] shall use as its risk range point of departure the concentrations in the Preliminary Remediation Goals issued by the Superfund Office of the United States Environmental Protection Agency in effect as of January 1, 2007" and presented in Attachment 6. Sections 25359.20(d) and (e) prohibit the sale, lease, sublease, or other transfer of SSFL property unless the Director of DTSC or his or her designee certifies that the land has undergone complete remediation pursuant to the most protective standards in sections 25359.20(a) through (c), inclusive.

2.5. Potential human and ecologic exposures to chemicals and radionuclides can occur either onsite or as a result of migration to offsite areas. A generalized conceptual site model (CSM) of potential exposure pathways to COCs at SSFL was developed based on field observations, current and future site use scenarios, and data collected during the investigations at the SSFL. The CSM for SSFL is described in the 2005 Standardized Risk Assessment Methodology (SRAM) Work Plan (Rev. 2) approved by DTSC. The SRAM (Rev. 2) was approved before the enactment of SB 990 (see section 2.4.7 of this order) and shall be revised to reflect SB 990 requirements. Attachments 7 and 8 provide a list of potential chemical and radionuclide exposure pathways for human health and ecological risk assessment at the SSFL.

2.6. Types of chemicals associated with rocket engine testing and other research and development activities at the SSFL, and corresponding hazardous substances consequently generated or present at the SSFL are shown on Attachment 9.

2.6.1. A list of COCs has been developed for the nine closed surface impoundments addressed in the two postclosure permits for Areas I and III, and Area II. COCs from the postclosure permits are listed in Attachment 10.

2.7. Numerous investigations have been conducted to assess the presence of contaminants in groundwater beneath the Site. The SSFL is geologically complex consisting of dipping, fractured sandstone and siltstone with several faults. Releases of hazardous substances have migrated offsite through groundwater. Trichloroethylene (TCE) has been identified in the groundwater at the SSFL and in groundwater monitoring wells immediately northeast and offsite of the SSFL. Groundwater characterization activities are ongoing to further assess the nature and extent of groundwater contamination at the SSFL. Various radionuclides have been detected in groundwater at the Site. A list of chemicals and radionuclides in groundwater at the SSFL identified as of the issuance of this Order is provided in Attachment 11.

2.8. The SSFL is located in hilly terrain, with approximately 1,100 feet of topographic relief near the crest of the Simi Hills. Approximately 70 percent of the area within a ~~5~~ five-mile radius of the SSFL is undeveloped. The SSFL contains considerable cultural, historical and natural resources that are unique and valuable. Residential development is located north of the SSFL, and also to the east of the SSFL (on Woolsey Canyon Road and in Dayton Canyon). Residential areas located south of the SSFL are separated from active portions of the SSFL by an undeveloped area. New residential developments are proposed in Dayton Canyon to the east, Woolsey Canyon to the northeast, and in Runkle Canyon to the northwest.

2.9. Surface water from the SSFL drains primarily toward the south into Bell Creek and then eastward to the Los Angeles River with its confluence located in the San Fernando Valley. Surface water in the very north portion of the SSFL drains via various drainages into Meier Canyon and other drainages which lead to the Arroyo Simi located in Simi Valley. Surface water runoff from Happy Valley on the east flows via Dayton Canyon Creek to Chatsworth Creek and then into Bell Creek. Bell Creek subsequently flows southeast to the Los Angeles River.

2.10. Water supply (drinking water) at the SSFL is provided by the Calleguas Water Company. There are currently no domestic water supply wells in use at the SSFL.

2.11. Hazardous substances released from operations at the SSFL have migrated or may migrate into soil, surface water, air, and groundwater (including seeps and springs) pathways. Potential exposures to hazardous substances can occur from direct contact with soils, sediments, weathered bedrock, surface water, air, and groundwater, and by ingestion of plants and animals if any were grown or raised on the Site. The Site is currently not used for growing or raising plants or animals. With the exception of plants that could be maintained in an Engineered Natural Treatment System for surface water control (but would not be consumed), there is currently no known intent to use the Site to grow or raise plants or animals in the future and Respondents Boeing and NASA intend to restrict all future use of groundwater at the Facility.

WORK TO BE PERFORMED

Based on the foregoing legal and factual statements and assertions, it is hereby ordered and agreed that:

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3.1. Without waiving its authority under Health and Safety Code section 25359.20 to use legal remedies under either Chapter 6.5 or 6.8, DTSC shall require and oversee Site investigation and remediation pursuant to the provisions of Health and Safety Code, Division 20, Chapter 6.8, Sections 25300-25395 ("Chapter 6.8"), as provided by SB 990 (Health and Safety Code section 25359.20(b)). Remediation under Chapter 6.8 shall continue to ensure that releases of hazardous substances at the Site are appropriately investigated and remediated, that the cleanup is protective of human health and the environment, and that there will be public participation in the decision-making process. Upon the Effective Date of this Consent Order, work performed to date pursuant to the Chapter 6.5 corrective action process and referenced in section 3.4.1(a)-(z), shall continue under this Consent Order, but in accordance with the processes and terminology established by Chapter 6.8. The processes and terminology of Chapter 6.5 and Chapter 6.8 shall be deemed functionally equivalent under this Consent Order. All corrective action work for the Site performed prior to the Effective Date shall be deemed sufficient under this Consent Order, and no modifications of any submittals under the Consent Order for Corrective Action referenced in Section 2.4.3 shall be required, except and only to the extent as such modifications are required by Section 25359.20, or to the extent that new information indicates that such modifications are necessary and appropriate. Except as specified in this Order, Respondents shall perform the work required by this Order in a manner ~~not in~~consistent with the DTSC-approved RI workplans (including RFI workplans approved under Chapter 6.5 corrective action) and amendments or additions, Feasibility Study Workplan, Response Action Implementation Plan, any other DTSC-approved workplans, Health and Safety Code section 25359.20, other applicable State and federal

laws and their implementing regulations, and applicable DTSC and U.S. EPA guidance documents identified in Attachment 12, to the extent such guidance documents are ~~not in~~consistent with the implementation ~~requirements~~ of SB 990 under ~~or~~ the terms of this Order.

3.1.1. Chemicals of potential concern (COPCs) and chemicals of potential ecological concern (COPECs) for input into, respectively, the human health and the ecologic risk assessments shall be determined following methods outlined in the SRAM (Rev. 3) described in section 3.2.4 of this Order. Chemicals of concern (COCs) and chemicals of ecological concern (COECs) shall be identified in each of the RI reports as they are prepared. Radionuclides of potential concern (ROPCs) and radionuclides of potential ecological concern (ROPECs) for input into, respectively, the Human Health and the Ecologic Risk Assessments, shall be determined following methods outlined in the SRAM (Rev. 3) described in section 3.2.4 of this Order. Radionuclides of concern (ROCs) and radionuclides of ecological concern (ROECs) shall be identified in each of the RI reports as they are prepared. Respondents shall update already-submitted draft RFI reports with ROCs and ROECs, and the schedule required by section 3.2.1 of this Order shall specify dates for the submittal of those updates.

3.2. Response Action Schedule.

3.2.1. All parties desire to expedite the completion of the investigation and implementation of the final remedy so that the Site can be returned to beneficial use as soon as practicable. DTSC and the Respondents acknowledge and agree that a critical objective of the schedule is to remediate contaminated soils by 2017, and the parties shall work to address issues that could have a substantial impact on Respondents' ability to meet the schedule (e.g., U.S. EPA's Area IV

radiological survey). Within 90 days of the effective date of this Order, Respondents shall submit to DTSC for review and approval, in hard copy and electronic format, a revised schedule (with tasks, specific deliverables, lead Respondents, milestones and timelines) for completion of the following by June 30, 2017 in compliance with the terms and conditions of this Order:

1. Completion of DTSC-approved remedies for contaminated soils and weathered bedrock.
2. Completion of construction of DTSC-approved groundwater cleanup remedies in the Chatsworth Formation OU and Surficial Media OU.
3. Completion of construction of any DTSC-approved long-term soil and weathered bedrock cleanup remedy in the Surficial Media OU and unweathered bedrock cleanup remedy in the Chatsworth Formation OU.

Upon approval by DTSC, the revised schedule required by this section shall be incorporated by reference into this Order and all parties to this Order shall comply with the approved schedule. If DTSC disapproves the revised schedule submitted by Respondents, DTSC shall explain the reasons for its disapproval in writing. Respondents shall amend the schedule in response to DTSC's written explanation and resubmit the amended schedule to DTSC within 30 days for review and approval.

3.2.2. Historical Site ~~Assessment~~ Review. In accordance with the DTSC-approved schedule specified in section 3.2.1 of this Order, Respondents shall conduct a review regarding use and ~~prepare and submit to DTSC for review and approval a comprehensive historical site assessment (HSA) of all operations in Areas I and II involving the~~ management of radioactive materials,

including a ~~submittal~~ review of historical documents, for Areas I, and II, as specified in section 3.4.4 of this Order~~, that describe the management of radioactive materials~~. The ~~HSA~~ review shall address ~~the potential for placement~~ historic use of soil borrow ~~with radiological contamination~~ material, if any, from Area IV ~~to~~ in other areas of the Site. ~~The U.S. EPA Area IV HSA and survey shall address not only the 290 acres of Area IV but also the 182 acre northern undeveloped land and any drainages that originate from Area IV and extend into adjacent downstream areas of SSFL potentially impacted by Area IV operations.~~ The ~~HSA~~ review shall also include ~~summaries of~~ prior radiological sampling conducted in Areas I, and II. The ~~purpose of the HSA is to~~ review will assist in determining the appropriate scope of the workplan for characterization of radionuclides required by section 3.2.3 and updating the revised RI Reports required by section 3.4.2.

3.2.3. Workplan for Preliminary Assessment of Presence of Radionuclides. In accordance with the DTSC-approved schedule specified in section 3.2.1 of this Order, Respondent NASA shall prepare and submit a preliminary assessment workplan to determine if radionuclide contamination is present in Areas I and II. Information, including historical documents, gathered for the historical site review described in section 3.2.2 shall be summarized and submitted with the workplan and used as the basis for designing the survey of Areas I and II. Survey results under section 3.2.3 through 3.2.3.2 shall be reported in the revised RI Reports required by section 3.4.2.

3.2.3.1. The ~~HSA~~ workplan shall provide information on the scope, type, quantity and location of use of radioactive materials in Areas I and II. The workplan required by Section 3.2.3 shall use this information to classify areas as either Class 1, Class 2, Class 3 or non-impacted according to Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) (EPA 402-

R-97-016, Revision 1, August 2000) guidelines. The sample density and surface scanning fractions shall then be determined using MARSSIM guidance.

3.2.3.2. Much of Areas I and II is either precipitous, rocky cliffs, steep hillsides or dense vegetation with no ready access. In preparing the workplan under Section 3.2.3, Respondent NASA shall consider and document the nature and degree of accessibility to these areas and potential investigation technologies that can access these areas. The workplan shall consider radiological data previously collected by Respondent NASA to assist in determining the amounts and types of sampling required. The workplan shall utilize MARSSIM criteria in the sampling/survey design, including accessibility, survey unit classification, and availability of agency approved prior sampling data. In addition, equipment, accessibility criteria, and analytical techniques shall be comparable to those utilized in the U.S. EPA Area IV radiological survey. Respondent NASA may propose to DTSC that no survey be conducted in non-impacted areas, inaccessible areas, or areas where DTSC has determined that prior radiological sampling has sufficiently established the absence of radionuclide contamination.

3.2.4. Standardized Risk Assessment Methodology for Radionuclides and Chemicals. In accordance with the DTSC-approved schedule specified in Section 3.2.1 of this Order, Respondents shall prepare and submit to DTSC for approval a Standardized Risk Assessment Methodology for Radionuclides and Chemicals (SRAM (Rev. 3). The SRAM (Rev. 3) shall incorporate the suburban residential ~~and open space (recreational)~~ and ecological exposure evaluations of SRAM (Rev. 2) for chemicals with amendments and addenda necessary to meet the requirements of this Order. The SRAM (Rev. 3) shall describe procedures and methods to identify

and quantify estimated ecological and cumulative human risks associated with both chemicals and radionuclides at the Site, consistent with the requirements of Health and Safety Code section 25359.20. The SRAM (Rev. 3) shall include evaluation procedures for suburban residential and ~~open space (recreational) from SRAM (Rev. 2) as well as the~~ rural residential (agricultural) land use scenarios, and methods to be used to estimate chemical risk- based screening levels (RBSLs) and cumulative radionuclide and chemical risk for human receptors, as required by Health and Safety Code sections 25356.1.5(d) and 25359.20(c). The SRAM (Rev. 3) may incorporate the open space (recreational) exposure evaluations from SRAM (Rev.2) since the Respondents may elect to perform this evaluation for comparison purposes. The SRAM (Rev. 3) shall be subject to public review and comment before ~~it is approved~~ approval by DTSC.

3.2.4.1. Respondents shall submit in the SRAM (Rev.3) a revised generalized Site Conceptual Model (SCM) of potential exposure pathways to include potential exposures to radionuclides and chemicals. Attachment 7 provides a list of potential radionuclide and chemical exposure pathways to be evaluated for use in human health risk assessments at the SSFL. Attachment 8 provides a list of potential radionuclide and chemical exposure pathways to be evaluated for use in ecological risk assessments at the SSFL.

3.2.4.2. Consideration of Background in Selection of COPCs/COPECs and ROPCs/ROPECs in SRAM (Rev. 3). If the concentrations of soil/sediment/weathered bedrock COPCs/COPECs or ROPCs/ROPECs in an area under evaluation are consistent with background concentrations from the SSFL chemical or radionuclide background studies, then those chemicals and radionuclides shall be excluded from further evaluation in the risk assessment for that area.

3.2.5. Compliance with Health and Safety Code section 25359.20. Section 25359.20 specifies a risk based approach to remediation. Under this approach, risk calculations shall be used to determine the response action necessary to achieve acceptable risk levels. The SRAM (Rev. 3) specified in Section 3.2.4 of this Order shall be used to calculate risk for the purpose of determining the response actions specified in sections 3.5, 3.6 and 3.8 of this order. The standards and approach set forth in sections 3.2.5 through 3.2.5.6 are consistent and compliant with the requirements of section 25359.20. Sections 3.2.5.1 through 3.2.5.6 of this Order outline elements of the SRAM (Rev. 3), required by section 3.2.4 of this Order, specify the standards governing its application in the implementation of this Order, and cite guidance documents that Respondents shall use in meeting the requirements of Health and Safety Code section 25359.20

3.2.5.1. Human Health Risk Range and Point of Departure. U.S. EPA CERCLA Guidance shall be used to determine the acceptability of risks. See 40 CFR 300.430(e)(2)(i)(A)(2), incorporated by reference in California Health and Safety Code section 25356.1(d) (incorporating requirements of the NCP). The NCP provides that "for known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between 10^{-4} and 10^{-6} using information on the relationship between dose and response. The 10^{-6} risk level shall be used as the point of departure for determining remediation goals for alternatives when Applicable or Relevant and Appropriate Requirements (ARARs) are not available or are not sufficiently protective because of the presence of multiple contaminants at a site or multiple pathways of exposure." Respondents shall use the 10^{-6} cumulative risk level as the point of departure for determining remediation goals for cancer-

causing chemicals and radionuclides. ~~Risk Based Screening Levels (~~RBSLs~~)~~ for chemicals and the Preliminary Remediation Goals specified in Health and Safety Code section 25359.20(c) for radionuclides will be used as the screening levels, described in SRAM (Rev. 3) for purposes of this Order.

3.2.5.2. Human Health Risks Incremental to Background. The estimated chemical and radionuclide cumulative cancer risk shall be compared to cumulative risk at background levels. Evaluation of chemicals and radionuclides shall be performed as described in SRAM (Rev. 3) specified in Section 3.2.4 of this Order. Cleanup of chemicals and radionuclides at or below background concentrations shall not be required. Risk management decisions shall be determined by comparison of site cumulative risk to background cumulative risk. Chemical background shall be determined by the chemical background study described in section 3.4.12 of this Order. The radionuclide background dataset that shall be used in the performance of risk assessments pursuant to the SRAM (Rev. 3) shall consist of the data from the U.S. EPA radionuclide background study described in section 2.4.5 of this Order. Incremental risk shall be compared to the 10^{-6} point of departure, when making preliminary recommendations regarding the need for evaluation of an RFI/RI site in the feasibility study (FS). RFI/RI sites with an incremental risk higher than 10^{-6} shall be evaluated for inclusion in the Feasibility Study discussed in section 3.5 of this Order. ~~Implementation of a remedial alternative that achieves a cleanup goal with a target incremental risk between 10^{-6} and 10^{-4} shall be based on risk management decisions using the nine evaluation criteria specified in section 3.5.4.~~

3.2.5.3. Detection Limits. The detection limits employed by U.S. EPA during the survey specified in section 2.4.5 of this order shall be used for all radionuclide testing at the Site. Similarly, reporting limits for chemicals shall be the lowest reasonably attainable in an effort to meet agricultural RBSLs. Detection limits and (chemical) reporting limits shall be set forth in the SRAM (Rev. 3). In cases where a PRG or RBSL falls below the limit of detection (for radionuclides) or the reporting limit (for chemicals), cleanup below the detection limit (for radionuclides) or the reporting limit (for chemicals) shall not be required .

3.2.5.4 Reasonable Maximum Exposure. ~~For the rural residential (agricultural), RME conditions shall be the exposure assumptions used in the derivation of the PRGs specified in section 2.4.7 of this Order. The evaluation of the suburban residential and recreational scenario shall be consistent with procedures in the SRAM (Rev. 2), to be incorporated into SRAM (Rev. 3).~~ Reasonable maximum exposure (RME) shall be calculated as described in USEPA Risk Assessment Guidance for Superfund, Volume 1, Part A, Chapter 6, Section 6.4.1, "Quantifying the Reasonable Maximum Exposure" (EPA/540/1-89/002). RMEs shall be calculated using exposure point concentrations. Exposure point concentrations shall be calculated, as specified in SRAM Rev. 3, and shall consider, as a minimum, the 95% UCL (upper confidence level) of the mean concentrations using software described in section 3.2.5.5.

3.2.5.5. Exposure Point Concentrations. Risk assessments performed for both radionuclides and chemicals shall be based on exposure point concentrations estimated in accordance with U.S. EPA's statistical software program "Scout Version 1.00.01" or subsequent revisions developed by U.S. EPA up until the draft of the SRAM (Rev. 3) is submitted to DTSC. Notwithstanding the

guidance referenced in this section, exposure point concentrations shall be estimated for each RFI/RI site. Potential hotspots shall be evaluated in the RFI/RI risk assessments using methods and procedures for COPC/COPEC and ROPC/ROPEC selection and refining EPCs as described in SRAM (Rev. 3). "Hot spot" evaluation ~~for purposes of making risk management decisions shall be defined in the SRAM (Rev. 3).~~ results shall be presented in RFI/RI reports for consideration in risk management decisions during evaluation of potential response actions as specified in Sections 3.5, 3.6, and 3.7 of this Order.

3.2.5.6. Human Exposure Pathways and Parameters. Exposure pathways and parameters for both chemicals and radionuclides used in the development of the rural residential (agricultural) exposure scenarios shall be those used by U.S. EPA in the derivation of the PRGs specified in section 2.4.7 of this Order, except that chemical-specific exposure pathways and parameters shall be added or modified where appropriate. ~~The evaluation of the suburban residential and recreational scenario shall be consistent with procedures in the SRAM (Rev. 2), to be incorporated into SRAM (Rev. 3).~~ The evaluation of the suburban residential scenario for radionuclides and cumulative risk shall be consistent with methods to be specified in SRAM Rev. 3. Evaluation of the open space (recreational) exposures may be performed by the Respondents for comparison purposes and, for chemicals, shall be consistent with the procedures in SRAM (Rev. 2) incorporated into SRAM (Rev. 3) and, for radionuclides, shall be specified in SRAM (Rev. 3). To calculate risk due to surface soil exposures of human receptors (excluding groundwater exposures), depths no greater than the top two feet from ground surface shall be considered. To calculate risks due to subsurface exposures, depths no greater than the top ten feet shall be

considered. The use of groundwater from beneath the SSFL shall be considered an incomplete exposure pathway if and when groundwater use is restricted through institutional controls, e.g., recordation of a land use covenant on the use of the groundwater underlying the facility for purposes including, but not limited to, domestic, residential and agricultural uses such as drinking, bathing, showering, food preparation, plant irrigation, and cleaning. An appropriate remedy to address groundwater contamination shall be approved by DTSC. Notwithstanding the recordation of a land use covenant or other institutional controls at the Site, direct exposures via seeps and springs, and indirect exposures via plant uptake and soil vapor at locations where the depth to groundwater is less than six feet shall be considered completed exposures pathways as appropriate.

3.3. Interim Response Actions (IRAs).

3.3.1. IRAs already completed by Respondents under RCRA corrective action are listed in Attachment 13 (Interim Measures Completed). Respondents shall evaluate available data and assess the need for IRAs in addition to those specifically required by this Order, or otherwise carried out by Respondents. IRAs shall be used whenever necessary, appropriate, and when directed by DTSC to control or abate immediate threats to human health or the environment, and to prevent or minimize the spread of contaminants while long-term response action alternatives are being evaluated. The completion of an IRA does not eliminate the area from further assessment.

3.3.2. In the event Respondents identify an immediate or potential threat to human health or the environment, or discover new releases of hazardous substances not previously identified, Respondents shall notify DTSC's SSFL Project Director orally within 48 hours of discovery, and

notify DTSC's SSFL Project Director in writing within 10 days of discovery, summarizing the findings, including the immediacy and magnitude of the potential threat to human health or the environment. If required, Respondents shall submit to DTSC an IRA workplan for approval within the time period specified by DTSC. The IRA workplan shall include a schedule for submitting to DTSC an IRA Operation and Maintenance Plan and IRA Plans and Specifications. The IRA workplan, IRA Operation and Maintenance Plan, and IRA Plans and Specifications shall be developed in a manner consistent with the Scope of Work for Interim Response Action Implementation approved by DTSC. If DTSC determines that immediate action is required, DTSC may orally authorize the Respondents to act prior to DTSC's receipt of the IRA workplan.

3.3.3. If DTSC identifies an immediate or potential threat to human health or the environment, discovers new releases of hazardous substances not previously identified, DTSC shall notify Respondents in writing. If required, Respondents shall submit an IRA workplan to DTSC for approval, within the time period specified by DTSC, ~~an IRA workplan that identifes~~ identifying interim response actions that will mitigate the threat. The IRA workplan shall include a schedule for submitting to DTSC an IRA Operation and Maintenance Plan and IRA Plans and Specifications. The IRA workplan, IRA Operation and Maintenance Plan, and IRA Plans and Specifications shall be developed in a manner consistent with the Scope of Work for Interim Response Action Implementation approved by DTSC. If DTSC determines that emergency action is required, DTSC may orally authorize Respondents to act prior to receipt of the IRA workplan.

3.3.4. All IRA workplans shall ensure that the IRAs are designed to mitigate current or potential threats to human health or the environment, and shall, to the extent practicable, be

consistent with the objectives of, and contribute to the performance of, all final remedies that may be required at the Site.

3.3.5. ~~Concurrent with the submission of an IRA workplan,~~ Respondents shall submit a corresponding Health and Safety Plan to DTSC for approval ~~a corresponding Health and Safety Plan~~ concurrent with the submission of an IRA workplan.

3.4. Remedial Investigation (RI).

3.4.1. The Parties acknowledge that significant investigation and analysis has occurred during the corrective action investigation that will be used during completion of the RI/FS. DTSC has reviewed the following ~~work plan related~~ documents associated with the RCRA Facility Investigation (RFI), ~~and~~ which, except to the extent that such documents require amendments or addenda to comply with Health and Safety Code section 25359.20, ~~documents~~ may be used by Respondents in their development of the RI/FS for each OU:

a) Current Conditions Report and Draft RCRA Facility Investigation Work Plan, Areas I and III, Santa Susana Field Laboratory, Ventura County, California (ICF Kaiser Engineers, October 1993).

b) Current Conditions Report and Draft RCRA Facility Investigation Work Plan, Area II and Area I LOX Plant, Santa Susana Field Laboratory, Ventura County, California (ICF Kaiser Engineers, October 1993).

c) Current Conditions Report and Draft RCRA Facility Investigation Work Plan, Area IV, Santa Susana Field Laboratory, Ventura County, California (ICF Kaiser Engineers, October 1993).

d) Sampling and Analysis Plan, Hazardous Waste Facility Post-Closure Permit PC-94/95-3-02, Area II. Santa Susana Field Laboratory, Rockwell International Corporation, Rocketdyne Division (Groundwater Resources Consultants, Inc., June 1995).

e) Sampling and Analysis Plan, Hazardous Waste Facility Post-Closure Permit PC-94/95-3-03, Areas I and III. Santa Susana Field Laboratory, Rockwell International Corporation, Rocketdyne Division (Groundwater Resources Consultants, Inc., June 1995).

f) RCRA Facility Investigation Work Plan Addendum, Santa Susana Field Laboratory, Ventura County, California (Ogden, September 1996).

g) RCRA Facility Investigation Metals Sampling and Analysis Plan, Santa Susana Field Laboratory, Ventura County, California (Ogden, September 1996).

h) Revised Sodium Reactor Experiment (SRE) RFI Workplan Amendment, Santa Susana Field Laboratory, Ventura County, California (Boeing, December 1998).

i) Ecological Validation Sampling and Analysis Plan, Santa Susana Field Laboratory, Ventura County, California (Ogden, May 2000).

j) RCRA Facility Investigation Work Plan Addendum Amendment, Santa Susana Field Laboratory, Ventura County, California (Ogden, June 2000);

k) RCRA Facility Investigation Shallow Zone Groundwater Investigation Work Plan Final, Santa Susana Field Laboratory, Ventura County, California (Ogden, December 2000).

l) Workplan for Additional Field Investigations, Chatsworth Formation Operable Unit, Santa Susana Field Laboratory, Ventura County, California (Montgomery Watson, October 2000)

m) Workplan for Additional Field Investigations, Former Sodium Disposal Facility, Chatsworth Formation Operable Unit, Santa Susana Field Laboratory, Ventura County, California (Montgomery Watson, June 2000).

n) Work Plan for Additional Field Investigations, Former Sodium Disposal Facility (FSDF), Chatsworth Formation Operable Unit, Santa Susana Field Laboratory, Ventura County, California, Revision 2.2 (Montgomery Watson Harza, December 2001).

o) RCRA Facility Investigation Work Plan Addendum Amendment, Building 56 Landfill (SWMU 7.1) Investigation, Santa Susana Field Laboratory, Ventura County, California (Montgomery Watson Harza, May 2003).

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p) Happy Valley Interim Measures Work Plan Addendum Amendment, Happy Valley and Building 359 Areas of Concern, Santa Susana Field Laboratory, Ventura County, California (Montgomery Watson Harza , August 2003).

q) RCRA Facility Investigation Work Plan Addendum, Area I and Area II Landfills Investigation Work Plan, Revised Final, SWMU 4.2 and SWMU 5.1, Santa Susana Field Laboratory, Ventura County, California (Montgomery Watson Harza, October 2003).

r) Perchlorate Characterization Work Plan (Revision 1), Santa Susana Field Laboratory, Ventura County, California (Montgomery Watson Harza, December 2003).

s) RCRA Facility Investigation Program Report, Surficial Media Operable Unit, Santa Susana Field Laboratory, Ventura County, California (Montgomery Watson Harza Inc., July 2004).

t) Proposed Drilling, Construction and Testing of Monitor Wells, Area IV, Santa Susana Field Laboratory, Ventura County, California (Haley & Aldrich, August 2004).

u) RCRA Facility Investigation Work Plan Addendum Amendment, Surface Flux and Ambient Air Monitoring, Former Liquid Oxygen (LOX) Plant Site (SWMUs 4.5 and 4.6), Ventura County, California, Revision 1 (MWH Americas, Inc., February 2005).

v) Standardized Risk Assessment Methodology (SRAM) Work Plan, Santa Susana Field Laboratory, Ventura County, California, Revision 2- Final (MWH Americas, Inc., September 2005).

w) RCRA Facility Investigation Vapor Migration Modeling Validation Study Work Plan, Santa Susana Field Laboratory, Ventura County, California (MWH Americas, Inc., November 2005).

x) Vapor Migration Modeling Validation Study Work Plan Amendment, Santa Susana Field Laboratory, Ventura County, California (Boeing, June 2006).

y) WorkPlan, Phase 2, Groundwater Site Conceptual Model, Santa Susana Field Laboratory, Ventura County, California (MWH Americas, Inc., April 2007)

z) WorkPlan, Phase 3, Groundwater Site Conceptual Model, Santa Susana Field Laboratory, Ventura Count, California (MWH Americas, In., June 2007.

3.4.2. Respondents shall submit RI Reports for the Surficial Media OU to DTSC for approval ~~RI Reports for the Surficial Media OU~~ in accordance with the schedule specified in section 3.2.1 and approved by DTSC. The SSFL has been divided into 11 Surficial Media OU Group Reporting Areas as listed on Attachment 14 and shown on the map in Attachment 15. An Ecologic Large Home Range report shall also be prepared. The RI Reports for the Surficial Media OU and the Ecologic Large Home Range report shall address both COCs and ROCs, and shall be developed in a manner consistent with the approved workplans, workplan amendments, and SRAM (Rev. 3) described in section 3.2.4 of this Order. DTSC shall review the Surficial Media OU Reports and notify Respondents in writing of DTSC's approval, conditional approval, or disapproval.

3.4.3. The comprehensive Surficial Media OU RI Reports shall summarize the findings from all investigative phases and areas of the SSFL. The Surficial Media OU RI Reports shall include all current and historical assessment data collected to date for the vicinity of the SWMUs and AOCs investigated in the RI program. The nine surface impoundments discussed in section 1.2 of this Order shall also be addressed and included in the Surficial Media OU RI Reports.

3.4.4. Each Respondent shall submit, along with each Surficial Media OU RI Report, historical records and documentation~~,~~ within its possession and control~~,~~ concerning ~~of all~~ activities associated with each SWMU and AOC. Such historical records and documentation shall be provided in an electronic format searchable by keyword utilizing a search engine technology with capabilities specified in section 3.4.8. This shall include primary historical records that list or describe any known or suspected chemicals or radionuclides stored, handled or released in the study area. Historical information shall include, but need not be limited to, available photographs,

drawings, manifests, memoranda, tabulations, lists and any other records regarding the operations conducted in the reporting areas, and the types and sources of chemicals or radionuclides that may have been handled or released in the reporting areas.

3.4.5. Respondents shall submit in a separate report historical and other documents as described in section 3.4.4 that are not submitted with individual Surficial Media OU RI Reports.

3.4.5.1. If Respondents assert that any document submitted pursuant to section 3.4.4 or 3.4.5 contains confidential business information, Respondents shall comply with the provisions of California Code of Regulations, title 22, section 66260.2 and the specific text on the page that Respondents consider to be confidential shall be identified. Documents containing confidential business information are to be provided to DTSC only in hard copy. All other historical documents submitted pursuant to sections 3.4.4 and 3.4.5 of this Order are to be submitted in an electronic format with electronic reference list, searchable by key word.

3.4.5.2. Nothing in sections 3.4.4, 3.4.5, or 3.4.5.1 of this Order shall require Respondents to provide to DTSC any documents protected from disclosure by applicable legal protections, including without limitation the attorney-client privilege and the attorney-work product doctrine, or shall prevent Respondents from asserting that such applicable legal protections prevent disclosure.

3.4.6. Respondents shall demonstrate and certify that they have conducted a reasonable search for the documents required in sections 3.4.4 and 3.4.5 and include a signed copy of the Signature and Certification specified in section 4.4.3 of this Order to certify a reasonable search was completed for each Surficial Media OU RI Report.

3.4.7. Reports prepared by the Respondents or their consultants in support of the Surficial Media OU RI shall be submitted in both hard copy and electronically to DTSC. Electronic copies shall be submitted in an electronic format that ~~allows them to be~~ is searchable by keyword utilizing a search engine technology with capabilities specified in section 3.4.8.

3.4.8. Respondents shall index all investigative reports, workplans, technical memoranda, and supporting historical records specified in section 3.4.4, such that the entire content of all the documents and historical records are searchable, using key words, consistent with the proposal Respondents submitted on December 12, 2008 which provides details of the search engine technology planned, expected performance, and schedule for implementation.

3.4.9. Assessment of Potential Debris Areas Contiguous to SSFL - In accordance with the DTSC-approved schedule specified in section 3.2.1 of this Order, Respondents shall prepare and submit a workplan to DTSC for the evaluation of potential debris disposal areas outside the boundaries of the Facility to determine whether there are any locations where wastes associated with Facility operations may have been disposed. Respondents shall implement the workplan upon DTSC's approval, and the results of the evaluation shall be reported to DTSC. If any wastes from SSFL operations are discovered outside the current boundaries of the Facility, Respondents shall submit workplans for response action with respect to the wastes, and shall implement those workplans within 180 days of approval by DTSC. If DTSC determines that implementation of a workplan for a response action to address such a potential debris area is necessary to control or abate immediate threats to human health or the environment, DTSC shall specify the time frame for

workplan implementation in its approval and Respondents shall implement the approved workplan within that specified time frame.

3.4.10. If DTSC determines, based on its evaluation of the Offsite Data Evaluation Report submitted by Respondents on December 13, 2007, that additional work is required, DTSC shall notify Respondents of that work. Respondents shall then propose to DTSC a schedule and scope for further action consistent with any directions given by DTSC.

3.4.11. Respondents shall provide updates to base maps, shape files, and SSFL-related chemical and radiological data for the GIS mapping data base annually until all response actions required under this Order are completed. The first such update shall be submitted within 90 days after the effective date of this Order. Updates thereafter shall be provided to DTSC by January 31 of each year unless DTSC specifies in writing that no updates are necessary for ~~to~~ the base maps, shape files, and SSFL-related chemical and radiological data for the GIS mapping data base~~, are necessary,~~ and that updates may be submitted at a later date, or when the response action is complete.

3.4.12. Respondents shall prepare a Chemical Background Study Workplan for the collection and analysis of offsite chemical soil and sediment samples, data interpretation and analysis, and reporting on the study's results according to the workplan's project-specific data quality objectives (DQOs). Respondents shall coordinate preparation of this workplan with U.S. EPA's background survey of radioactive materials. The activities described in the Chemical Background Study Workplan shall be conducted in coordination with and at the direction of DTSC ~~including,~~ . Such activities include collecting the additional soil and sediment samples from offsite

locations to be determined through a selection process that adheres to the DQOs. The new chemical background study shall supplement the existing DTSC-approved soil background dataset.

3.4.13. Respondents shall submit a draft Sitewide Groundwater Remedial Investigation (RI) Report for the Chatsworth Formation Operable Unit (CFOU) to DTSC for ~~approval a draft Sitewide Groundwater Remedial Investigation (RI) Report for the Chatsworth Formation Operable Unit (CFOU)~~ in accordance with Work Plan, Site-Wide Groundwater Characterization, Santa Susana Field Laboratory (CFOU RI Workplan) dated January 2008~~,~~ (as conditionally approved by DTSC on June 2, 2009 and in accordance with the schedule required under section 3.2.1 of this Order). The draft Sitewide Groundwater RI Report shall identify and characterize all sources of contamination, define the nature and extent of contamination in the CFOU, and characterize potential contaminant pathways, rate, and direction of migration. As part of the RI work, the Respondents shall develop a comprehensive Site Conceptual Model (SCM for the flow of Chatsworth Formation groundwater and transport in the vicinity of SSFL. The SCM shall be used to assist in the evaluation of the current and future transport and fate of contaminants. Respondents shall submit to DTSC a draft Sitewide Groundwater RI Report that shall contain a complete and comprehensive evaluation of all groundwater data collected from the Site.

The draft Sitewide Groundwater RI Report shall, at a minimum:

(a) Define the nature and extent of all contaminant releases in the entire groundwater system at the Site, including occurrences in the soil, weathered bedrock, and unweathered bedrock and occurrences in the unsaturated unweathered bedrock.

(b) Fully characterize the fracture network at the Site including the variability across the Site, near faults, and within different rock types (i.e. sandstones, siltstones, and shales) and within different geologic members of the Chatsworth Formation (e.g., Bowl Member and Canyon Member).

(c) Characterize lateral and vertical groundwater flow at the Site.

(d) Assess the effects of the individual faults at the Site on groundwater flow and contaminant movement.

(e) Adequately evaluate the groundwater quality at known seeps and springs.

3.4.13.2. The draft Sitewide Groundwater RI Report shall identify and address the uncertainties associated with all factors affecting groundwater flow and contaminant movement including, but not limited to, the following:

(1) groundwater recharge;

(2) bulk hydraulic conductivity;

(3) measurements of flows taken from seeps and springs and measurements of transpiration from phreatophytes;

(4) the degree of contaminant diffusion versus the effects of dispersion, adsorption, dilution, and degradation on retarding the movement of contaminants; and

(5) the effect of the historical groundwater pumping so that the effects of other natural retardation processes can be assessed and the future movement of the contaminant plumes predicted.

As part of the draft Sitewide Groundwater RI Report, Respondents shall address identified data gaps by inclusion of a Sampling and Analysis Plan (SAP) for additional field data collection. Respondents shall implement the SAP in accordance with the approved schedule and shall submit the results in a final Sitewide Groundwater RI Report for DTSC's review and approval.

3.4.14. Respondents Boeing and NASA shall record, or cause to have recorded, a prohibition, to run with the land, on the use of the groundwater underlying the Facility for all purposes including, but not limited to, domestic, residential and agricultural uses such as drinking, bathing, showering, food preparation, plant irrigation, and cleaning.

3.5. Feasibility Study (FS)

3.5.1. Respondents shall prepare and submit FS workplans to DTSC for the Surficial Media OU and Chatsworth Formation OU (including both groundwater and the unsaturated zone) in accordance with the schedule specified in section 3.2.1 of this Order. The FS workplans for the Surficial Media OU and Chatsworth Formation OU (including both groundwater and the unsaturated zone) are subject to approval by DTSC and shall be developed in a manner consistent with Health and Safety Code Chapter 6.8.

3.5.2. The FS workplans shall detail the methodology for developing and evaluating potential response action measures to remedy chemical and radionuclide contamination at the Site utilizing the SRAM (Rev.3). The FS Workplan shall identify the potential response action measures, including any innovative technologies that may be used for the containment, treatment, remediation, or disposal of contamination. Potential groundwater response action measures shall evaluate all state-of-the-art remedial technologies including but not limited to the following: TCE

oxidation using potassium- or sodium-permanganate; nanoscale zero-valent iron particle technology; radio frequency heating; blast-fractured enhanced permeability remediation; steam injection; and enhanced bioremediation. In evaluating response actions involving excavation and offsite disposal, Respondents shall evaluate whether the import fill results in equal or greater risk than in situ soils using risk assessment methodologies approved by DTSC for the Site. Respondents shall expend all reasonable efforts to identify clean import fill alternatives.

3.5.3. Respondents shall complete treatability studies for the viable potential response action technologies that involve treatment except where Respondents can demonstrate to DTSC's satisfaction that treatability studies are not needed. The FS workplans shall include, at a minimum, a summary of the proposed treatability studies including conceptual designs, a schedule for submitting treatability study workplans, or Respondents' justifications for not proposing treatability studies.

3.5.4. Respondents shall submit FS Reports to DTSC for approval in accordance with the DTSC-approved FS workplan schedule. Within 30 days, DTSC shall review the FS reports and notify Respondents in writing of DTSC's approval or disapproval. If DTSC disapproves of the FS reports in whole or in part, it shall explain in writing the reason(s) for its disapproval. The FS reports shall summarize the results of the FS including the following:

(a) documentation of all treatability studies conducted;

(b) development of OU-specific response action objectives, including legal requirements and other promulgated standards that are relevant;

(c) identification and screening of general response actions, response technologies, and process options on an OU specific basis;

(d) evaluation of alternatives based on the criteria contained in the NCP, 40 C.F.R. Part 300 including:

Threshold Criteria:

(1) overall protection of human health and the environment;

(2) compliance with legal requirements and other promulgated standards that are Relevant;

Primary Balancing Criteria:

(1) long-term effectiveness and permanence;

(2) reduction of toxicity, mobility, or volume through treatment;

(3) short-term effectiveness;

(4) implementability;

(5) cost;

Modifying Criteria:

(1) State acceptance;

(2) community acceptance;

(e) the response action criteria specified in Health and Safety Code sections 25356.1 and 25356.1.5.

3.5.4.1. If the use of imported fill as part of a response action involving excavation would result in risks at the Site exceeding the final cleanup levels, Respondents shall propose and DTSC

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shall consider feasible alternatives identified through the application of the NCP criteria outlined in section 3.5.4.

3.5.5. Impact on Resources. DTSC agrees that specific factors it will consider in its evaluation of the work required to be performed by Respondents under this Order may include, and not be limited to the following: (1) emissions footprint (determined by a quantitative analysis of emissions from heavy equipment operation, transportation and offsite disposal); (2) natural capacity conservation and restoration (determined by a quantitative analysis for habitat preservation and restoration, biomass balance, biodiversity, local and regional watershed impacts, contaminant reduction and overall ecosystem impacts from excavation); and (3) resource conservation and usage (determined by an assessment of major resource requirements and potential natural resource impacts from heavy equipment operation, transportation and offsite disposal). In preparing and reviewing any FS report, Respondents and DTSC respectively shall further examine the net benefit associated with any remedies under consideration as supporting information for the evaluation criteria outlined in section 3.5.4, including 1999 U.S. EPA OSWER Directive 92857-28P and EPA 542-R-08-002 Green Remediation; Incorporating Sustainable Environmental Practices into Remediation of Contaminated Sites (EPA 542/R-08/002, April 2008).

3.6. Remedy Selection.

3.6.1. Respondents shall prepare a draft Response Action Plan (RAP). The draft RAP shall be consistent with the NCP and Health and Safety Code sections 25356.1 and 25356.1.5. The draft RAP shall be based on and summarize the approved RI/FS reports, and shall clearly set forth:

(a) health and safety risks posed by the conditions at the Site;

(b) the effect of contamination or pollution levels upon present, future, and probable beneficial uses of contaminated, polluted, or threatened resources;

(c) the effect of alternative response action measures on the reasonable availability of groundwater resources for present, future, and probable beneficial uses;

(d) site-specific characteristics, including the potential for offsite migration of hazardous substances, the surface or subsurface soil, and the hydrogeologic conditions, as well as preexisting background contamination levels;

(e) cost-effectiveness of alternative response action measures. Land disposal shall not be deemed the most cost-effective measure merely on the basis of lower short-term cost;

(f) the potential environmental impacts of alternative response action measures;

(g) a statement of reasons setting forth the basis for the response actions selected. The statement shall include an evaluation of each proposed alternative submitted and evaluate the consistency of the response actions proposed by the plan with the NCP; and

(h) a schedule for implementation of all proposed response actions.

The selection of the remedy from the potential response alternatives established during the FS shall consider: (1) overall protection of human health and the environment; and (2) the impact of the remedy on resources values including emission footprint, natural capacity conservation and restoration, and resource conservation and use. Following DTSC's review, DTSC shall specify any changes to be made in the RAP. The entire review of the RAP, including public review and comment, shall be completed in accordance with the DTSC-approved schedule specified in section 3.2.1 of this Order.

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3.6.2. Following the public comment period, DTSC shall approve the final RAP, ~~or~~ identify issues, or provide comments to be added by Respondents to the RAP.

3.6.3. DTSC shall notify Respondents of the final response action(s) selected by DTSC in its approval of the final RAP. The RAP shall include DTSC's reasons for selecting the response action(s). In selecting any final response action, DTSC shall apply the NCP evaluation criteria outlined in section 3.5.4 (and specified in 40 CFR section 300.400 et seq. and incorporated by reference in Health and Safety Code section 25356.1) and the requirements specified in Health and Safety Code section 25356.1.5 (a). DTSC's selection of the final response action(s) in its approval of the final RAP shall not be subject to the dispute resolution procedures of sections 4.20.1 through 4.20.6 but rather Health and Safety Code section 25356.1(g).

3.7. CEQA. Respondents shall provide all information necessary to facilitate DTSC's preparation of a CEQA analysis, including a Site-wide Environmental Impact Report (EIR).

3.8. Remedial Design/Response Action Implementation Workplan (RD/RA Work plan) .

3.8.1. In accordance with the DTSC-approved schedule specified in section 3.2.1 of this Order, Respondents shall submit to DTSC a RD/RA workplan for the Surficial Medial OU and the Chatsworth Formation OU. The RD/RA workplan is the plan and schedule to design, construct, operate, maintain, and monitor the performance of the response action(s) selected in the final RAP. The RD/RA workplan is subject to approval by DTSC. If DTSC disapproves of the RD/RA workplan in whole or in part, it shall explain the reasoning for its disapproval in writing ~~the reasoning for its disapproval~~. The RD/RA workplan shall include the schedule for submittal to DTSC of the following documents:

1. Health and Safety Plan
2. Draft Plans and Specifications
3. Final Plans and Specifications
4. Construction workplan
5. Construction Completion Report
6. Operation and Maintenance Plan; and
7. Final Completion Report

3.8.2 The Operation and Maintenance Plan shall include documentation required to establish a financial assurance mechanism for operation and maintenance of the response action(s). Respondents shall include a detailed cost estimate for implementation of the operation and maintenance of the response action(s) for DTSC review and approval. The financial assurance mechanism(s) must be approved by DTSC as part of the final Operations and Maintenance Plan approval. The financial assurance mechanisms may include any mechanism described in Health and Safety Code section 25355.2. The purpose of establishing a financial assurance mechanism is to demonstrate that Boeing is financially capable of implementing the operations and maintenance of the response action(s) and to enable DTSC to undertake implementation of the operations and maintenance of the response action(s) in the event that Respondents are unable or unwilling to undertake the required actions. Boeing shall annually adjust the mechanism(s) for inflation in accordance with California Code of Regulations, title 22, sections 66264.142 or 66265.142, as those sections apply to owners and operators of facilities and sites subject to Health and Safety Code section 25355.2.

3.9. Land Use Covenants. A land use covenant shall be executed and recorded if limitations or restrictions are to be placed on any portion of the Site because residual hazardous materials, hazardous wastes or constituents, or hazardous substances remain at the property or in the groundwater at levels which are not suitable for unrestricted use of the land. If the approved remedy in the Final RAP includes deed restrictions, Boeing and NASA shall record, or cause to have recorded, the appropriate deed restrictions. Use of Land Use Covenants or any other institutional controls that prohibit use of groundwater shall not ~~constitute a remedy or sole justification for a remedy~~ be a sole determining factor for any groundwater remedy decisions~~, or~~ prevent the transfer of land under Health and Safety Code section 25359.20(d).

3.10. Site Access. Recognizing the open nature of the Site, Respondents shall maintain reasonable precautions to restrict the possibility of unknowing or unauthorized entry of persons or livestock onto the Site.

3.11. Public participation activities shall be conducted in accordance with Health and Safety Code sections 25356.1 and 25358.7. DTSC issued a final Public Participation Plan (PPP) for the SSFL on March 27, 2009. DTSC may periodically update the PPP in consultation with Respondents and the public.

OTHER REQUIREMENTS AND PROVISIONS

4.1. Project Director. Within 14 days of the effective date of this Order, the Respondents shall each designate a Project Coordinator and shall notify DTSC in writing of the Project Directors selected. Each Project Director shall be responsible for overseeing the implementation of this

Order and for designating a person to act in his/her absence. All communications between Respondents and DTSC, and all documents, report approvals, and other correspondence concerning the activities performed pursuant to this Order shall be directed through their respective Project Directors. Each party may change its Project Director with at least seven days prior written notice to the other parties.

4.2. Web Site. Respondents shall establish and maintain a web ~~based~~ site ~~which~~ that shall be used for posting of documents and information related to the investigation and cleanup of the SSFL. The content of the website shall be solely under the control of DTSC. No changes to the website shall be made without prior DTSC approval.

4.3. DTSC Approval.

4.3.1. Subject to the dispute resolution procedures in sections 4.20.1 through 4.20.6, Respondents shall revise any workplan, report, specification, or schedule in accordance with DTSC's written comments. Respondents shall submit to DTSC any revised documents by the due date specified by DTSC. Revised submittals are subject to DTSC's written approval or disapproval. If DTSC disapproves of any submittal in whole or in part, it shall explain in writing the reason(s) for its disapproval.

4.3.2. Upon receipt of DTSC's written approval, Respondents shall commence work and implement any approved workplan in accordance with the schedule and provisions contained therein.

4.3.3. Any DTSC approved workplan, report, specification, or schedule required by this Order shall be deemed incorporated into this Order.

4.3.4. Any requests for revision of an approved workplan requirement must be in writing. Such requests must be timely and provide justification for any proposed workplan revision. DTSC shall approve such proposed revisions absent good cause not to do so. Any approved workplan modification shall be in writing and shall be incorporated by reference into this Order.

4.3.5. Verbal advice, suggestions, or comments given by DTSC representatives shall not constitute an official approval or disapproval.

4.4. Submittals.

4.4.1. Respondents shall ~~continue to~~ provide DTSC with quarterly progress reports of response action activities conducted pursuant to this Order, in conjunction with the Hazardous Waste Facility Post Closure Progress Reports, on or before the last day of the month in August, November, February, and May.

4.4.2. Any report or other document submitted by each Respondent pertaining to its activities at the Site pursuant to this Order shall be signed and certified by a responsible corporate officer, or a duly authorized representative.

4.4.3. Certification

The certification required above, shall be in the following form:

> I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

4.4.4. Except as provided in section 3.4.5.1, all reports and other documents submitted by the Respondents or their consultants in response to this Order shall be submitted to DTSC in both

hard copy and electronically ~~to DTSC~~ as further described herein. Electronic copies of reports, workplans, technical memoranda, and other documents shall be submitted to DTSC in a format that allows ~~them to be searchable by~~ key word searches, in accordance with section 3.4.8. Due to the large size of the various documents to be submitted to DTSC, the hard copy reports shall be categorized into Standard Hard Copy and Review Hard Copy reports. Standard Hard Copy reports shall contain electronic copies of figures, tables, and attachments in appendices on accompanying DVDs, whereas Review Hard Copy reports shall have printed figure, tables, and attachments in appendices. Respondents shall provide ~~four~~ 4 hard copies, one Review Hard Copy and 3 Standard Hard Copies, and 12 electronic copies of all documents, including but not limited to, workplans, reports, and correspondence of 15 pages or longer to DTSC's Regional office in Sacramento, one Review Hard Copy and one electronic copy to the GSU reviewer assigned to review the document, ~~two hard copies and two electronic copies to DTSC's Regional office in Cypress,~~ one electronic copy to the consultant or contractor who maintains the website specified in section 4.2.1 of this Order, and one ~~hard copy~~ Review Hard Copy and one electronic copy to DTSC's Administrative File for SSFL (currently DTSC's Regional Office located in Chatsworth). The number of hard copies required for submittal to DTSC's offices may be modified upon agreement between DTSC and Respondents. Progress reports and correspondence of less than 15 pages are specifically exempted from this copy requirement, and only one copy is required. If progress reports or correspondence contain attachments larger than 8.5 x 11 inches in size, then each submittal must be accompanied by an electronic copy. For documents with very large files size (e.g., the historical documents for the RFI Group Reports) which cannot easily fit onto DVDs, the Respondents may,

with prior DTSC approval, submit such documents electronically on hard drives in lieu of the four hard copies and 12 electronic copies specified above. DTSC may designate that additional hard copies or electronic copies (or both) be provided simultaneously to designated repositories. If Respondents assert that any document to be submitted may contain confidential business information, Respondents shall comply with the provisions of California Code of Regulations, title 22, section 66260.2 and the specific text on the page that Respondents consider to be confidential shall be identified. Documents containing confidential business information are to be submitted in hard copy to DTSC.

4.4.5. Unless otherwise specified, all reports, correspondence, approvals, disapprovals, notices, or other submissions relating to this Order shall be in writing and shall be sent to the current Project Directors.

4.5. Proposed Contractor/Consultant.

All work performed by Respondents pursuant to this Order shall be under the direction and supervision of a professional engineer or registered geologist, registered in California, with expertise in hazardous substance site cleanup. Respondents' contractors and consultants shall have the technical expertise sufficient to fulfill their responsibilities. Within 14 days of the effective date of this Order or any contract awarded to implement this Order, Respondents shall notify the DTSC Project Director in writing of the name, title, and qualifications of the professional engineer or registered geologist and of any contractors or consultants and their personnel to be used in carrying out the requirements of this Order. Notifications submitted prior to the effective date of

this Order in response to section 4.5 of the August 16, 2007 Consent Order for Corrective Action need to be resubmitted only if the information contained in the notification has changed.

4.6. Quality Assurance.

4.6.1. All sampling and analyses performed by Respondents under this Order shall follow applicable DTSC and U.S. EPA guidance for sampling and analyses. Workplans shall contain or reference a master quality assurance/quality control and chain of custody procedures for all sampling, monitoring, and analytical activities. Any deviations from the approved workplans or quality assurance procedures must be approved by DTSC prior to implementation and, must be documented in a manner that provides, including reasons for the deviations, and. Any deviations must be reported in the affected report. Each workplan submitted Quality Assurance Project Plans (QAPP) for SSFL soil and groundwater (and respective related media) shall include:

(1) Project organization and responsibilities with respect to sampling and analysis;

(2) Quality assurance objectives for measurement including accuracy, precision, and method detection limits. In selecting analytical methods, Respondents shall consider obtaining detection limits at or below potentially applicable legal requirements or relevant and appropriate standards, such as Maximum Contaminant Levels (MCLs) or Maximum Contaminant Level Goals (MCLGs), or other project specific standards as defined in SRAM Rev 3;

(3) Sampling procedures;

(4) Sample custody procedures and documentation;

(5) Field and laboratory calibration procedures;

(6) Analytical procedures;

(7) Laboratory to be used certified pursuant to Health and Safety Code section 25198;

(8) Specific routine procedures used to assess data (precision, accuracy and completeness) and response actions;

(9) Reporting procedure for measurement of system performance and data quality;

(10) Data management, data reduction, validation and reporting. Information shall be accessible to downloading into DTSC's system; and

(11) Internal quality control.

4.6.2. Except as provided below, Respondents shall use California State-certified analytical laboratories for all chemical and radiological analyses required to comply with this Order. If a California State-certified laboratory is not available for a particular test required by this Order, Respondents shall use an alternative laboratory identified by Respondents subject to approval by DTSC. The names, addresses, telephone numbers, and California Department of Public Health, Environmental Laboratory Accreditation Program (ELAP) certification numbers of the laboratories Respondents propose to use must be specified in the applicable workplans.

4.6.3. All workplans required under this Order shall include data quality objectives for each data collection activity to ensure that data of known and appropriate quality are obtained and that data are sufficient to support their intended uses.

4.6.4. Respondents shall monitor to ensure that high quality data are obtained by their consultants and contract laboratories. Respondents shall ensure that laboratories used by

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Respondents for chemical analyses perform such analyses according to the latest approved edition of "Test Methods for Evaluating Solid Waste, (SW 846)," or other methods deemed satisfactory to DTSC. If methods other than U.S. EPA methods are to be used, Respondents shall specify all such protocols in the affected workplan (e.g., RI workplan). DTSC shall reject any chemical data that do not meet the requirements of the approved workplan, U.S. EPA analytical methods, or quality assurance/quality control procedures, and may require resampling and analysis. Respondents shall ensure that laboratories used by Respondents for radiological analyses perform such analyses according to the latest approved edition of "HASL-300, EML Procedures Manual" or other methods deemed satisfactory to DTSC. If methods other than HASL-300 methods are to be used, Respondents shall specify all such protocols in the affected workplan (e.g., RI workplan). DTSC shall reject any radiological data that do not meet the requirements of the approved workplan, HASL-300 methods, or quality assurance/quality control procedures, and may require resampling and analysis.

4.6.5. Respondents shall ensure that the laboratories used by Respondents for analyses have quality assurance/quality control programs. DTSC may conduct a performance and quality assurance/quality control audit of the laboratories chosen by Respondents before, during, or after sample analyses. Upon request by DTSC, Respondents shall have their selected laboratory perform analyses of samples provided by DTSC to demonstrate laboratory performance. If the audit reveals deficiencies in a laboratory's performance or quality assurance/quality control procedures, resampling and analysis may be required.

4.7. Sampling and Data/Document Availability.

4.7.1. Upon request, Respondents shall ~~submit to~~ provide DTSC with ~~upon request~~ the results of all sampling or tests or other data generated by its employees, agents, consultants, or contractors pursuant to this Order. Respondents shall follow the same signature and certification requirements of sections 4.4.2 and 4.4.3 above for information submitted pursuant to this section.

4.7.2. Notwithstanding any other provisions of this Order, DTSC retains all of its information gathering and inspection authority and rights, including enforcement actions related thereto, under the Health and Safety Code, and any other State or federal law, subject to national security and other restrictions imposed under the Atomic Energy Act of 1954, as amended, applicable executive orders or any other applicable requirements.

4.7.3. Respondents shall notify DTSC in writing at least seven days prior to beginning each separate phase of field work approved under any workplan required by this Order. If Respondents believe they must commence emergency field activities without delay, Respondents shall seek emergency telephone authorization from the DTSC Project Director or, if the Project Director is unavailable, ~~his/her~~ their designee, to commence such activities immediately.

4.7.4. At the request of DTSC, Respondents shall provide or allow DTSC or its authorized representative to take split or duplicate samples of all samples collected by Respondents pursuant to this Order. Similarly, at the request of Respondents, DTSC shall allow Respondents or their authorized representative(s) to take split or duplicate samples of all samples collected by DTSC under this Order.

4.8. Access.

4.8.1. Subject to the Respondents' security and safety procedures, and except as provided in section 4.7.2 of this Order, Respondents shall provide DTSC and its representatives access at all reasonable times, following normal procedures for access onto any property under each Respondent's control to which access is required for implementation of this Order and shall permit such persons to inspect and copy all non-privileged records, files, photographs, documents, including all sampling and monitoring data, that pertain to the investigation and remediation of the Site and that are within the possession or under the control of Respondents or their contractors or consultants.

4.8.2. To the extent that work being performed pursuant to this Order must be conducted beyond the Facility boundary, Respondents shall use their best efforts to obtain access agreements necessary to complete work required by this Order from the present owners or possessors, as appropriate, of such property within 30 days of approval of any workplan for which access is required. "Best efforts" as used in this paragraph shall include, at a minimum, a letter by certified mail from the Respondents to the present owners or possessors of such property requesting an agreement to permit Respondents and DTSC and their authorized representatives access to such property. Respondents shall provide DTSC's Project Director with a copy of any access agreements in their possession. In the event that an agreement for access is not obtained within 30 days of approval of any workplan for which access is required, an unanticipated need for access becomes known to Respondents, or access is revoked by the property owner or possessor, Respondents shall notify DTSC in writing within 14 days thereafter regarding both the efforts

undertaken to obtain access and the failure to obtain such agreements. DTSC may, at its discretion, assist Respondents in obtaining access.

4.8.3. Nothing in this section limits or otherwise affects DTSC's right of access and entry pursuant to any applicable State or federal law or regulation.

4.8.4. Nothing in this Order shall be construed to limit or otherwise affect Respondents' liability and obligation to perform response action including such action beyond the Facility boundary.

4.9. Record Preservation.

4.9.1. Respondents shall retain, during the implementation of this Order and for a minimum of ten years after the Acknowledgement of Satisfaction executed pursuant to section 6.0 of this Order, all data, records, and documents that relate to implementation of this Order or to hazardous substance management or disposal. Respondents shall notify DTSC in writing 90 days prior to the destruction of any such records, and shall provide DTSC with the opportunity to take possession of any such records. Such written notification shall reference the effective date, caption, and docket number of this Order and shall be addressed to:

(insert name of designated Project Director)
SSFL Project Director
Department of Toxic Substances Control
P.O. Box 806
Sacramento, California 95812-0806

4.9.2. If Respondents retain or employ any agent, consultant, or contractor for the purpose of complying with the requirements of this Order, Respondents shall require any such agents,

consultants, or contractors to provide Respondents a copy of all documents produced pursuant to this Order.

4.9.3. All documents pertaining to this Order shall be stored in a manner to afford ease of access by DTSC and its representatives.

4.10. Change in Ownership. No change in ownership or corporate or partnership status relating to the Facility shall in any way alter Respondents' responsibility under this Order. No conveyance of title, easement, or other interest in the Facility, or a portion of the Facility, shall affect Respondents' obligations under this Order. Unless DTSC agrees that such obligations may be transferred to a third party, Respondents shall be responsible for and liable for any failure to carry out all activities required of Respondents by the terms and conditions of this Order, regardless of Respondents' use of employees, agents, contractors, or consultants to perform any such tasks.

4.11. Notice to Contractors and Successors. Respondents shall provide a copy of this Order to all contractors, laboratories, and consultants retained to conduct or monitor any portion of the work performed pursuant to this Order and shall condition all such contracts on compliance with the terms of this Order. Each Respondent shall give written notice of this Order to any successor in interest

prior to transfer of ownership or operation of any portion of the Facility that the Respondents own or operate and shall notify DTSC at least 30 days prior to such transfer. Respondents or their contractors shall provide written notice of this Order to all subcontractors hired to perform any portion of the work required by the Order. Respondents shall nonetheless be responsible, to the

extent reasonably within their control, for ensuring that their contractors and subcontractors perform the work contemplated herein in accordance with this Order. With regard to the activities undertaken pursuant to this Order, the defenses available to Respondents shall be those specified in Health and Safety Code section 25323.5 (incorporating by reference Sections 101(35) and 107(b) of CERCLA, 42 U.S.C., section 9601(35) and 9607(b).

4.12. Compliance with Applicable Laws and Regulations. All actions taken pursuant to this Order by any of the Parties shall be undertaken in accordance with applicable local, State, and federal laws and regulations. Respondents shall obtain or cause their representatives to obtain all permits and approvals necessary under such applicable laws and regulations.

4.13. Costs. Respondents are liable for all costs associated with the implementation of this Order, including all costs incurred by DTSC in overseeing the work required by this Order, in accordance with Health and Safety Code sections 25269 through 25269.6, including procedures for dispute resolution. DTSC shall retain all cost records associated with the work performed under this Order as required by State law. DTSC shall make all documents which support the DTSC's cost determination available for inspection upon request, as provided by the Public Records Act.

4.14. Endangerment During Implementation. In the event that DTSC determines that any circumstances or activities (whether or not pursued in compliance with this Order) are creating an imminent and substantial endangerment to the health or welfare of people at the Site or in the surrounding area or to the environment, DTSC may order Respondents to stop further implementation of this Order for such period of time as needed to abate the endangerment. Any

deadline in this Order directly affected by an Order to Stop Work under this section shall be extended for the term of the Order to Stop Work.

4.15. Liability. Nothing in this Order shall constitute or be construed as a satisfaction or release from liability for any conditions or claims arising as a result of past, current, or future operations of Respondents. Notwithstanding compliance with the terms of this Order, Respondents may be required to take further actions as are necessary to protect public health or welfare or the environment.

4.16. Government Liabilities. The State of California shall not be liable for injuries or damages to persons or property resulting from acts or omissions by Respondents or related parties specified in section 4.20 in carrying out activities pursuant to this Order, nor shall the State of California be held as a party to any contract entered into by Respondents or its agents in carrying out activities pursuant to the Order.

4.16.1. Availability of Federal Funds -- DOE and NASA. It is the expectation of DTSC that the federal agencies under this Order shall seek sufficient funding through the federal budgetary process to fulfill the requirements under this Order. It is agreed that if inadequate funds are appropriated for such purposes, the federal agencies shall notify DTSC immediately and develop a plan in writing to secure additional funding to carry out the requirements of this Order. Nothing in this Order shall be construed as precluding federal agencies from arguing either that the unavailability of appropriated funds constitutes a force majeure, or that no provisions of this Order shall be interpreted to require the obligation or payment of funds in violation of the Anti-Deficiency Act, 31 U.S.C. 1301 or 1341. The Parties agree that in any proceeding to enforce the requirements

of this Order, federal agencies may raise as a defense that any failure or delay was caused by the unavailability of appropriated funds.

4.17. Reserved.

4.18. Incorporation of Plans and Reports. All plans, schedules, and reports that require DTSC approval and are submitted by Respondents pursuant to this Order and are not the subject of dispute resolution under paragraphs 4.20.1 through 4.20.6 are incorporated in this Order upon approval by DTSC.

4.19. Penalties for Noncompliance.

4.19.1. Respondents shall be liable for stipulated penalties in the amount of $15,000 per day for a material failure to comply with the requirements of this Order, including the making of any false statement or representation in any document submitted for purposes of compliance with this Order. If DTSC can discern that a specific Respondent(s) is responsible for a material failure to comply with the requirements of this Order, DTSC shall proceed only against the responsible Respondent(s) for associated stipulated penalties. "Compliance" by Respondents shall include, but shall not be limited to, completion of the activities under this Order or any workplan or other plan approved under this Order within the specified time schedules established by and approved pursuant to this Order or as otherwise directed by DTSC under this Order.

4.19.2. Following DTSC's determination that Respondents have materially failed to comply with a requirement of the Order, DTSC shall give Respondents written notification of the violation and describe the noncompliance. DTSC shall send Respondents a written notice of noncompliance with an opportunity to cure by a date designated by DTSC in lieu of or prior to a

written demand for the payment of the penalties. Respondents, individually or collectively, may dispute DTSC's finding of noncompliance by invoking the dispute resolution procedures described in Sections 4.20.1 through 4.20.6 herein. All penalties assessed under section 4.19.1 shall begin to accrue on the business day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. The accrual and payment of any proposed penalty shall be tolled during the dispute resolution period. If Respondents do not prevail in dispute resolution, any penalty shall be due to DTSC within 30 days of resolution of the dispute unless appealed to a court of law. If Respondents prevail in dispute resolution, no penalty shall be paid.

4.19.3. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Order and other applicable provisions of law, except that the same facts shall not be relied upon to generate separate and cumulative penalties against a single Respondent. Notwithstanding the provisions of section 4.19.1, 4.19.2, or 4.19.3, DTSC reserves the right to seek additional remedies or sanctions for knowing violations of this Order, including knowingly making any false statement or representation in any document submitted for purposes of compliance with this Order

4.20. Dispute Resolution.

4.20.1. The parties agree to use their best efforts to resolve all disputes informally. The parties acknowledge that the three Respondents to this Order each have differing ownership and operational responsibilities for various portions of the Site and the work addressed in this Order. Each Respondent expressly reserves its right to dispute any finding of noncompliance or written

decision, including but not limited to those for which it is not responsible or on which it relies in whole or in part on the actions of another Respondent(s). The parties agree that, except as otherwise specifically provided for by sections 25269.2 and 25269.5 of the Health and Safety Code for cost recovery disputes, and except for an action that challenges in whole or in part the validity, legality, enforceability or constitutionality of Health and Safety Code section 25359.20 (including the resolution of any legal or factual dispute related to or raised in such a challenge, or the determination of which provisions of this Order remain effective following such a challenge (see section 4.27 [Severability]), the procedures contained in this section are the required administrative procedures for resolving disputes arising under this Order. If any Respondent fails to follow the procedures contained in this section, that Respondent shall have waived its rights to further consideration of the disputed issue in any administrative proceeding initiated under this section. Respondents each reserve their respective legal rights to contest or defend against any final decision rendered by DTSC under this Order.

4.20.2. If any Respondent disagrees with any finding of noncompliance or written decision by DTSC pursuant to this Order, such Respondent's Project Director shall orally notify DTSC's Project Director of the dispute. The Project Directors shall attempt to resolve the dispute informally.

4.20.3. If the Project Directors cannot resolve the dispute informally, the disputing Respondent(s) may pursue the matter by placing an objection in writing. The Disputing Respondent's written objection must be forwarded to the DTSC Director or ~~his/her~~ their designee, with a copy to the DTSC Project Director. The written objection must be mailed to the DTSC Director or ~~his/her~~ their designee within 14 days of the disputing Respondent's receipt of DTSC's

finding of noncompliance or written decision. The Disputing Respondent's written objection must set forth the specific points of the dispute and the basis for Respondent's position.

4.20.4. DTSC and the disputing Respondent(s) shall have 14 days from DTSC's receipt of each disputing Respondent's written objection to resolve the dispute through formal discussions. This period may be extended by DTSC for good cause. During such period, Respondent(s) may meet or confer with DTSC to discuss the dispute.

4.20.5. After the discussion period, DTSC shall provide the Respondent(s) with its written decision on the dispute, which shall constitute a final agency decision. DTSC's written decision shall reflect any agreements reached during the formal discussion period and be signed by the DTSC Director or ~~his/her~~ their designee.

4.20.6. During the pendency of all dispute resolution procedures set forth in sections 4.20.3 through 4.20.5 of this Order, the time periods for completion of work to be performed under this Order that are affected by such a dispute shall be extended for a period of time not to exceed the actual time taken to resolve the dispute. The existence of such a dispute shall not excuse, toll, or suspend any other compliance obligation or deadline required pursuant to this Order except to the extent that such other compliance obligation or deadline is dependent upon the resolution of the matter which is the subject of such a dispute under this Order, in which case the time periods for completion of such other compliance obligations or deadlines required pursuant to this Order that are affected by such a dispute shall be extended for a period of time not to exceed the actual time taken to resolve the dispute.

4.21. Force Majeure. The Respondents shall cause all work to be performed within the time limits set forth in this Order unless an extension is approved or performance is delayed by events that constitute an event of force majeure. For purposes of this Order, an event of force majeure is an event arising from circumstances beyond the control of the involved Respondents that delays performance of any obligation under this Agreement, provided the involved Respondents have undertaken all appropriate planning and prevention measures to avoid any foreseeable circumstances. Increases in cost of performing the work specified in this Order shall not be considered circumstances beyond the control of the involved Respondents. For purposes of this Order, events which constitute a force majeure shall include, without limitation, events such as acts of God; war; civil commotion; unusually severe weather; labor difficulties; shortages of labor; materials or equipment; government moratorium; delays in obtaining necessary permits due to action or inaction by third parties; failure to obtain access to non-SSFL properties, provided Respondents comply with section 4.8.2.; and earthquake, fire, flood or other casualty. The involved Respondents shall notify DTSC in writing immediately after the occurrence of the force majeure event. Such notification shall describe the anticipated length of the delay, the cause or causes of the delay, the measures taken and to be taken by the involved Respondents to minimize the delay and the timetable by which these measures shall be implemented. If DTSC does not agree that the delay is attributable to a force majeure event, then the matter may be subject to the dispute resolution procedures set forth in sections 4.20.1 through 4.20.6 of this Order.

4.22. Schedule Changes. If Respondents are unable to perform any activity or submit any document by the date specified in the schedule developed pursuant to section 3.2.1 of this Order

due to delays by DTSC in completing its review of or response to submittals by Respondents, upon DTSC's completion of such review of or response to such submittals, the schedule shall be automatically adjusted accordingly, unless DTSC and Respondents agree to an alternative schedule, and the new schedule shall be incorporated by reference into this Order. In such event, the provisions of section 4.19 Penalties for Noncompliance shall not apply to Respondents' inability to perform any activity or submit any document under the original schedule; however, section 4.19 Penalties for Noncompliance shall apply to the new schedule unless the schedule is revised pursuant this section 4.22 or Section 4.23.

4.23. Extension Requests. If Respondents are unable to perform any activity or submit any document within the time required under the schedule developed pursuant to section 3.2.1 of this Order, Respondents shall, prior to expiration of the time, request an extension of the time in writing. The extension request shall include a justification for the delay and the proposed new Schedule. All such requests shall be in advance of the date on which the activity or document is due. If DTSC determines that good cause exists for an extension, it shall grant the request and specify a new schedule in writing. "Good cause" shall include delays by DTSC in completing its review of and response to submittals by Respondents to the extent that future deadlines are impacted as specified in the schedule. Respondents shall comply with the new schedule specified by DTSC, which shall be incorporated by reference into this Order.

4.24. Parties Bound. This Order shall apply to and be binding upon Respondents, and their officers, directors, agents, employees, contractors, consultants, receivers, trustees, successors,

and assignees, including but not limited to individuals, partners, and subsidiary and parent corporations.

4.25. Compliance with Waste Discharge Requirements. Respondents shall comply with all applicable waste discharge requirements and other Orders issued by the State Water Resources Control Board or a California Regional Water Quality Control Board.

4.26. Time Periods. Unless otherwise specified, time periods begin from the effective date of this Order and "days" means calendar days. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday or federal or State holiday, the period shall run until the next business day.

4.27. Severability. The requirements of this Order are severable. Should a provision or provisions of this Order be determined by a court to be ineffective, or should a court determine that any federal or State law or regulation incorporated into, referenced in, or authorizing this Order is invalid or unenforceable in whole or in part, Respondents shall comply with each and every remaining effective provision.

MODIFICATION

5. 0. This Order may be modified by the mutual agreement of the parties. Any agreed modifications shall be in writing, shall be signed by all Parties, shall have as their effective date the date on which they are signed by DTSC, and shall be deemed incorporated into this Order.

TERMINATION AND SATISFACTION

6. 0. The provisions of this Order shall be deemed satisfied upon the execution by the parties of an Acknowledgment of Satisfaction (Acknowledgment). DTSC shall prepare the

Acknowledgment for Respondents' signatories. The Acknowledgment shall specify that Respondents have demonstrated to the satisfaction of DTSC that the terms of this Order including payment of DTSC's costs have been satisfactorily completed. The Acknowledgment shall affirm Respondents' continuing obligation to preserve all records after the rest of the Order is satisfactorily completed.

EFFECTIVE DATE

7. 0. The effective date of this Order shall be the date on which the Order is signed by DTSC.

NO THIRD PARTY BENEFICIARY

8. 0. The Parties to this Order agree that there are no third party beneficiaries to any of the terms and conditions contained in, or rights and obligations arising out of, this Order.

PREVIOUS ORDER SUPERSEDED

9.0. This Order shall supersede the Consent Order for Corrective Action (P3-07/08-003) entered into by Respondents and DTSC on August 16, 2007.

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SIGNATORIES

10.0. Each undersigned representative of the Parties to this Order certifies that he or she is fully authorized to enter into the terms and conditions of this Order and to execute and legally bind the Parties to this Order.

DATE: _____ _____

Maziar Movassaghi
Director
Department of Toxic Substances Control

DATE: _____ _____

Cynthia V. Anderson
Deputy Chief Operations Officer
Office of Environmental Management
U.S. Department of Energy

DATE: _____ _____

Robert M. Lightfoot
Acting Director
Marshall Space Flight Center
National Aeronautics and Space Administration

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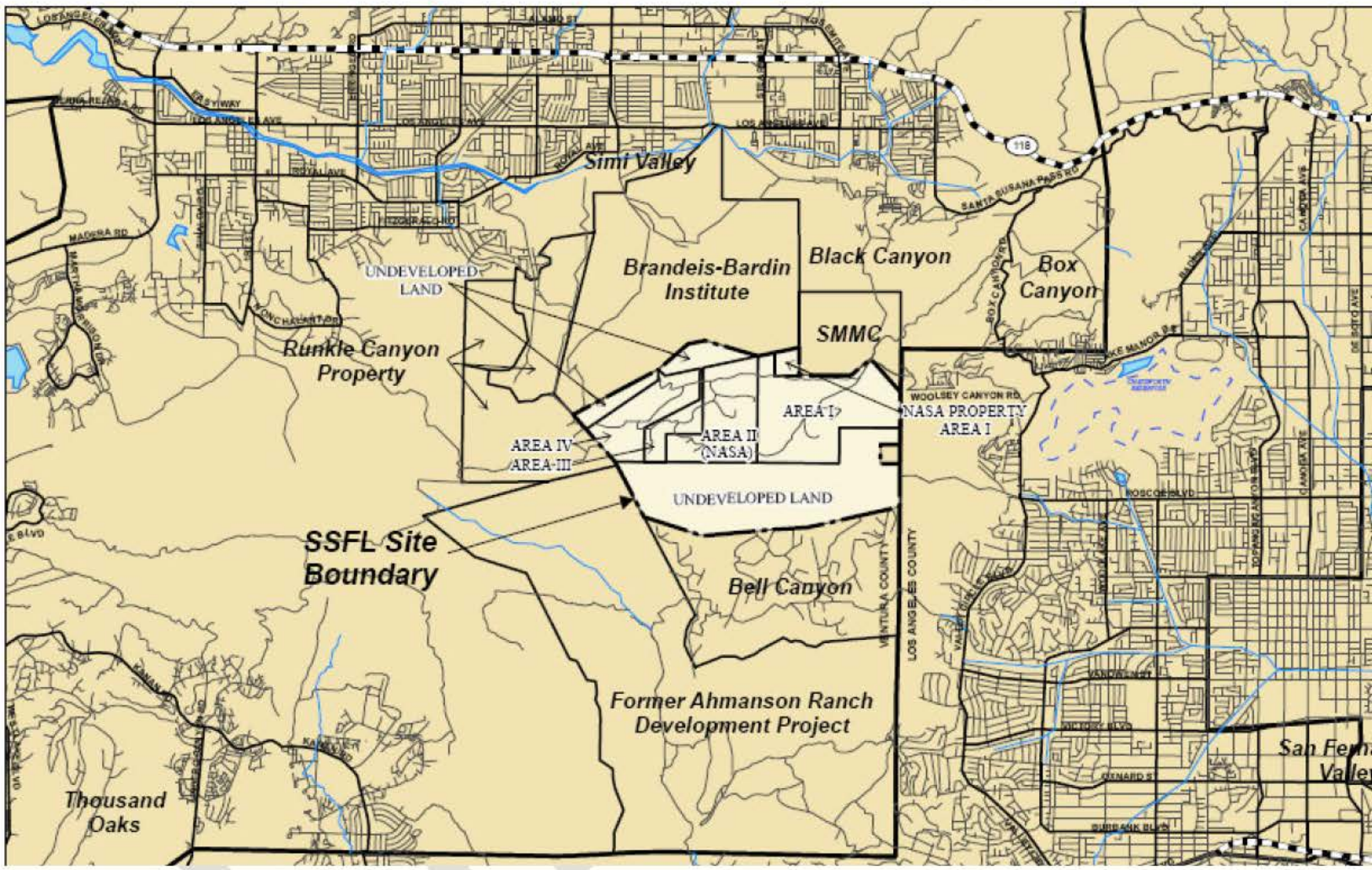
ATTACHMENT 1
Santa Susana Field Laboratory
Regional Map



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ATTACHMENT 2 – SSFL PERMITS AND INTERIM STATUS AUTHORIZATIONS

SSFL AREA	RCRA PERMIT	PERMIT TYPE	PERMITTED UNITS	OWNER / OPERATOR	STATUS	CURRENT ACTIVITY
I	**Interim Status Document** (CAD093365435)	T / S	Thermal Treatment Facility (TTF) OB/OD unit	Boeing	ISD & Facility Inactive, Undergoing Closure	Evaluating cleanup and Closure Plan
I & III	**Post-Closure Hazardous Waste Facility Permit** (CAD093365435)	T / S / D	5 surface impoundments - Advanced Propulsion Test Facility 1 (APTF-1) - Advanced Propulsion Test Facility 2 (APTF-2 - Systems Test Laboratory-IV 1 (STL-IV-1) - Systems Test Laboratory-IV 2 (STL-IV-2) - Engineering Chemistry Laboratory Pond 5 Groundwater Treatment Units (GWTU) and associated Air Stripping Towers (ASTs) - Alfa Test Area GWTU & ASTs - Canyon Area GWTU & ASTs - Area 1 Road Bowl Area GWTU & ASTs - STV-IV GWTU & ASTs - WS-5 Area GWTU UV/Peroxidation Unit	Boeing	Active Permit Effective Date: 05/11/1995 Expiration Date: 05/11/2005	Post-closure care of the surface impoundments. Operation and maintenance of the groundwater treatment facility.
II	**Post-Closure Hazardous Waste Facility Permit** (CA1800090010)	T / S / D	4 surface impoundments - Alfa Bravo Skim Pond (ABSP) - Storable Propellants Area Pond 1 (SPA-1) - Storable Propellants Area Pond 2 (SPA-2) - Delta Area Pond (Delta) 3 Groundwater Treatment Units (GWTU) and associated Air Stripping Towers (ASTs) - Bravo GWTU & ASTs - Delta GWTU & ASTs - RD-9 Area GWTU & UV/Peroxidation Unit	NASA / Boeing	Active Permit Effective Date: 05/11/1995 Expiration Date: 05/11/2005	Post-closure care of the surface impoundments. Operation and maintenance of the groundwater treatment facility.
II	**Hazardous Waste Facility Permit** (CA1800090010)	S	Hazardous Waste Container Storage Facility, and PCB Storage Area	NASA / Boeing	Clean Closed	Facility Certified Closed 09/30/1998
IV	**Hazardous Waste Facility Permit** (CAD000629972)	T / S	Hazardous Waste Management Unit (HWMF): - Building 133 (sodium treatment facility) - Building 29 (sodium storage facility)	DOE/ Boeing	Permit Active, Facility Inactive, Undergoing Closure Effective Date: 11/30/1993 Expiration Date: 11/30/2003	Closure Plan Approved
IV	**Interim Status Document** (CA1800090010)	T / S	Radioactive Materials Handling Facility (RMHF): -Bldg 4022 Mixed Waste Storage -Bldg 4021 Mixed Waste Treatment -Bldg 4621 Mixed Waste Storage	DOE / Boeing	ISD Active	Closure Plan on hold

TYPE: T = treatment, S = storage, D = disposal
OB/OD = Open Burn / Open Detonation
ISD = Interim Status Document

Boeing = The Boeing Company,
NASA = National Aeronautics and Space Administration
DOE = U.S. Department of Energy

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ATTACHMENT 3
SSFL SURFACE IMPOUNDMENTS

Areas I & III

Advanced Propulsion Test Facility 1, (APTF-1)

Advanced Propulsion Test Facility 2, (APTF-2)

Systems Test Laboratory-IV 1, (STL-IV-1)

Systems Test Laboratory-IV 2, (STL-IV-2)

Engineering Chemistry Laboratory Pond, (ECL)

Area II

ALFA Bravo Skim Pond (ABSP)

Storable Propellants Area Pond 1 (SPA-1)

Storable Propellants Area Pond 2 (SPA-2)

Delta Area Pond (Delta).

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ATTACHMENT 4
SOLID WASTE MANAGEMENT UNITS (SWMUs) and AREAS OF CONCERNS (AOCs)

SWMU or AOC	Description	Lead Respondent	Regulatory Jurisdiction	Current Regulatory Program	Current Status	Comments
AREA I						
4.5	LOX Plant Waste Oil Sump and Clarifier	NASA	DTSC	RCRA Corrective Action	RFI	Accelerated cleanup performed during 1993 (removal of clarifier).
4.6	LOX Plant Asbestos and Drum Disposal Area	NASA	VCEHD/ VCAPCD DTSC	RCRA Corrective Action	RFI	Asbestos cleanup conducted in 1990 under oversight of VCEHD and VCAPCD; NFA required by VCEHD.
4.20	~~Rocketdyne Atomics International Rifle and Pistol Club~~ Offsite Debris Area [(a)]		NA	NA	NA	Included in RFA but property belongs to SMMC
Area I Leach Fields[(b)] (16):					Inactive	There are no active leach fields onsite; formerly under WDR issued by RWQCB.
Area I USTs[(b)] (2):						
AREA II						

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SWMU or AOC	Description	Lead Respondent	Regulatory Jurisdiction	Current Regulatory Program	Current Status	Comments
5.1	Area II Landfill	NASA	VCEHD/ RWQCB DTSC	RCRA Corrective Action	RFI	DTSC lead for characterization; site action and lead agency determination based on results.
5.2	ELV Final Assembly, Building 206	NASA	DTSC	RCRA Corrective Action	RFI	Site expanded during RFI field program to include area near Building 203.
5.3	Building 231 PCB Storage Facility	NASA	DTSC	Former RCRA Part A Permit	Closed	Closed 1998 by DTSC.
5.4	RD-9 Area Ultraviolet Light/ Hydrogen Peroxide (UV/H_2O_2) Treatment System	NASA	DTSC	RCRA Part B Permit	Standby	Part of groundwater treatment system under jurisdiction of DTSC. Currently inactive on standby.
5.5	Building 204 Former Waste Oil UST (UT-50)	NASA	DTSC	RCRA Corrective Action	RFI	Former waste oil UST closed by VCEHD in 1991. DTSC requested additional assessment for RFI.
5.6	Former Area II Incinerator Ash Pile	NASA	DTSC	RCRA Corrective Action	RFI	Accelerated cleanup performed during 1993 (removal of ash pile).
5.8	HWSA Container Storage Area	Boeing NASA	DTSC	Former RCRA Part A Permit	Closed	Closed 1998 by DTSC.
5.9	Alfa Test Area	NASA	DTSC	RCRA Corrective Action	RFI	

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SWMU or AOC	Description	Lead Respondent	Regulatory Jurisdiction	Current Regulatory Program	Current Status	Comments
5.10	Alfa Test Area Tanks	NASA	DTSC	RCRA Corrective Action	RFI	
5.11	Alfa Skim and Retention Ponds and Drainage	NASA	DTSC	RCRA Corrective Action	RFI	Previous sampling performed in channels for PC Permit.
5.12	Alfa/Bravo Skim Pond (ABSP)	NASA	DTSC	PC Permit	Closed	Soil vapor sampling near impoundment performed during RFI (included in Bravo site). Groundwater monitoring ongoing as specified in PC Permit (1995).
5.13	Bravo Test Area	NASA	DTSC	RCRA Corrective Action	RFI	
5.14	Bravo Test Stand Waste Tank	NASA	DTSC	RCRA Corrective Action	RFI	
5.15	Bravo Skim Pond and Drainage	NASA	DTSC	RCRA Corrective Action	RFI	Previous sampling performed in channels for PC Permit.
5.16	Storable Propellant Area Surface Impound-ment-1 (SPA-1) and Drainage	NASA	DTSC	PC Permit	Closed	Soil vapor sampling near impoundment performed during RFI (included in SPA site); groundwater monitoring ongoing as specified in PC Permit (1995).

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SWMU or AOC	Description	Lead Respondent	Regulatory Jurisdiction	Current Regulatory Program	Current Status	Comments
5.17	SPA Surface Impound-ment-2 (SPA-2) and Drainage	NASA	DTSC	PC Permit	Closed	Soil vapor sampling near impoundment performed during RFI (included in SPA site); groundwater monitoring ongoing as specified in PC Permit (1995).
5.18	Coca Test Area	NASA	DTSC	RCRA Corrective Action	RFI	
5.19	Coca Skim Pond and Drainage	NASA	DTSC	RCRA Corrective Action	RFI	
5.20	Propellant Load Facility (PLF) Waste Tank	NASA	DTSC	RCRA Corrective Action	RFI	Tank never used.
5.21	PLF Ozonator Tank	NASA	DTSC	RCRA Corrective Action	RFI	Ozonator tank received RCRA variance from DTSC.
5.22	PLF Surface Impound-ment	NASA	DTSC	RCRA Corrective Action	Closed	Closed by DHS in 1989.
5.23	Delta Test Area	NASA	DTSC	RCRA Corrective Action	RFI	
5.24	Delta Skim Pond and Drainage	NASA	DTSC	PC Permit	Closed	Soil vapor sampling near impoundment performed during RFI (included with Delta site); groundwater monitoring ongoing as specified in PC Permit (1995).

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SWMU or AOC	Description	Lead Respondent	Regulatory Jurisdiction	Current Regulatory Program	Current Status	Comments
5.25	Purge Water Tank near Delta Treatment System	NASA	DTSC	RCRA Corrective Action	NFA	Polypropylene AST intermittently used since 1992 as temporary holding tank for groundwater to transfer to treatment system; DTSC did not request further investigation during 1999/2000 site review.
5.26	R-2A and R-2B Ponds and Drainage	NASA	DTSC	RCRA Corrective Action	RFI	Surface water discharge from ponds monitored under RWQCB jurisdiction at NPDES outfall locations.
5.27	Area II Air Stripping Towers (Delta and Bravo)	NASA	DTSC VCAPCD	RCRA Part B Permit	Opera-tional	Part of groundwater treatment system under jurisdiction of DTSC; air discharges permitted by VCAPCD.
5.29	RD-51 Watershed [(c)]	(c)	(c)	(c)	(c)	
5.28	Area II AOCs (combined and listed as a SWMU in RFA)					

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SWMU or AOC	Description	Lead Respondent	Regulatory Jurisdiction	Current Regulatory Program	Current Status	Comments
Area II – AOC	Building 515 Sewage Treatment Plant (STP) Area	NASA	RWQCB DTSC	NPDES Permit RCRA Corrective Action	Inactive RFI	When operational, discharges from sewage treatment plant under RWQCB jurisdiction (NPDES permit). Site includes Building 211 leach field (Area II AOC) and downslope area near RD-9 groundwater treatment system (SWMU 5.4).
Area II – AOC	Storable Propellant Area (SPA)	NASA	DTSC	RCRA Corrective Action	RFI	
Area II – AOC	Alfa/Bravo Fuel Farm (ABFF) and Stormwater Basin	NASA	RWQCB DTSC	SPCC RCRA Corrective Action	Operational RFI	Site added to RFI field program when soil impacts observed at fuel farm during underground pipeline removal.
Area II – AOC	Coca/Delta Fuel Farm (CDFF)	NASA	DTSC	RCRA Corrective Action	RFI	New AOC added to RFI after DTSC site review (Boeing 1997a).
Area II – AOC	Drainage Pipes Under ABSP	NASA	DTSC	PC Permit	Closed	Soil vapor sampling near impoundment drainage performed during RFI (included in Bravo site); groundwater monitoring ongoing as specified in PC Permit (1995).
Area II Leach Fields[(b)] (10):					Inactive	There are no active leach fields onsite; formerly under WDR Permit issued by RWQCB.

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SWMU or AOC	Description	Lead Respondent	Regulatory Jurisdiction	Current Regulatory Program	Current Status	Comments
Area II – AOC	Area II Service Area, Building 211	NASA	DTSC	RCRA Corrective Action	RFI	Included with Building 515 STP site (Area II AOC).
Area II – AOC	Alfa Control Ctr, Building 208	NASA	DTSC	RCRA Corrective Action	RFI	At Alfa site (SWMUs 5.9/10/11).
Area II – AOC	Alfa Pretest, Building 212	NASA	DTSC	RCRA Corrective Action	RFI	North of Alfa site (SWMUs 5.9/10/11).
Area II – AOC	Bravo Pretest, Building 217	NASA	DTSC	RCRA Corrective Action	RFI	At Bravo site (SWMUs 5.13/14/15).
Area II – AOC	Bravo Recording Ctr, Building 213	NASA	DTSC	RCRA Corrective Action	RFI	At Bravo site (SWMUs 5.13/14/15).
Area II – AOC	Coca Pretest, Building 222	NASA	DTSC	RCRA Corrective Action	RFI	At Coca site (SWMUs 5.18/19).
Area II – AOC	Coca Upper Pretest, Building 234	NASA	DTSC	RCRA Corrective Action	RFI	At Coca site (SWMUs 5.18/19). Not listed in RFA but included in CCR.
Area II – AOC	Coca Control Ctr, Building 218	NASA	DTSC	RCRA Corrective Action	RFI	At Coca site (SWMUs 5.18/19). Listed incorrectly as Building 216 in RFA.
Area II – AOC	Delta Control Ctr, Building 224	NASA	DTSC	RCRA Corrective Action	RFI	At PLF site (SWMU 5.20/21/22).
Area II – AOC	Delta Pretest, Building 223	NASA	DTSC	RCRA Corrective Action	RFI	At Delta site (SWMU 5.23).
Area II USTs[(b)] (4 Sites)						

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SWMU or AOC	Description	Lead Respondent	Regulatory Jurisdiction	Current Regulatory Program	Current Status	Comments
Area II – AOC	Building 207 Diesel UST (UT-53)	NASA	VCEHD	LUFT	Closed	Closed 1996. Former diesel UST on north side of Building 207.
Area II – AOC	UST across from Alfa/Bravo Fuel Farm (ABFF) (UT-52)	NASA	VCEHD	LUFT	Closed	Closed 1994. Former gasoline UST north of ABFF site (Area II AOC) along road.
Area II – AOC	Building 206 Diesel UST (UT-51)	NASA	VCEHD	LUFT	Closed	Closed 1996. Former diesel UST east of Building 206 (ELV site, SWMU 5.2).
Area II – AOC	Two Underground Tanks at Plant Services (UT-48 and UT-49)	NASA	VCEHD	LUFT	RFI (Tanks closed)	UT-48 closed 1996; former fuel oil UST located on east side of Building 204. UT-49 closed by VCEHD 1991; former gasoline UST located on south side of Building 204. Additional soil sampling requested by DTSC in area for Building 204 site.
AREA IV						
7.1	Building 056 Landfill	DOE	DTSC	RCRA Corrective Action	RFI	
7.2	Building 133 Hazardous Waste Management Facility	DOE	DTSC	RCRA Part B Permit	Inactive	Closure plan approved. Work suspended until completion of EIS

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SWMU or AOC	Description	Lead Respondent	Regulatory Jurisdiction	Current Regulatory Program	Current Status	Comments
7.3	Building 886 Former Sodium Disposal Facility (FSDF)	DOE	DTSC	RCRA Corrective Action	RFI	Interim measures completed in 2000 (IT 2002).
7.4	Old Conserva-tion Yard (OCY) Container Storage Area and Fuel Tanks	DOE	DTSC	RCRA Corrective Action	RFI	
7.5	Building 100 Trench	DOE	DTSC	RCRA Corrective Action	RFI	
7.6	Radioactive Materials Handling Facility (RMHF)	DOE	DOE/DHS DTSC	Part A Permit Interim Status	Operational	Site under DTSC/DOE jurisdiction; Part A permit administered by DTSC. Closure plan in preparation.
7.7	Building 020	DOE	DTSC	RCRA Corrective Action	RFI	Site investigation pending.
7.11	Building 029 Reactive Metal Storage Yard	DOE	DTSC	RCRA Part B Permit	Opera-tional	Closure plan submitted to DTSC.
7.12	Area IV AOCs (combined and listed as a SWMU in RFA)					

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SWMU or AOC	Description	Lead Respondent	Regulatory Jurisdiction	Current Regulatory Program	Current Status	Comments
Area IV - AOC	Building 059 Former SNAP Reactor Facility	DOE	DOE/DHS DTSC	DOE Closure RCRA Corrective Action	RFI	Under DHS/DOE jurisdiction; demolition, final status surveys and DHS verification surveys completed; pending unrestricted release. Groundwater monitoring ongoing.
Area IV- AOC	Building 065 Metals Laboratory Clarifier	DOE	DTSC	RCRA Corrective Action	RFI	New AOC added after DTSC site review in 1999/2000.
Area IV- AOC	Building 457 Hazardous Materials Storage Area (HMSA)	DOE	DTSC	RCRA Corrective Action	RFI	New AOC added after DTSC site review in 1999/2000.
Area IV Leach Fields (15):					Inactive	There are no active leach fields onsite; formerly under WDR issued by RWQCB.
Area IV – AOC	AI-Z2, Building 064	DOE	DTSC	RCRA Corrective Action	RFI (re-moved)	Included in DOE leach fields RFI site (Area IV COC). Incorrectly listed as Building 014 in RFA.
Area IV – AOC	AI-Z3, Building 030	DOE	DTSC	RCRA Corrective Action	RFI (re-moved)	Included in DOE leach fields RFI site (Area IV AOC). Status of leach field will be addressed in RFI report.
Area IV – AOC	AI-Z4, Building 093	DOE	DTSC	RCRA Corrective Action	RFI (re-moved)	Incorrectly listed as Building 003 in RFA. Part of DOE leach fields RFI site.

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SWMU or AOC	Description	Lead Respondent	Regulatory Jurisdiction	Current Regulatory Program	Current Status	Comments
Area IV – AOC	AI-Z5, Building 021	DOE	DTSC	Pending	Pending	Regulatory assignment pending review and approval of RMHF (SWMU 7.6) closure plan (Part A Permit).
Area IV – AOC	AI-Z6, Building 028	DOE	DTSC	RCRA Corrective Action	NFA (not present)	Not located during CCR investigation- facility records confirm the building never had a leach field. DTSC did not require further investigation during 1999/2000 site review.
Area IV – AOC	AI-Z7, Building 010/ 012	DOE	DTSC	RCRA Corrective Action	RFI (removed)	Not located during CCR or RFI. Included in DOE leach fields RFI site (Area IV AOC). Incorrectly listed as Building 012 in RFA and CCR.
Area IV – AOC	AI-Z10, Building 383	DOE	DTSC	RCRA Corrective Action	RFI (removed)	Incorrectly listed as Building 483 in RFA. Included in DOE leach fields RFI site (Area IV AOC).
Area IV – AOC	AI-Z11, Building 009	DOE	DTSC	RCRA Corrective Action	RFI (re-moved)	Included in DOE leach fields RFI site (Area IV AOC).
Area IV – AOC	AI-Z12, Building 020	DOE	DTSC	RCRA Corrective Action	RFI (re-moved)	At RIHL RFI site (SWMU 7.7).
Area IV – AOC	AI-Z13, Building 373	DOE	DTSC	RCRA Corrective Action	RFI (re-moved)	Included in DOE leach fields RFI site (Area IV AOC).

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SWMU or AOC	Description	Lead Respondent	Regulatory Jurisdiction	Current Regulatory Program	Current Status	Comments
Area IV – AOC	AI-Z14, Building 363	DOE	DTSC	RCRA Corrective Action	RFI (re-moved)	Included in DOE leach fields RFI site (Area IV AOC).
Area IV – AOC	AI-Z15, Building 353	DOE	DTSC	RCRA Corrective Action	RFI (re-moved)	Included in DOE leach fields RFI site (Area IV AOC).
7.13	SRE Watershed[(c)]	(c)	(c)	(c)	(c)	

Notes: All SWMUs and AOCs (except those added by DTSC during the field program) are described in the RFA Report (SAIC 1994) and CCR (ICF 1993). Site descriptions for all SWMUs/AOCs added during RFI are further described in the RFI WPAA (Ogden 2000b) and this document.

See Acronym List for acronym definitions

(a) The former Rocketdyne-Atomics International Rifle and Pistol Club shooting range on Sage Ranch is an offsite location and is owned by SMMC. It is included in this table because it was listed in the RFA.

(b) Individual leach fields and USTs located in Areas I, II, and III are all associated with existing SWMUs or AOCs, and are being evaluated as part of those sites. Individual Area IV leach fields located outside of other RFI sites have been grouped as RFI sites by owner. Nine of these are being evaluated as a single AOC (DOE Leach Fields RFI site), and two are being evaluated as a separate AOC (Boeing Leach Field RFI site). Of the remaining five leach field sites in Area IV, four are being evaluated with associated RFI sites, and one is pending approval of a RCRA closure plan. Please note that this table reflects corrections to site identification errors in the RFA (e.g., Building 008 listed as an Area I leach field in the RFA, but it is an Area IV warehouse).

(c) The RD-51 and SRE watersheds were identified as SWMUs in the RFA (SAIC 1994) based on radiological sample data collected during initial sampling in 1993 (McLaren Hart 1993). Subsequent resampling of these areas did not detect or confirm initial data (McLaren Hart 1995).

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ATTACHMENT 5
RFI SITES

RFI Site SWMU Number or AOC and Name	**Sampling Plan Reference**
AREA I	
B-1 Area 4.1 B-1 Area AOC Building 312 Leach Field	DTSC site review 1999/2000
Area I Landfill 4.2 Area I Landfill	Area I & II Landfills Work Plan (MWH 2003e)
Instrument and Equipment Laboratories (IEL) 4.3 Building 324 Instrument Lab, Hazardous Waste Tank 4.4 Building 301 Equipment Lab, TCA Unit and Used Product Tank AOC Buildings 301/324 Gasoline USTs (UT-37/UT-38) AOC Building 301 Diesel UST (UT-44) AOC Building 300 Leach Field AOC Building 324 Leach Field	WPA (Ogden 1996) DTSC site review 1999/2000
Liquid Oxygen (LOX) Plant 4.5 LOX Plant Waste Oil Sump and Clarifier 4.6 LOX Plant Asbestos and Drum Disposal Area	WPA (Ogden 1996) DTSC site review 1999/2000
Component Test Laboratory III (CTL-III) 4.7 CTL-III AOC Building 413 Leach Field AOC Building 412 Leach Field	WPA (Ogden 1996) DTSC site review 1999/2000
Advanced Propulsion Test Facility (APTF) 4.9 Advanced Propulsion Test Facility AOC APTF Aboveground Tanks	WPA (Ogden 1996)
LETF/CTL-I 4.12 Laser Engineering Test Facility (LETF)/ Component Test Laboratory I (CTL-I) AOC Building 309 Leach Field AOC Building 317 Leach Field AOC Building 423 Leach Field	WPA (Ogden 1996) DTSC site review 1999/2000
Canyon Area 4.14 Canyon Area AOC Building 375 Leach Field AOC Building 382 Leach Field	WPA (Ogden 1996) DTSC site review 1999/2000
Bowl Area	WPA (Ogden 1996)

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4.15 Bowl Area AOC Building 900 Leach Field AOC Building 901 Leach Field		DTSC site review 1999/2000
R-1 Pond 4.16 Area I Reservoir (R-1 Pond)		WPA (Ogden 1996)
Perimeter Pond 4.17 Perimeter Pond		Identified in WPA DTSC site review 1999/2000
Building 359 Area AOC Building 359 Leach Field/Sump AOC Building 376 Leach Field AOC Building 741 Leach Field		WPA (Ogden 1996) DTSC site review 1999/2000
Happy Valley AOC Happy Valley		WPA (Ogden 1996)
Component Test Laboratory V (CTL-V) AOC CTL-V AOC Building 439 Leach Field		Letter Work Plan (Boeing 1997); Building 439 Leach Field identified in RFA
AREA II		
Area II Landfill 5.1 Area II Landfill		Area I & II Landfills Work Plan (MWH 2003e)
Expendable Launch Vehicle (ELV) 5.2 ELV Final Assembly, Building 206		WPA (Ogden 1996)
Building 204 USTs 5.5 Building 204 Former Waste Oil UST (UT-50) AOC Underground Tanks at Plant Services (UT-48 and UT-49)		WPA (Ogden 1996)
Former Area II Incinerator Ash Pile 5.6 Former Area II Incinerator Ash Pile		WPA (Ogden 1996)
Hazardous Waste Storage Area (HWSA) Waste Coolant Tank (WCT) 5.7 Hazardous Waste Storage Area Waste Coolant Tank		WPAA (Ogden 2000b)

AREA II (Cont'd)

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Alfa Area 5.9 Alfa Test Area 5.10 Alfa Test Area Tanks 5.11 Alfa Skim and Retention Ponds and Drainage AOC Building 208 Leach Field AOC Building 212 Leach Field		WPA (Ogden 1996) DTSC site review 1999/2000
Bravo Area 5.13 Bravo Test Area 5.14 Bravo Test Stand Waste Tank 5.15 Bravo Skim Pond and Drainage AOC Building 213 Leach Field AOC Building 217 Leach Field		WPA (Ogden 1996) DTSC site review 1999/2000
Coca Area 5.18 Coca Test Area 5.19 Coca Skim Pond and Drainage AOC Building 222 Leach Field AOC Building 234 Leach Field AOC Building 218 Leach Field		WPA (Ogden 1996) DTSC site review 1999/2000
Propellant Load Facility (PLF) 5.20 PLF Waste Tank 5.21 PLF Ozonator Tank 5.22 PLF Surface Impoundment (Closed) AOC Building 224 Leach Field		Identified in WPA DTSC site review 1999/2000
Delta Area 5.23 Delta Test Area AOC Building 223 Leach Field		WPA (Ogden 1996) DTSC site review 1999/2000
R-2 Ponds 5.26 R-2A and R-2B Ponds and Drainage		Identified in WPA DTSC site review 1999/2000
Building 515 Sewage Treatment Plant (STP) AOC Building 515 STP Area AOC Building 211 Leach Field		WPA (Ogden 1996) DTSC site review 1999/2000
Alfa/Bravo Fuel Farm (ABFF) AOC ABFF and Stormwater Basin		DTSC site review 1997
Coca/Delta Fuel Farm (CDFF) AOC CDFF		Letter Work Plan (Boeing 1997)
Storable Propellant Area (SPA)		WPA (Ogden 1996)

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AOC SPA		
AREA III		
Engineering Chemistry Laboratory (ECL) Area 6.1 ECL Building 270, Waste Tank, and Container Storage Area 6.2 ECL Suspect Water Pond 6.3 ECL Collection Tank AOC Building 260 ECL Runoff Tanks AOC Building 270 Leach Field		WPA (Ogden 1996) DTSC site review 1999/2000
Compound A Facility 6.4 Building 418 Compound A Facility		WPA (Ogden 1996)
Systems Test Laboratory IV (STL-IV) 6.5 STL-IV Test Area and Ozonator Tank AOC Buildings 253/254 Leach Field		WPA (Ogden 1996) DTSC site review 1999/2000
Silvernale Reservoir 6.8 Silvernale Reservoir and Drainage		WPA (Ogden 1996)
Environmental Effects Laboratory (EEL) 6.9 EEL		WPA (Ogden 1996)
Sewage Treatment Plant (STP) Pond AOC Sewage Treatment Plant (STP) Pond		DTSC site review 1999/2000
AREA IV		
Building 56 Landfill 7.1 Building 56 Landfill		WPA (Ogden 1996) B56 Landfill WP
Former Sodium Disposal Facility (FSDF) 7.3 Building 886 FSDF		Identified in WPA DTSC site review 1999/2000
Old Conservation Yard (OCY) 7.4 OCY Container Storage Area and Fuel Tanks		WPA (Ogden 1996)
RFI Site SWMU Number or AOC and Name		**Sampling Plan Reference**
AREA IV (Cont'd)		
Building 100 Trench 7.5 Building 100 Trench		DTSC site review 1999/2000

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Hot Laboratory (HL) 7.7 HL, Building 20 AOC Building 20 Leach Field		WPA (Ogden 1996) (revised in WPAA)
New Conservation Yard (NCY) 7.8 NCY		WPA (Ogden 1996)
Empire State Atomic Development Authority (ESADA) 7.9 ESADA Chemical Storage Yard		Identified in WPA DTSC site review 1999/2000
Coal Gasification Process Development Unit (PDU) 7.10 Building 005 Coal Gasification PDU AOC Buildings 005/006 Leach Field		Identified in WPA DTSC site review 1999/2000
Sodium Reactor Experiment (SRE) Area AOC SRE AOC Building 003 Leach Field		Letter Work Plan (Boeing 1997)
Southeast Drum (SE Drum) Storage Yard AOC SE Drum Storage Yard		DTSC site review 1999/2000
Pond Dredge Area AOC Pond Dredge Area		WPAA (Ogden 2000b)
Boeing Area IV Leach Fields AOC Building 011 Leach Field AOC Building 008 Warehouse		DTSC site review 1999/2000
Systems for Nuclear Auxiliary Power (SNAP) Facility AOC Building 59, SNAP Facility		WPAA (Ogden 2000b)
Building 65 Metals Laboratory Clarifier AOC Building 65, Metals Laboratory Clarifier		WPAA (Ogden 2000b)
Hazardous Materials Storage Area (HMSA) AOC Building 457, Former HMSA		WPAA (Ogden 2000b)
DOE Leach Fields AOC Building 009 Leach Field AOC Building 010 Leach Field AOC Building 030 Leach Field AOC Building 064 Leach Field AOC Building 093 Leach Field		DTSC site review 1999/2000

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AOC Building 353 Leach Field AOC Building 363 Leach Field AOC Building 373 Leach Field AOC Building 383 Leach Field		

Summary by Document

Document	Total		Proposed for Sampling	
	SWMUs/AOCs	RFI Sites	SWMUs/AOCs	RFI Sites
WPA (1996)	64	34	40	27
WPAA (2000)	6	5	7	6
DTSC Site Reviews (1997/1998)	29	7	52	13
Area I/II Landfill WP (2003)	2	2	2	2
Letter WPs (1997/1998)	5	3	5	3
Totals	**106**	**51**	**106**	**51**

Notes:

1. Sampling plans included in referenced document or as directed during field investigation by DTSC.

2. Because of proximity, Buildings 011 and 008 will be reported together as one RFI site.

3. Only SWMUs and AOCs considered part of each RFI site are listed. No RCRA permitted units or closed USTs are shown, with the exception of tanks for which DTSC has requested additional characterization. All SWMUs and AOCs included in the RFI are listed here and designated in Table 1-3 by "RFI" under "Current Status."

4. Leach Field AOCs originally introduced in the RFA (SAIC 1994).

See Acronym List for acronym definitions

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ATTACHMENT 6

[EPA PRGs to be inserted]

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ATTACHMENT 7
LIST OF SURFICIAL OU AND CHATSWORTH FORMATION OU HUMAN HEALTH EXPOSURE PATHWAYS

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Exposure Pathway	Rural Residential (Agricultural)		Suburban Residential		Recreational	
	Radionuclides[a]	Chemicals	Radionuclides[a]	Chemicals	Radionuclides	Chemicals
Direct radiation exposure	X	N/A	X	N/A	X	N/A
Soil/sediment pathways:						
Ingestion of soil	X	X	X	X	X	X
Dermal contact with soil	N/A	X	N/A	X	N/A	X
Inhalation of particulates in air derived from soil	X	X	X	X	X	X
Inhalation of VOCs in ambient air derived from soil	N/A	X	N/A	X	N/A	X
Inhalation of VOCs in indoor air derived from soil	N/A	X	N/A	X	N/A	N/A
Surface water pathways						
Ingestion of surface water	N/A	X	N/A	X	N/A	X
Dermal contact with surface water	N/A	X	N/A	X	N/A	X
Groundwater pathways						
Ingestion of potable water	X	X	X	X	N/A	N/A
Dermal contact while bathing	N/A	X	N/A	X	N/A	N/A
Inhalation of VOCs/volatiles while showering	X	X	X	X	N/A	N/A
Inhalation of VOCs in indoor air derived from groundwater	N/A	X	N/A	X	N/A	N/A
Inhalation of VOCs in ambient air derived from groundwater	N/A	X	N/A	X	N/A	X
Consumption of Biota:						
Fruits & vegetables	X	X	X	X	N/A	N/A
Beef	X	X	N/A	N/A	N/A	N/A
Poultry	X	X	N/A	N/A	N/A	N/A
Swine	X	X	N/A	N/A	N/A	N/A
Eggs	X	X	N/A	N/A	N/A	N/A
Milk	X	96X	N/A	N/A	N/A	N/A
Fish	X	X	N/A	N/A	N/A	N/A

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Human Health Exposure Pathways for Radionuclides and Chemicals by Land Use

	Rural Residential (Agricultural)		Suburban Residential		Recreational (Optional)	
Exposure Pathway	**Radionuclides[a]**	**Chemicals**	**Radionuclides[a]**	**Chemicals**	**Radionuclides**	**Chemicals**
Direct radiation exposure	X	N/A	X	N/A	X	N/A
Soil/sediment pathways:						
- Ingestion of soil	X	X	X	X	X	X
- Dermal contact with soil	N/A	X	N/A	X	N/A	X
- Inhalation of particulates in air derived from soil	X	X	X	X	X	X
- Inhalation of VOCs in ambient air derived from soil	N/A	X	N/A	X	N/A	X
- Inhalation of VOCs in indoor air derived from soil	N/A	X	N/A	X	N/A	N/A
Surface water pathways						
- Ingestion of surface water	N/A	X	N/A	X	N/A	X
- Dermal contact with surface water	N/A	X	N/A	X	N/A	X
Groundwater pathways						
- Ingestion of potable water	X	X	X	X	N/A	N/A
- Dermal contact while bathing	N/A	X	N/A	X	N/A	N/A
- Inhalation of VOCs/volatiles while showering	X	X	X	X	N/A	N/A
- Inhalation of VOCs in indoor air derived from groundwater	N/A	X	N/A	X	N/A	N/A
- Inhalation of VOCs in ambient air derived from groundwater	N/A	X	N/A	X	N/A	X
Consumption of Biota:						
- Fruits & vegetables	X	X	X	N/E	N/A	N/A
- Beef	X	X	N/A	N/A	N/A	N/A
- Poultry	X	98X	N/A	N/A	N/A	N/A
- Swine OR DISCUSSION PURPOSES ONLY	X	X	N/A	N/A	N/A	N/A
- Eggs	X	X	N/A	N/A	N/A	N/A
- Milk	X	X	N/A	N/A	N/A	N/A
- Fish	X	X	N/A	N/A	N/A	N/A

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Notes:
[a] Based on default EPA agricultural and residential soil PRGs and tap water PRGs.
N/A – Not applicable.
N/E – May be applicable but not quantitatively evaluated for this receptor.

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ATTACHMENT 8
LIST OF SURFICIAL OU AND CHATSWORTH FORMATION OU ECOLOGICAL EXPOSURE PATHWAYS

Representative Ecological Receptor	Evaluated Exposure Pathways[a]
Plant (terrestrial)	• Soil (direct exposure)
Soil Invertebrate (terrestrial)	• Soil (direct exposure)
Red Tailed Hawk	• Food ingestion (small mammals) • External dose (radionuclides only)
Hermit Thrush	• Soil ingestion • Food Ingestion (plants and invertebrates) • Surface water ingestion • Near-surface groundwater (seeps and springs) • Chatsworth formation groundwater (seeps and springs) • External dose (radionuclides only)
Deer Mouse	• Soil Ingestion • Food ingestion (plants and invertebrates) • Surface water ingestion • Near-surface groundwater (seeps and springs) • Chatsworth formation groundwater (seeps and springs) • Vapor inhalation (chemicals only)

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	• External dose (radionuclides only)
Mule Deer	• Soil Ingestion • Food ingestion (plants) • Surface water ingestion • Near-surface groundwater (seeps and springs) • Chatsworth formation groundwater (seeps and springs) • External dose (radionuclides only)
Bobcat	• Food ingestion (small mammals) • Surface water ingestion • Near-surface groundwater (seeps and springs) • Chatsworth formation groundwater (seeps and springs) • External dose (radionuclides only)
Plant (aquatic)	• Direct exposure to surface water concentrations
Invertebrate (aquatic)	• Direct exposure to surface water concentrations
Great Blue Heron	• Food ingestion (small mammals, aquatic invertebrates and fish) • Surface water ingestion • Chatsworth formation groundwater (seeps and springs)

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		• Sediment ingestion • External dose (radionuclides only)

[a]: Exposure pathways applicable to both radionuclides and chemicals unless otherwise specified

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ATTACHMENT 9

SSFL
HAZARDOUS SUBSTANCES OF CONCERN ASSOCIATED WITH
ROCKET ENGINE TESTING and OTHER RESEARCH AND DEVELOPMENT ACTIVITIES

- Hazardous substance constituents of concern at the SSFL associated with rocket engine testing include, but are not limited to, the following:

Liquid rocket test fuels - RP-1 (high-grade kerosene), JP-4 (a type of jet fuel) monomethyl hydrazine, hydrazine, derivatives, and liquid hydrogen, as well as various by-product of the combustion of these materials;

Oxidizers - liquid oxygen and nitrogen tetroxide, and various fluorine compounds and inhibited red fuming nitric acid; and

Solvents - trichloroethylene, the primary solvent used at SSFL, used to clean engine components before and after testing.

- Hazardous substances of concern associated with other research and development activities carried out at the SSFL include, but are not limited to, the following:

Halogenated solvents - 1,1,1-trichloroethane, tetrachloroethylene, 1,1-dichloroethane, and chlorofluorocarbons;

Caustic solutions - potassium hydroxide and sodium hydroxide;

Radionuclides;

Reactive metals - sodium and other reactive metals;

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"Green Liquor" wastewater - generated from coal gasification operations, containing organics, sulfur compounds, and ash;

Energetic materials - perchlorate, glycidyl azide polymer, hexahydro-1,3,4-trinitro-1,3,5-triazine (RDX), oxtahydro-1,3,5,7-tetranitro-1,2,5,7-tetrazocine (HMX), and other ordnance compounds;

Polychlorinated biphenyls (PCBs) – transformers;

Various chemicals - used in laboratory operations, such as solvents, acids, and bases;

Laboratory wastes - from cleaning laboratory instruments, such as waste solvents, acids and bases;

Waste oil - sumps and clarifiers;,

Construction debris - including concrete, wood, metal and asbestos;

Incinerator ash - dioxin and metals; and

Biocides - cooling tower, water treatment chemicals which include copper and chromium compounds.

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ATTACHMENT 10
CHEMICALS OF CONCERN
FROM POST CLOSURE PERMITS
SSFL

Acetone
Carbon Tetrachloride
Methylene Chloride
Chloroform
Fluoride
Freon 11
Freon 113
Formaldehyde
Ammonia
Nitrate
Methyl Ethyl Ketone
Benzene
Toluene
Xylenes
Ethylbenzene
PCE
TCE
Cis-1,2-DCE
Trans-1,2-DCE
1,1-DCE
Vinyl Chloride
1,1,1-TCA
1,1,2-TCA
1,2-DCA
1,1-DCA
1,4-dioxane
N-nitrosodimethylamine
Nitrobenzene

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ATTACHMENT 11
LIST OF CHEMICALS AND RADIONUCLIDES IDENTIFIED IN GROUNDWATER AT SSFL

The following list is inclusive of all chemicals detected in at least a single groundwater sample collected from wells at or near the SSFL (regardless of concentration). These chemicals are not necessarily related to releases from the SSFL and include those that occur naturally and are artifacts of work performed in analytical laboratories.

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1,1,1-trichloroethane
1,1,2--trichloroethane
1,2-dichloroethane
1,1-dichloroethane
chloroethane
1,4-dioxane

tetrachloroethylene
trichloroethylene
cis-1,2-dichloroethylene
trans-1,2-dichloroethylene
1,1-dichloroethylene
vinyl chloride

n-nitrosodimethylamine
1,2,3-trichloropropane
1,3-dinitrobenzene
nitrobenzene
nitrate
perchlorate
petroleum hydrocarbons (various ranges)
benzene
ethylbenzene
m-, p-, and o-xylenes
toluene
acetone
ammonia as nitrogen
fluoride

carbon tetrachloride
methylene chloride
chloroform
chloromethane

trichlorotrifluoroethane (Freon 113)
trichlorofluoromethane (Freon 11)
dichlorodifluoromethane (Freon 12)

poly-chlorinated di-benzo dioxins/furans
formaldehyde

cadmium
chromium
copper
lead
manganese
nickel
silver
thallium
zinc

The following is a list of all radionuclides detected in at least a single groundwater sample collected from wells at or near SSFL (regardless of concentration). These radionuclides are not all necessarily related to releases from the SSFL and include radionuclides that occur naturally.

Actinium	228
Bismuth	214
Cesium	134
Cobalt	60
Hydrogen	3
Lead	210
Lead	212
Lead	214
Polonium	210
Potassium	40
Radium	226
Radium	228
Radon	222
Strontium	90
Thallium	208
Thorium	228
Thorium	230
Thorium	232
Uranium	233/234
Uranium	234
Uranium	235
Uranium	236
Uranium	238

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ATTACHMENT 12

LIST OF APPLICABLE GUIDANCE DOCUMENTS

- Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA, Interim Final (EPA 540/G-89/004, OSWER 9355.3-01,October 1988),
- Proven Technologies and Remedies Guidance – Remediation of Metals in Soil (DTSC, August 2008)
- Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) (EPA 402-R-97-016, Revision 1, August 2000)
- U.S. EPA's Pro UCL Version 4.00.02 User Guide
- Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW 846)
- Environmental Measurements Laboratory (EML) Procedures Manual, HASL-300
- EPA Publication 9285.7-08, "Supplemental Guidance to RAGS: Calculating the Concentration Term"
- EPA 93555.0-01, "Guidance on Surface Soil Cleanup at Hazardous Waste Sites", EPA/600/R-07/038
- California Environmental Protection Agency (Cal-EPA). 1997. Selecting Inorganic Constituents as Chemicals of Potential Concern at Risk Assessments at Hazardous Waste Sites and Permitted Facilities. Prepared by Human and Ecological Risk Division, Department of Toxic Substances Control. California Environmental Protection Agency. February.
- Department of Toxic Substances Control (DTSC). 1998-2009. *HERD Ecological Risk Assessment Notes: Numbers 1-5.* California Department of Toxic Substances Control. Human and Ecological Risk Division (HERD).

- DTSC. 1992. Supplemental Guidance for Human Health Multimedia Risk Assessments of Hazardous Waste Sites and Permitted Facilities. October. Document not provided. Publicly available document.
- DTSC. 1994. Preliminary Endangerment Assessment Guidance Manual. January. Document not provided. Publicly available document.
- DTSC. 1996. Guidance for Ecological Risk Assessment at Hazardous Waste Sites and Permitted Facilities, Part A: Overview. State of California, California Environmental Protection Agency. July. Document not provided. Publicly available document.
- United States Environmental Protection Agency (USEPA). 1989a. Risk Assessment Guidance for Superfund (RAGS). Volume I: Human Health Evaluation Manual (Part A), Interim Final, EPA/540/1-89/002. December.
- USEPA. 1989b. Risk Assessment Guidance for Superfund. Volume II: Environmental Evaluation Manual. Interim Final. EPA/540/1-89/001A.
- USEPA. 1991a. Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors.
- USEPA. 1991b. Role of the Baseline Risk Assessment in Superfund Remedy Selection Decision, OWSER Directive 9355.0-30.
- USEPA. 1992a. Final Exposure Assessment Guidelines.
- USEPA. 1992b. National Toxics Rule Criteria to Protect Freshwater Aquatic Life in California Waters. Criterion for Continuous Concentration (CCC). 40 CFR 131.36.
- USEPA. 1993a. Wildlife Exposure Factors Handbook, Volume I of II. Office of Research and Development. EPA 600/R-93/187a. December.
- USEPA. 1993b. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons. EPA/600/R-93/089.
- USEPA. 1996. Ecotox Thresholds. US Environmental Protection Agency. Office of Solid Waste and Emergency Response. EPA 540/F-95/038. January.
- USEPA. 1997a. Exposure Factors Handbook, Volume I: General Factors. Office of Emergency and Remedial Response. EPA/600/P-95/002 Fa. August.
- USEPA. 1997b. Exposure Factors Handbook, Volume II: Food Ingestion Factors. Office of Emergency and Remedial Response. EPA/600/P-95/002 Fa. August.

- USEPA. 1997c. Exposure Factors Handbook, Volume III: Activity Factors. Office of Emergency and Remedial Response. EPA/600/P-95/002 Fa. August.
- USEPA. 1997d. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments. Interim Final. June.
- USEPA. 1998. Guidelines for Ecological Risk Assessment. EPA/630/R-95/002F. April 14.
- USEPA. 1999a. Contact Laboratory Programs National Functional Guidelines for Organic Data Review. February.
- USEPA. 1999b. Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities. Volume Three. Peer Review Draft. Appendix C Media-to-Receptor Bioconcentration Factors (BCFs). EPA530-D-99-001A. August.
- USEPA 1999c. Data Collected for the Hazardous Waste Identification Rule. Section 10.0 Farm Food Chain and Terrestrial Foodweb Data. US Environmental Protection Agency, Washington DC, Contract No. 68-W-98-085, October.
- USEPA. 2000. Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California; Rule Part III. 40 CFR Part 131. May 18.
- USEPA. 2001. Risk Assessment Guidance for Superfund (RAGS), Supplemental Guidance for Dermal Risk Assessment, Interim.
- USEPA. 2002a. Guidance for Comparing Background and Chemical Concentrations at Superfund Sites. Office of Solid Waste and Emergency Response.
- USEPA. 2002b. Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites, OSWER 9285.6-10. December.
- USEPA. 2002c. Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites, OSWER 9285.6-10. December.
- USEPA, 2003. Guidance for Developing Ecological Soil Screening Levels. OSWER 9285.7-55. November.
- USEPA, 2004. Risk Assessment Guidance for Superfund (RAGS) Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). EPA/540/R/99/005.

- USEPA. 2005. Update of Ecological Soil Screening Level (Eco-SSL) Guidance and Contaminant Specific Documents. February-March 2005.

- USEPA. 2007. Guidance for Developing Ecological Soil Screening Levels (Eco-SSL). Attachment 4-1. Exposure Factors and Bioaccumulation Models for Derivation of Wildlife Eco-SSLs. OSWER Directive 9285.7-55. Issued November 2003. Revised February 2005. Revised April 2007.

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ATTACHMENT 13
INTERIM MEASURES COMPLETED

DATE	NAME	ACTION
1999-2000	Happy Valley Interim Measure	Over 1,600 cubic yards of soil and debris were removed from drainage containing metals/perchorate and geophysical surveys in support of ordnance investigation
2000	Former Sodium Disposal Facility (FSDF)	Over 20,000 cubic yards of material were excavated to remove elevated concentrations of dioxins, PCBs, and mercury.
2003 - 2004	Happy Valley Interim Measures	Approximately 8,500 cubic yards of perchlorate impacted soils and surficial weathered bedrock excavated during removal action primarily from the southern Happy Valley Drainage area. Approximately 8,000 cubic yards are undergoing biotreatment of perchlorate.
2004	Building 203 Interim Cleanup Measure	Interim measures were performed north of Building 203 to remove mercury-impacted soils to prevent migration of mercury in soil downslope. Approximately 3,000 cubic yards of soil and bedrock that contained mercury were excavated.

ATTACHMENT 14
RFI GROUP AREA REPORTS FOR SSFL

RFI Group Report Area

Group 1A - Boeing

Group 1B - Boeing

Group 2 - NASA

Group 3 - NASA & Boeing

Group 4 - NASA

Group 5 - Boeing & DOE

Group 6 - Boeing & DOE

Group 7 - DOE

Group 8 - Boeing & DOE

Group 9 - Boeing & NASA (DOE contribution)

Group 10 – Boeing

Eco/Large Home Range

Note: Group 1A, 2, 4, 5, 6, 8, and 10 Reports were received as of April 1, 2009

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ATTACHMENT 15
SSFL RFI Group Report Areas

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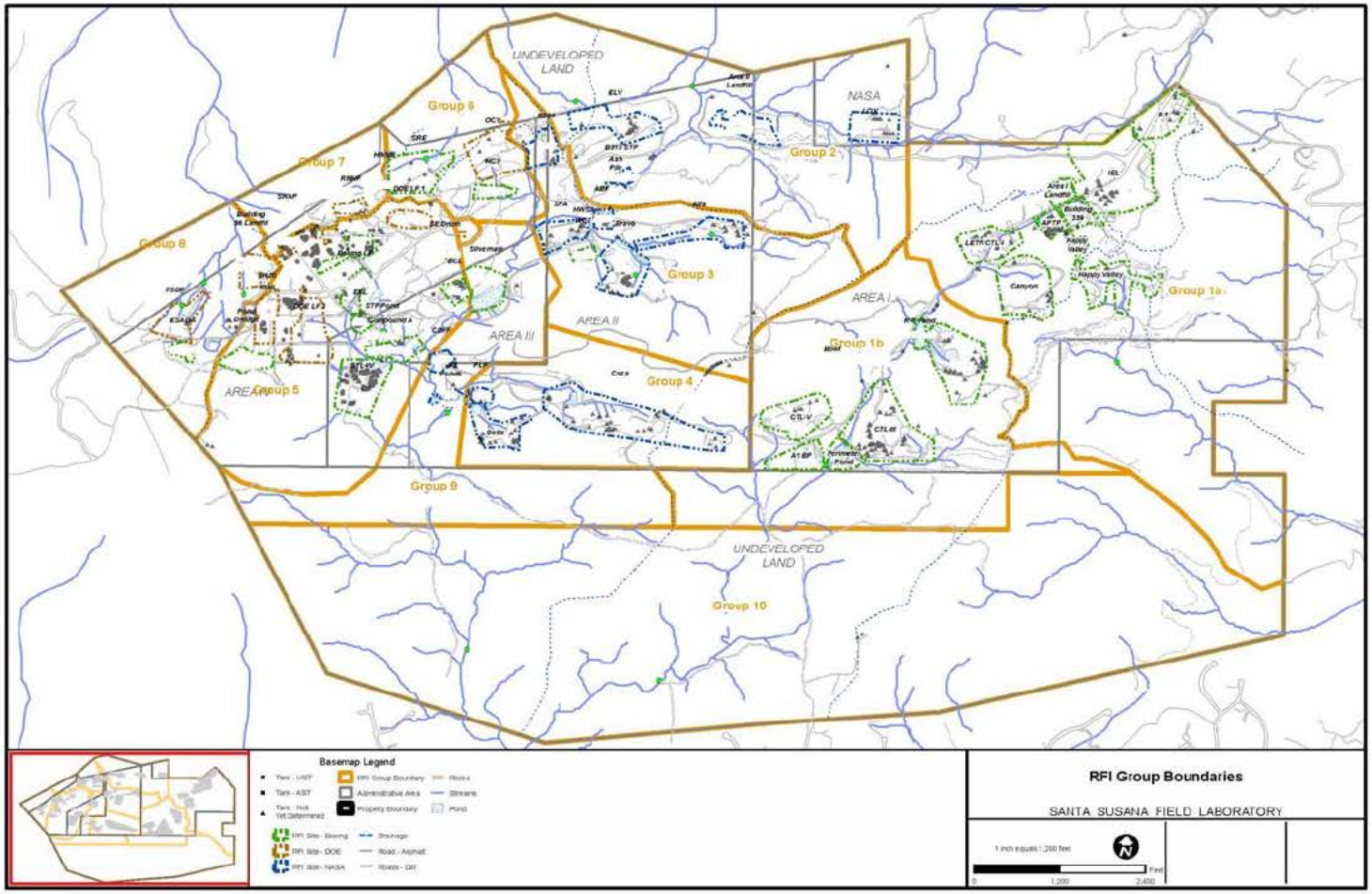

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Source: Modified from CH2MHill figure dated January 2008 showing RFI Group boundaries

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Administrative Orders on Consent

Presentation to the
DTSC Public Participation Group
May 25, 2011

Administrative Orders on Consent: A Path Forward

- Represent a compromise
- Resolve disagreements over interpretations and implementation of SB 990 (Kuehl, 2007)
- Accelerate the process to more quickly get to cleanup
- Provide certainty and eliminate concerns about the unknown outcome of the cleanup process
- Take advantage of U.S. EPA's ongoing site survey and soil sampling work ***and*** U.S. EPA's expertise on radiological contamination

What are the Administrative Orders on Consent?

- The final agreements between DOE and DTSC and between NASA and DTSC
- Integrate the Agreements in Principle with cleanup and environmental review procedures
- Include key elements that govern the relationship between DOE and DTSC, and NASA and DTSC
- Establish the requirements as binding and enforceable

A Brief History

- 2007

  Legislature passed and Governor signed SB 990

  - Boeing Letter of Intent
  - Cal/EPA Secretary Letter of Intent (with community)
- 2008

  Discussed implementation details with RPs
- 2009

  Negotiated new agreement with RPs

A Brief History (continued)

- November 2009
  - Public comment period on agreement
  - Boeing tolling agreement
  - DTSC draft of agreement (based on community comments)
  - Boeing lawsuit

A Brief History (continued)

- <u>February 2010</u>

  High level conversations

  - Cal/EPA Secretary Adams, DOE Secretary Chu, NASA Administrator Bolden
  - Desire to resolve differences and find path forward

- <u>March 2010</u>

  DOE offer to “clean to background”

A Brief History (continued)

- March 2010 – August 2010

  Negotiate details of "clean to background"
  - What, who, how
  - Exceptions
  - Enforceability
- September 2010

  NASA agrees to use same approach

A Brief History (continued)

- September 2010
  - Public comment on Agreements in Principle
- October 2010 – November 2010
  - Public comment on draft Administrative Orders on Consent
- December 2010
  - Administrative Orders on Consent signed

What do the Administrative Orders on Consent do?

- Integrate the Agreements in Principle
- Clean up to Background Levels
  - No contaminated soils to be “left in place”
  - No contaminated soils to be buried or landfilled on-site
- Direct use of Detection Limits
  - For chemicals = reporting limit
  - For radionuclides = minimum detectable activity

What do the Administrative Orders on Consent ***NOT*** do?

- Do not bypass other requirements/laws
  - CEQA
  - Endangered Species Act
  - Historic preservation

- Do not include groundwater or soils being contaminated by groundwater

How will the groundwater be cleaned up?

- The 2007 Consent Agreement (including Boeing, DOE and NASA) is still in effect for groundwater
  - Boeing, DOE and NASA have been and will continue their groundwater investigation and cleanup responsibilities
  - Groundwater (and soils being re-contaminated by groundwater) will be taken care of with the groundwater cleanup

Public Participation

- Public will have an opportunity to review and comment on ***all*** draft plans and reports
- DTSC to host technical roundtable sessions on key activities and work phases
- PPG will be asked for its input at key decision points
  - DTSC approval of key documents (at a minimum)
    - Lookup Tables
    - Characterization Report
    - Remedial Action Implementation Plan
    - Completion Report

California Environmental Quality Act

- CEQA Scoping to begin in 2011
- CEQA analysis documents to be made available for public review and comment at the same time as the draft Soils Remedial Action Implementation Plan
- Analysis to take into account mitigation described in Plan

Funding

- Investigation and cleanup activities to be funded by DOE (or NASA)

- DTSC oversight (and USEPA activities) to be fully funded by DOE (or NASA)

Regulatory Oversight

- Characterization and cleanup (for both chemicals and radiologic contaminants) of both soils and groundwater are subject to DTSC approval

- U.S.EPA available in a vital technical consultative/advisory role

US EPA Role

- Continue with radiologic background study and survey of Area IV and Northern Buffer Zone
- Provide local background values and reporting limits for radionuclides
- Provide “split” samples to DTSC during its Area IV/Northern Buffer Zone soil sampling
- Conduct post cleanup radiation assessment to verify cleanup
- Verify that backfill/replacement soils do not exceed local background

Summary Judgment Order (Judge Conti Decision)

- DOE cannot transfer ownership or possession, or relinquish control over any portion of Area IV until it completes an EIS
- The Court retained jurisdiction until DOE has met its legal obligations
- DOE and DTSC to seek and obtain the support of the plaintiffs in applying for relief from the court's order to allow the AOC to be carried out

NASA Administrative Order on Consent

Primary Differences

NASA AOC v. DOE AOC

- Area II and portion of Area I
- NASA to focus primarily on chemical contaminants
  - If radiological contamination is discovered, sampling and disposal plans developed as needed
- No role for US EPA (no ongoing investigation or survey work)

Primary Differences
NASA AOC v. DOE AOC

- Investigation/chemical data
  - Continue with investigation activities underway
  - DTSC to identify data gaps and direct data gathering

Primary Differences

NASA AOC v. DOE AOC

- Confirmation sampling protocol to be developed (similar to DOE's)
- Investigation and cleanup activities to be funded by NASA
- DTSC oversight to be fully funded by NASA

Boeing Lawsuit
Recent Court Decision

- DTSC will continue to implement the Administrative Orders on Consent
- DTSC will appeal the court's decision
- DTSC will continue efforts to reach resolution with Boeing

Questions?

From:	Christine Rowe
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01); Fellows, Merrilee (HQ-LD000); GROMAN, JENNIFER A. (HQ-LD020)
Subject:	NASA SECTION 106 AND DEIS COMMENTS - PART 1
Date:	Tuesday, October 01, 2013 4:21:14 AM
Attachments:	NASA SANTA SUSANA FIELD LABORATORY DEIS AND SECTION 106 COMMENTS PART 1 CR.pptx

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Dear Mr. Elliott,

I recognize that the U.S. Government has shut down, and you will not be able to respond to whether you have received this document or not.

I sincerely hope that the PEOPLE make it clear to their representatives and to our President what the impact is on their lives.

I have broken the Power Point that I tried to submit yesterday into two parts. I also tried to reduce the resolution.

Attached is Part 1 of the two parts of my Power Point for my Section 106 comments and these comments would apply to the NASA DEIS as well.

Respectfully submitted,

Christine L. Rowe
NASA SECTION 106 Consulting Party
October 1st, 2013

NASA SANTA SUSANA FIELD LABORATORY

{

DRAFT ENVIRONMENTAL IMPACT STATEMENT
SECTION 106
COMMENTS
SEPTEMBER 30 2013
PART 1

THE SITE OF THE NASA SANTA SUSANA FIELD LABORATORY IS THE SUM OF ITS GEOLOGICAL HISTORY PAST AND PRESENT, OTHER NATURAL FORCES, THE PRESENCE OF ITS BIOLOGICAL ENVIRONMENT, THE OCCUPANTS OF ITS DISTANT PAST, AND THE IMPACT OF ITS MORE RECENT OCCUPANTS.

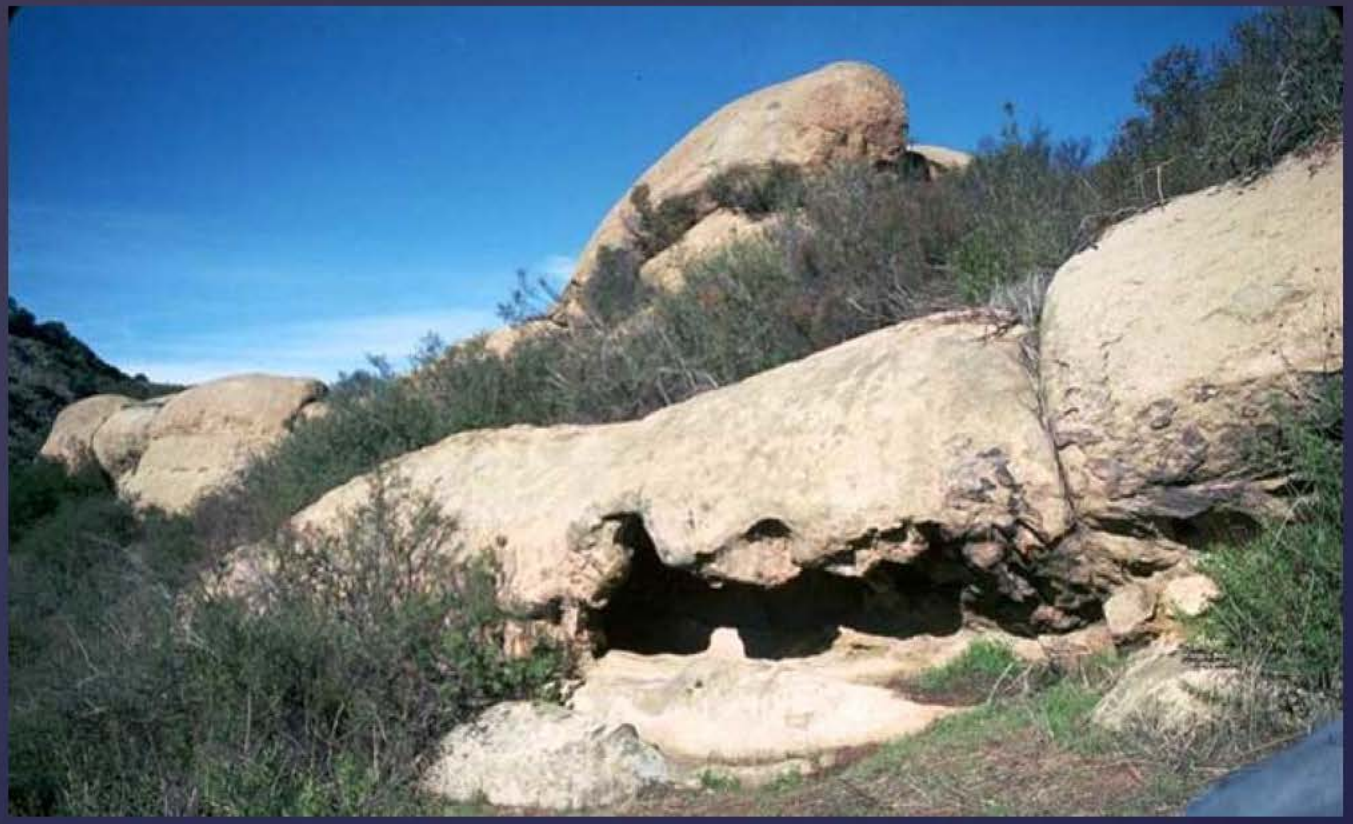
WHY ARE WE TRYING TO PRESERVE THIS PROPERTY?
WHAT IS ITS FUTURE USE?

UPLIFT AND COMPLICATED GEOLOGY THAT MAKES IT SO DIFFICULT TO KNOW THE PATHWAYS OF CONTAMINATION BENEATH THE SURFACE

THE SIMPLE NATURAL BEAUTY THAT CAN GROW IN A ROCK OUTCROP

GEOLOGY AND A SIMPLE SNAG
SNAGS ARE HABITATS OR POTENTIAL NESTING AREAS

THE NATURAL ENVIRONMENT PROVIDED SHELTER TO ITS EARLIEST INHABITANTS



IT IS THE COMBINATION OF ALL OF THE FACTORS RELATED TO THIS SITE – THE GEOLOGICAL THAT PROVIDES SHELTER, THE BIOLOGICAL THAT PROVIDED FOOD SOURCES, THE LOCATION OF WATER, THAT EVENTUALLY LEAD TO THE SACRED USE OF THIS SITE.

SOIL SAMPLING AND REMEDIATION

- DO WE NEED TO SAMPLE IN KNOWN ARCHAEOLOGICAL SITES TO PROTECT HUMAN HEALTH AND THE BIOTA?
- WE SHOULD AVOID ALL KNOWN ARCHAEOLOGICAL SITES IF IT IS POSSIBLE TO DO SO.

NATURAL BURNS CAN CAUSE DIOXINS AND OTHER COMBUSTION BYPRODUCTS

- DESPITE NATURAL BURNS, NATIVE PLANTS AND NON NATIVE PLANTS ARE REBORN FROM THE ASHES

- NASA AOC = NASA NANO

- WILL ALL OF THE OAK TREES THAT WERE SPARED UNDER THE INTERIM SOURCE REMOVAL ACTION BE SPARED UNDER THE FUTURE CLEANUP?

From:	Christine Rowe
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01); GROMAN, JENNIFER A. (HQ-LD020); Fellows, Merrilee (HQ-LD000)
Subject:	NASA Section 106 and DEIS Comments - Part 2
Date:	Tuesday, October 01, 2013 4:30:58 AM
Attachments:	NASA SANTA SUSANA FIELD LABORATORY DEIS AND SECTION 106 COMMENTS PART 2 CR.pptx

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Dear Mr. Elliott,

Attached is Part 2 of my Section 106 and DEIS comments.

I was trying to show the beauty that I see at Santa Susana, and the importance of preservation of the archaeological and cultural as well as the historical in my comments and with my photos.

Respectfully submitted,

Christine L. Rowe
NASA SECTION 106 Consulting Party
October 1, 2013

NASA SANTA SUSANA FIELD LABORATORY

DRAFT
ENVIRONMENTAL IMPACT STATEMENT
SECTION 106 COMMENTS
SEPTEMBER 30 2013
PART 2

REMEDIATION AT ITS WORST

- UNDER AN IMMINANT AND SUBSTANTIAL ENDANGERMENT ORDER BY DTSC IN THE NORTHERN DRAINAGE, WHAT SHOULD HAVE BEEN A SIMPLE SURFACE JOB WENT FIVE TO TEN FEET IN DEPTH.
- THIS AREA – A BLUE LINE STREAM WITH KNOWN ARCHAEOLOGICAL SITES IN THE AREA - SHOULD HAVE BEEN MONITORED BY ARCHAEOLOGISTS AND NATIVE AMERICANS WHILE THIS EXCAVATION WORK WAS PERFORMED.

TEST STANDS

- TEST STANDS WERE BUILT INTO THE ROCK OUT CROPS. THIS WAS A TREMENDOUS ENGINEERING FEAT.
- BEDROCK IS EXCLUDED FROM THE ADMISTRATIVE ORDER ON CONSENT, THEREFORE AN ATTEMPT SHOULD BE MADE TO PRESERVE SEVERAL OF THESE HISTORIC STRUCTURES AND THEIR SUPPORT FACILITIES FOR FUTURE GENERATIONS.

ALPHA AND SUPPORT FACILITIES

- VIEWING STRUCTURES ENABLED RESEARCHERS TO WATCH TESTS IN A SAFE MANNER. IF A HISTORIC DISTRICT SUCH AS ALPHA CAN BE PRESERVED, SUPPORT STRUCTURES THAT ARE OF HISTORIC VALUE SHOULD BE INCLUDED IF THEY ARE NOT CLEARLY CONTAMINATED, AND THEY DO NOT PRESENT A POTENTIAL FUTURE USE HAZARD.

BRAVO

{ BRAVO AND ITS SUPPORTING STRUCTURES ADD TO ITS HISTORIC VALUE

RP-1

COCA

- COCA AND ITS SUPPORT FACILITIES ARE THE THIRD HISTORIC DISTRICT
- WHILE THE ENGINEERING SKILLS IN DESIGNING THIS STRUCTURE WERE TREMENDOUS, AND WHILE ITS USE IS VERY HISTORIC, THIS HISTORIC DISTRICT IS THE MOST CONTAMINATED OF THE THREE HISTORIC DISTRICTS
- FURTHERMORE, THIS FACILITY IS EXTREMELY RUSTY AND IT WOULD HAVE TO BE COMPLETELY REPAINTED AND THEN SEALED. THE LONG TERM MAINTENANCE COSTS WOULD BE THE MOST PROHIBITIVE TO FUTURE OWNERS.
- THEREFORE, I BELIEVE THAT OF THE THREE HISTORIC DISTRICTS, COCA IS THE ONE I WOULD NOT WANT TO MAINTAIN.

THE VIEW FROM THE SOUTH WITH COCA IN THE DISTANCE – HUMAN ENGINEERING AT ITS BEST

CONCLUSIONS

- THE PROPOSED FUTURE USE OF THIS PROPERTY IS OPEN SPACE OR PARKLAND.
- IT IS MY OPINION DUE THE ARCHAEOLOGICAL AND CULTURAL SIGNIFICANCE OF THIS SITE, THAT THE FUTURE USE OF THIS PROPERTY SHOULD BE PRESERVED IN A MANNER THAT ALLOWS FUTURE GENERATIONS TO LEARN ABOUT THE NATIVE AMERICAN HISTORY OF THE SITE.
- WE MUST CONSIDER THE SACREDNESS OF THIS PROPERTY TO THIS GENERATION'S NATIVE AMERICANS
- WE SHOULD ATTEMPT TO PRESERVE ONE OR MORE HISTORIC DISTRICTS FOR FUTURE GENERATIONS.
- AS A FUTURE PARK, BRAVO HAS THE LEAST STEEP CLIMB. IT HAS THE LEAST AMOUNT OF CONTAMINATION, AND IT HAS THE SMALLEST FOOT PRINT. IT IS IN THE BEST CONDITION OF THE THREE HISTORIC DISTRICTS.
- BRAVOS SIGNIFICANCE IN ENGINEERING IS ONE OF THE LONGEST AND ONE OF THE MOST SIGNIFICANT – PLEASE PRESERVE BRAVO AS MY NUMBER ONE CHOICE.

From:	Joel Dibiase
To:	MSFC-SSFL-EIS; dibiase@tamarac.com
Subject:	NASA SSFL DEIS
Date:	Wednesday, October 02, 2013 2:07:02 AM
Attachments:	NASA DEIS Letter.doc SSFL Cleanup-Alternative Comparison.pdf SSFL Cleanup-Truck Routes.pdf SSFL Excavation-per NASA.pdf SSFL Resources to Evaluate-per NASA.pdf

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Please see attached letter
- Karen DiBiase

October 1, 2013

Allen Elliott
SSFL Program Director
NASA MSFC AS01
Building 4494
Huntsville, AL 35812

RE: SSFL DEIS

Dear Mr. Elliott:

I have been a resident of Woodland Hills, CA, since 1988. I have worked in Chatsworth, CA, for the past 16 years and have visited Sage Ranch (near the Santa Susana Field Lab) with my sons' Boy Scout Troop for the past 5 years.

I would like to respond to the SSFL DEIS. I strongly suggest that an alternate choice for the proposed demolition and Environmental cleanup be considered. the proposed action of "cleanup to background levels" will destroy the local landscape, endanger already protected plant and animal life, be hazardous to the local community concerning the trucks removing soil and traveling through our local neighborhoods,

Page 2-36 from the SASA DEIS lists the offsite dumpgrounds for soil removed from the SSFL. These trucks will travel across the street from several schools, retirement homes, three shopping centers and one park before continuing on the freeways to the eventual dump site (between 51 miles and 712 miles from the SFL site). There is no mention anywhere in the DEIS stating how these truck will be covered, and therefore protecting the local neighborhoods. There is also no mention anywhere in the DEIS were "clean soil" will be acquired to replace 1/3 of what is removed. This still leaves a major hole in the ground.

I have attached several pages from NASA's own presentation in 2012 showing areas that will be harmed with the proposed "cleanup to background level". Please refer to attached file "excavation and disposal (Page 12)" showing up to 2 feet of soil being removed. Depending on the area, there is a potential of up to 20 feet of soil being removed. This picture demonstrates that more harm than good will be caused by removing soil to this level. Native plants and animals will not survive this type of destruction. This area is a migratory area for birds and animals that are protected and can not be diverted or relocated to other nearby areas.

Additional pages attached show that NASA is aware of the "historic properties" and the Native American sites in the area. These test site structures should be preserved for

future generations to show our nation's space technology. These test sites are not replaceable. Again, "cleanup to background level" will destroy this history of our area and can be replaced.

I reapectively submit that alternate cleanup or no action alternative be chosen (see page 2-35 of the DEIS).

Sincerely,

Karen DiBiase
20525 Aetna St.
Woodland Hills, CA 91367
DenKarDib@msc.com

List of Resources to Evaluate

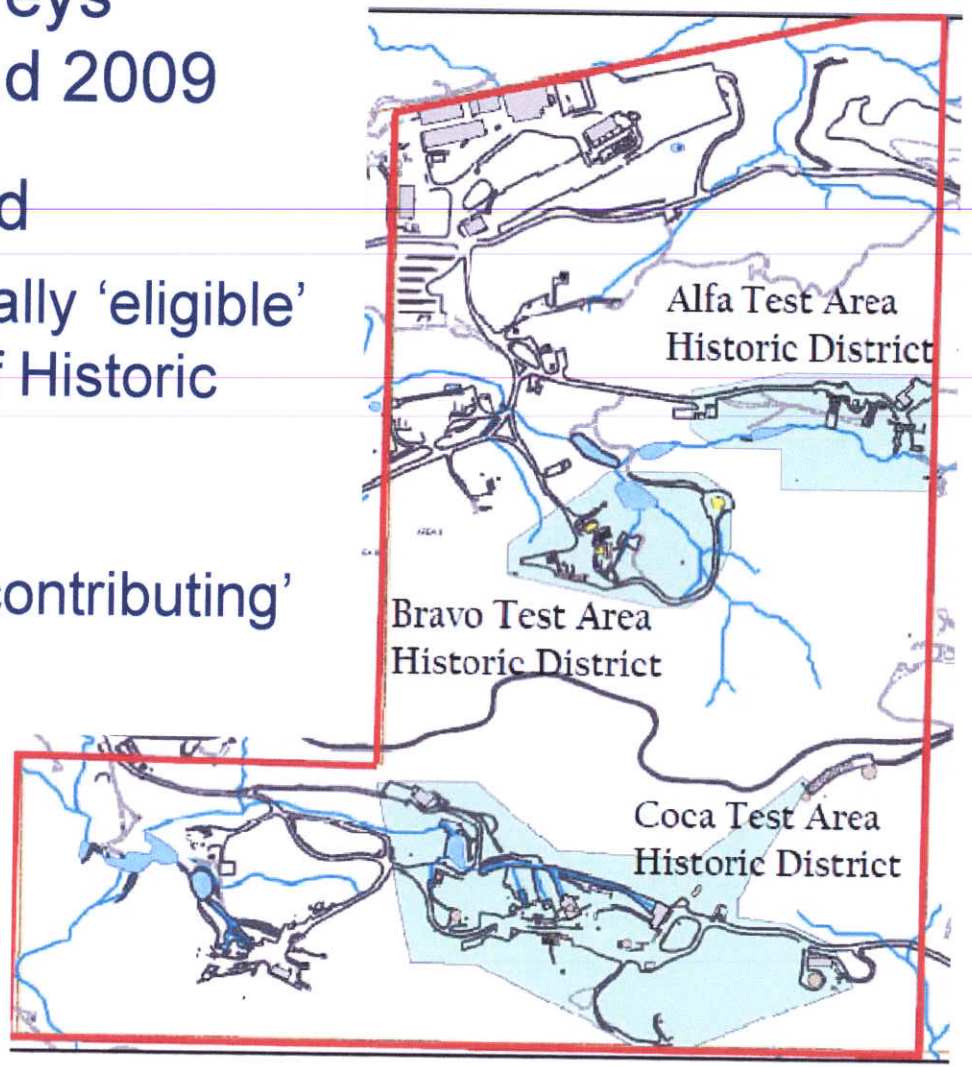
NEPA requires federal agencies to consider environmental effects that include, among others, impacts on social, cultural, and economic resources, as well as natural resources.

- Air Quality
- Biological Resources
- Cultural, Historic, and Archaeological
- Environmental Justice
- Geological Resources
- Greenhouse Gas
- Hazardous Materials / Hazardous Waste
- Health and Safety
- Infrastructure and Utilities
- Land Use
- Noise
- Paleontology
- Socioeconomics
- Transportation
- Water Resources

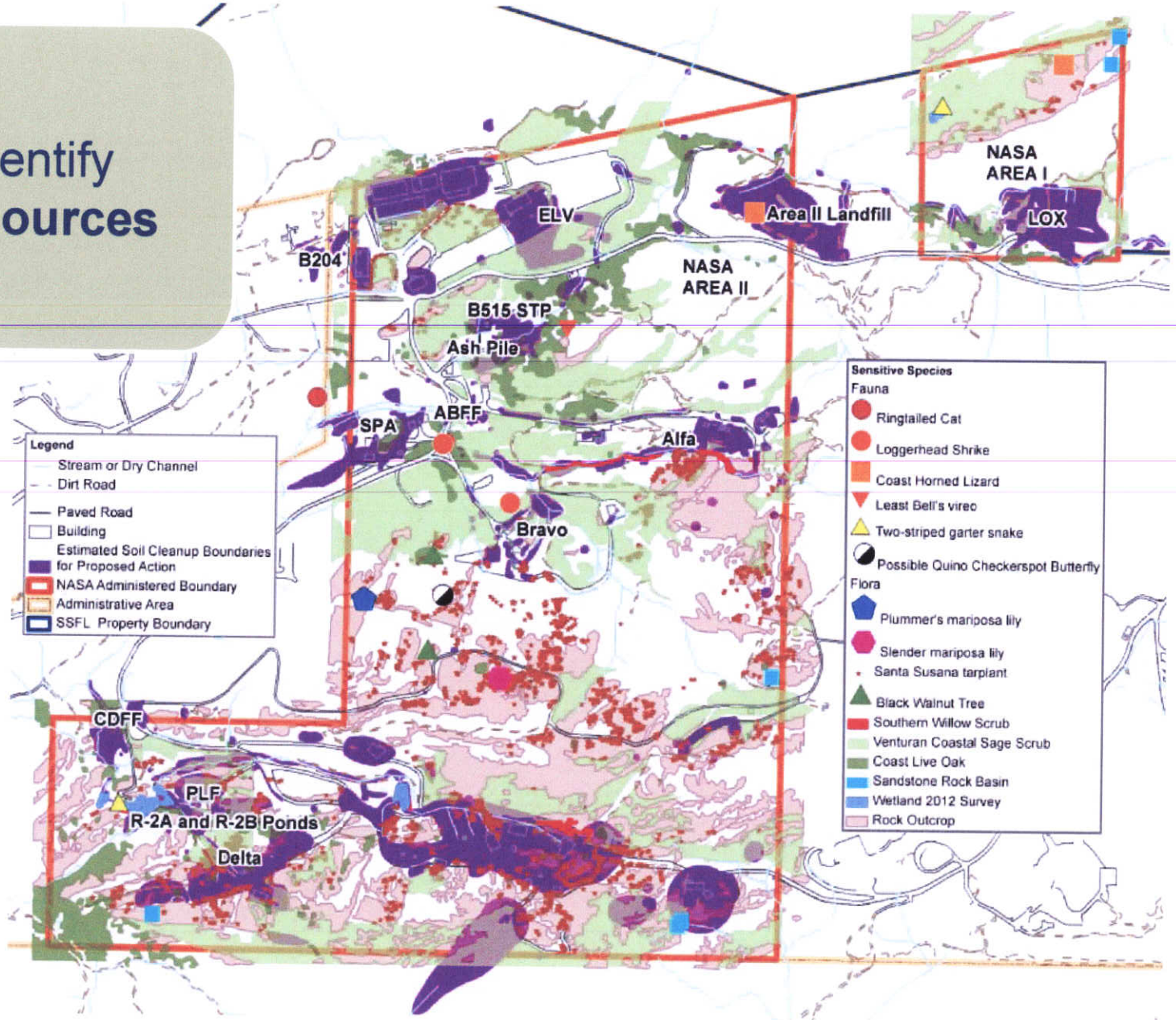
Historic Properties on Area II

Two Historic/Structural surveys were performed in 2007 and 2009

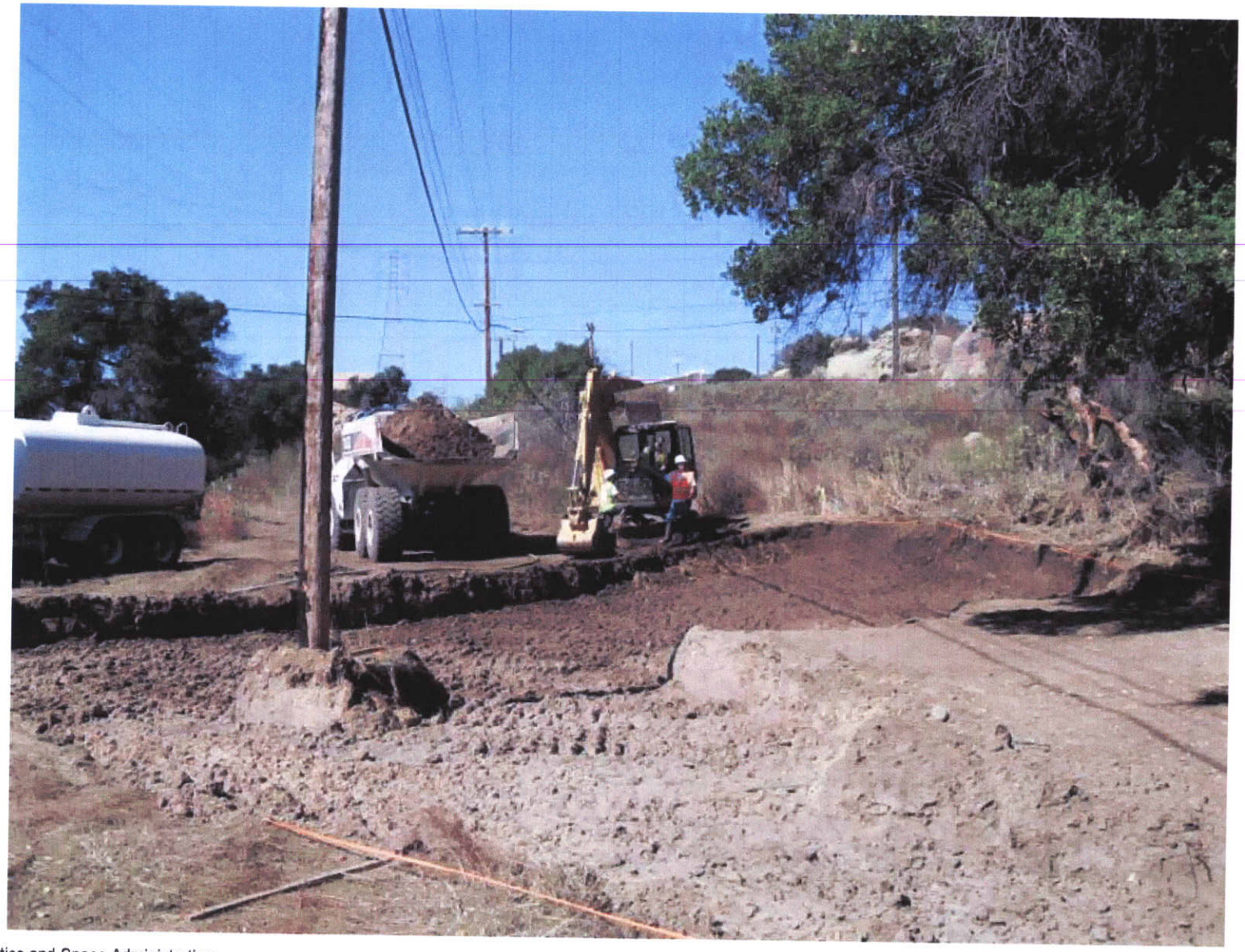
- 3 historic districts identified
  - 9 structures found individually 'eligible' for the National Register of Historic Places (NRHP)
  - 27 structures considered 'contributing' to the historic districts

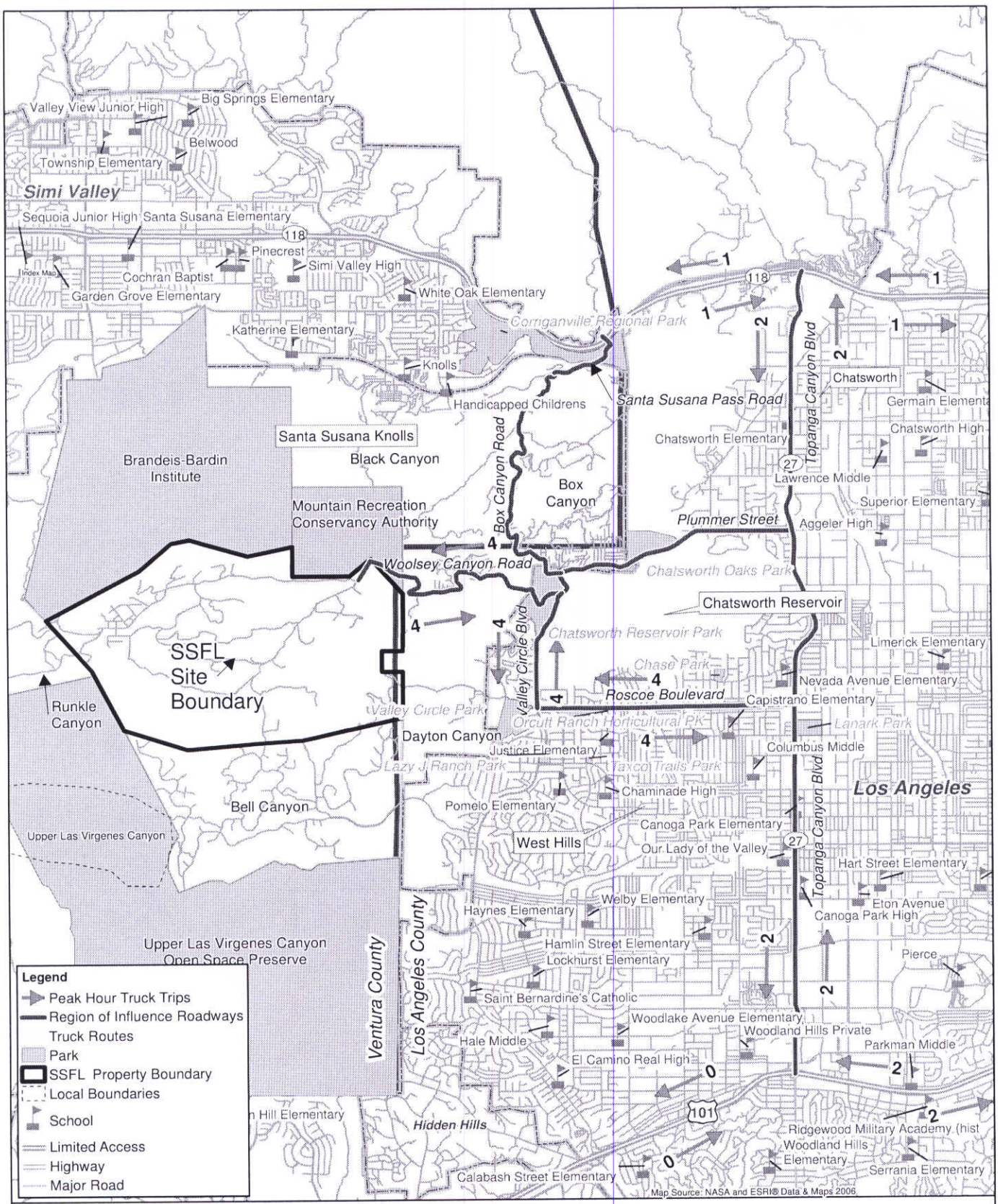


Identify **Resources**



Excavation and Disposal





Map Document: O:\NASA\SSFL\maps\EIS_2011\TruckRoute_Schools_Excav_Disp_Treat.mxd

Figure 4.5-3
Excavation and Disposal plus Onsite Treatment
Proposed Truck Routes, Truck Trips, and Local Schools
NASA - Santa Susana Field Laboratory
EIS for Proposed Demolition and Environmental Cleanup

TABLE 2.4-1
Alternatives Comparison
NASA SSFL EIS for the Proposed Demolition and Environmental Cleanup

Technology	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Description	Demolition, Soil Cleanup to Background Levels, Groundwater Cleanup	Demolition, Soil Cleanup to Suburban Residential Look-Up Table Values, Groundwater Cleanup	Demolition, Soil Cleanup to Commercial/Industrial Look-Up Table Values, Groundwater Cleanup	Demolition, Soil Cleanup to Recreational Look-Up Table Values, Groundwater Cleanup	No action taken for demolition, soil, or groundwater remediation other than currently approved activities
Meets the 2010 AOC Commitments	Yes	No	No	No	No
Cubic Yards of Soil Remediated	500,000	182,000	92,000	58,000	0
Acres of Soil Removed	105	18	10	6	0
Total Trucks Required for Soil Removal (assuming soils are hauled offsite)	26,441	9,568	4,860	3,031	0
Frequency (trucks per day) for Soil Removal	53	19	10	6	0
Backfill Volume (yd^3) —1/3 of total volume	167,000	61,000	31,000	19,000	0
Total Trucks Required for Backfill Hauling (assuming backfill sourced offsite) [a]	8,814	3,189	1,620	1,010	0
Frequency (trucks per day) for Backfill Hauling [b]	18	6	3	2	0
Hauling Duration (months)	23	23	23	23	0
Daily Material Handled (tons per day) [b]	1,698	614	312	195	0

Notes:
[a] Assumes truck capacity of 19 yd^3/truck or 24 tons/truck
[b] Assumes completion by the end of 2017

From:	Elisabeth Landis
To:	MSFC-SSFL-EIS
Subject:	NASA SSFL DEIS
Date:	Tuesday, October 01, 2013 7:08:42 PM
Attachments:	CNPS Comments on NASA SSFL DEIS,20131001.doc SSFL Final Draft Orange Group Alternatives 062412.pdf

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See the attached documents:
1) CNPS Comments on NASA SSFL DEIS, October 1, 2013

2) The Orange Group Alternative for the DOS SSFL DEIS

Betsey Landis, State California Native Plant Society Delegate for the
Los Angeles / Santa Monica Mountains Chapter

California Native Plant Society

Los Angeles / Santa Monica Mountains Chapter

3908 Mandeville Canyon Road
Los Angeles, California 90049
October 1, 2013

Allen Elliott
SSFL Program Director
NASA MSFC AS01
Building 4494
Huntsville, Alabama 35812
e-mail: msfc-ssfl-eis@mail.nasa.gov<mailto:msfc-ssfl-eis@mail.nasa.gov>

RE: Santa Susana Field Lab Draft Environmental Impact Statement

Dear Sir:

California Native Plant Society is a state-wide organization. The Los Angeles / Santa Monica Mountains Chapter has about four hundred members in the San Fernando Valley, Simi Hills and Santa Monica Mountains. We are actively involved in the process of determining how best to "clean up" the Santa Susana Field Lab site.

We have the following comments and questions concerning NASA's Santa Susana Field Lab (SSFL) Draft Environmental Impact Statement (DEIS).

Comments and Questions:

1. Why is there no environmentally superior alternative in this DEIS?

2. Isn't an EIS supposed to provide several alternatives utilizing different approaches to minimize environmental impacts? The DEIS admits the two proposed alternatives both have severe environmental impacts.

2. Why are there only two alternatives (No Action or Soil Removal and Structure Demolition) proposed in this DEIS?

3. If the AOC and Consent Order previously described require vegetation removal, soil removal to the sandstone bedrock, destruction and destabilization of the site with resulting long-term severe air pollution (dust and sandstorms), water pollution (silted flows, mudslides), changes in groundwater retention and natural drainage patterns, firestorms swept by high winds through weed-choked arroyos, and damage to urban infrastructure such as roadbeds, why doesn't this DEIS include an environmentally superior alternative that includes a modification of the AOC and Consent Order to fix 2017 as the timeline for scheduling and beginning a short- and long-term set of remediations?

4. The best management way to do the "clean up" is to retain the native vegetation, the natural drainages and as much of the soil as possible. This would protect the health and well-being of the urban population in the vicinity of the SSFL site, as well as protecting all the natural and cultural resources: important native American sites, resident and visiting wildlife, the vital wildlife linkage between the Santa Monica Mountains and Los Padres National Forest, and the natural vegetation supporting migratory and native bird populations.

5. Air Quality- Wouldn't the loss of mature oaks, shrubs and other native vegetation result in increased dust/sand storms in residential areas, not only from the site itself, but from the surrounding hills to the north and northeast of the site? This area is very windy. Leafy canopies act as dust catchers. Extensive root systems retain water and nutrients, supporting a complex understory that maintains healthy habitats and supports a rich biodiversity of species. Wouldn't the removal of these complex native habitats and the organism-filled soil system result in an invasion of non-native flammable plant species, raising the frequency of wildfires?

6. Biological Resources- Where is the inclusion and discussion of a federally-listed endangered plant, Braunton's Milkvetch (*Astragalus brauntonii*) in this DEIS? Where is a discussion of the uses of the habitats on this land by many species of fauna, from mountain lions to birds and raptors, reptiles and many pollinators. SSFL is a valuable traditional resting, nesting and foraging location for migrating fauna. How many species may perish if the vegetation and water sources are destroyed?

6. Greenhouse Gas Emissions and Carbon Sequestration- Does NASA realize the high carbon sequestration of the native vegetation on the site, e.g. long-lived Coast Live Oak (*Quercus agrifolia*), chaparral shrubs that resprout from their root collars or root systems (*Quercus berberidifolia, Malosma laurina* et al) over and over again for possible hundreds of years? Removing this native vegetation will cause a huge release of carbon into the air. Restoring the carbon-sequestering underground root systems to their current state would take centuries. Isn't one short-term impact the immense soil removal proposed, involving large numbers of greenhouse gas emitting machinery? How does that impact local air quality? Isn't a better choice to remediate most of the contamination on site? NASA should consider some useful remediation methods being developed at two local universities under contract to DOE.

7. Hazardous Materials / Hazardous Waste- How can the DEIS say that this is a minor impact? Why are the following facilities on a list to receive possibly hazardous soil from the SSFL site? Lancaster Landfill, Antelope Valley Landfill, Chiquita Canyon Landfill are all Class III municipal landfills which are not legally allowed to accept any hazardous materials. Why are DeMenno Kerdoon Wastewater Treatment facility in Santa Fe Springs and Lakeland Ridgeline Processing in Compton also designated as receivers of possibly hazardous soil from the site? Compton is in the middle of the Los Angeles Basin, Santa Fe Springs is in the eastern Los Angeles Basin. What are levels of contamination in the material being sent to these locations?
If the soil is not hazardous that is being taken to these facilities, why isn't the soil being left on the SSFL site?

8. Health and Safety- If neither of the alternatives offered by the NASA DEIS protects either the short-term or the long-term health and safety of the population (whether human, plant, animal, local geology, local hydrology or the ancient cultural heritage on the SSFL site) why is NASA even proceeding with this DEIS?

9. Land Use- The best use of the SSFL site is national park land, preserving magnificent sandstone geology, many unusual niche habitats of native flora and fauna, natural drainages supporting riparian habitat not only on the site but through lower elevations surrounding the site. As not only an outstanding natural resource, but as an ancient cultural heritage site where native Americans studied outer space and as a modern site of human endeavors to explore outer space, SSFL is worthy of careful, thoughtful remediation and restoration.

The basis for NASA's choices in alternatives needs to be reconsidered and the DEIS must be rewritten. An alternative written in a workshop on the DOS EIS is attached.

Sincerely,

Betsey Landis

Betsey Landis, State CNPS Chapter Delegate, LA / SMM Chapter

Date: June 28, 2012
Copies to:
Stephie Jennings
John Jones
John Wondolleck
Sandy Enyeart
Wendy Lowe

June 24, 2012

FINAL DRAFT

Remediation for Area IV and Northern Buffer Zone
Santa Susana Field Laboratory
Environmental Impact Statement
Alternatives Development Workshop
Orange Group
Warner Center Marriott, Woodland Hills, CA
June 9, 2012

SUGGESTED DISCUSSION TOPICS	*GROUP CONTRIBUTION*
Condition of the Property at Transfer • *What condition do you think the property should be in before transfer to Boeing* • *Describe what the property would look like* • *What would be left behind* • *What would the land look like*	At transfer, the property should be open space, highly invasive non-native plant species removed, re-vegetated with native habitat, preserving biological, botanical, cultural, and historical resources. All Federal, State, and local special status species will be protected. In particular, the major population of federally-endangered Braunton's milkvetch (*Astragalus brauntonii*) growing on the southwestern hills in Area IV will be undisturbed and protected, as will the major populations of Santa Susana tarweed (*Deinandra minthornii*) growing in the northern portion of Area IV. Smaller populations of Santa Susana tarweed growing on the rock outcrops around Area IV will also be protected from disturbance. The SSFL property will have a visitor's center focusing on history and educational issues relevant to the site. Replacement nesting/roosting structures shall exist on the site. (See Structure/Infrastructure below.)
Structure/Infrastructure • *Removal of uncontaminated debris, slabs?* • *Retain any structures for historic preservation purposes?* • *Approach, sequencing, how to prioritize* • *On-site storage of debris (pending transport to disposal) – where, how* • *Sorting of debris for disposal*	Remove all contaminated structures and infrastructure that cannot be decontaminated in place on a cost-effective basis. Where possible, consider re-using non-contaminated structures for the visitor center. Removal and de-contamination priorities shall be based on toxic risk assessments. Known or newly discovered historical /cultural sites shall be left undisturbed and be protected. Short-term (measured in days or weeks, not months) on-site storage of containerized debris shall be confined to unused paved parking lots. No land shall be cleared for the purpose. Sorting of debris shall be done at the site of removal. Recycling shall be given priority. Remove all unnecessary road paving. Maintain critical access roads and use existing, uncontaminated roads and parking lots to the extent possible. Assess need for remaining uncontaminated infrastructure using best management practices and /or on a case-by-case basis. Uncontaminated debris and slabs may be left in place. Replacement structures for sensitive species, such as raptors, shall be constructed near existing structures currently used by wildlife prior to their demolition.

SUGGESTED DISCUSSION TOPICS	GROUP CONTRIBUTION
Soil Contamination • *Thoughts regarding the balance between excavation and on-site treatment* • *How to minimize impacts on biological resources* • *How to minimize impacts on cultural resources* • *Prioritization, approach, sequencing under constrained budget scenarios* • *Contamination in the northern drainages?*	Toxicity is a major consideration in development of look-up tables. Conduct toxicity analyses on known areas of contamination. Prioritize clean-up areas by toxicity. Based upon prioritization, select best available treatment(s) for those most toxic areas first. Following that, focus on areas of lower toxicity. Minimize excavation by using a suite of alternative treatments, including on-site treatment, based on priorities (determined by toxicity analyses). This approach includes the assumptions: • That the prioritization process described above is carried forward through the look up table development and application; • Look up table numbers should be able to correlate with established EPA or State of California toxicity levels. The clean up process should be thoughtfully applied without deadline(s) as the driver. New treatment technologies should be continually sought. Cost-benefit analysis, based on toxic risk, shall be applied proactively and funds budgeted accordingly.
Disposal • *Preferences for radiological contamination* • *Preferences for radiological/chemical contamination (mixed)* • *Preferences for chemical contamination* • *Preferences for uncontaminated debris* • *Acceptability of recycling uncontaminated metals?* • *Prioritization, approach, sequencing under constrained budget*	For contaminated material: Subsequent to implementation of all treatment options, remaining contaminated materials would be taken to appropriate, licensed facilities. All other debris would be disposed of by landfill or recycling as appropriate, and include requirements as described in Structure / Infrastructure. Where necessary and feasible, local disposal, for example at Calabasas Landfill, is preferred over long-distance transport. Priorities should follow the recommendations indicated under Structure / Infrastructure, and cost-benefit analysis should be applied as indicated under Soil Contamination.

Transportation
• *Depending upon preferred disposal sites:*
  ○ *Transportation modes*
  ○ *Routes*
  ○ *Logistics, as needed*
  ○ *How to minimize traffic impacts*
  ○ *How to minimize noise?*
  ○ *How to minimize air emissions and climate impacts?*
  ○ *How to maximize safety*
• *Method and route for transporting fill material*
	Minimize number of loads and transportation of waste from site by truck by making every effort to treat soil on –site. Follow established routes and select route based upon contaminant types, concentrations, and load weights. For example, Chatsworth route may not be appropriate, because it is a narrow two lane road through a residential and light commercial area, and the road may not be designed to support hours of heavily-loaded truck traffic. Look to minimize shipping distances when selecting approved and /or licensed disposal locations. Best management practices should be utilized to protect the public health by minimizing noise and air pollution; trucks should be required to utilize new technologies such as alternate fuels, new hybrid engines, and/or engines with low emissions.
	Transportation activities should occur during the hours between 0900 and 1430 to avoid rush hours and school arrivals and departures., and to prevent accidents that could occur by trucks driving on Woolsey Canyon after dark
	.

SUGGESTED DISCUSSION TOPICS	GROUP CONTRIBUTION
Groundwater • *Technology options* • *Prioritization, approach, sequencing under constrained budget*	Expand GETS. Pump groundwater to prevent further contaminant migration. Explore data gaps on seeps and springs. Install vapor extraction system where necessary. Continue with tests that are in place, but accelerate groundwater treatability studies to include present and future technologies. Tritium in groundwater: allow natural attenuation with continued monitoring. Priorities should follow the recommendations indicated under Structure / Infrastructure, and cost-benefit analysis should be applied as indicated under Soil Contamination. Groundwater and soil treatment must be considered and treated at the same time to prevent recontamination of new soil by groundwater.

Additional Actions
• *What else might be necessary to accomplish the desired condition:*
  ○ *Backfilling?*
  ○ *Recontouring?*
  ○ *Revegetation?*
  ○ *Long-term monitoring?*
  ○ *Restoration of the northern drainages?*
• *Would your proposed alternative accomplish your desired condition?*
	Backfilling should be minimized, and its placement should be timed to lessen erosion potential.
	Backfill soils should be similar to what was taken from the contaminated area.
	Any recontouring should be minimal, should consider natural drainage patterns, and should be performed for remediation purposes only after soil disturbances.
	Re-vegetation should be site-specific, consist of local, native plant species and should allow for re-colonization of Area IV by native plant species from adjacent habitat.
	Long-term monitoring will be performed and will include monitoring of soils, drainages, historical, archaeological and biological resources that are protected or listed (or when these resources are discovered during the remediation process). Clean-up impacts to the Northern Buffer Zone should be minimized to the extent possible.
	Systematic monitoring of plants growing on contaminated soils should be instituted to evaluate the effectiveness of contaminant uptake, degradation, and potential adverse effects on consumer species.
	The group believes its suggestions for conditions at transfer can be accomplished.

SUGGESTED DISCUSSION TOPICS	GROUP CONTRIBUTION
Total Package • *What is most important, least important* • *What is urgent?* • *Brainstorm predictable impacts – positive and negative* • *Is the alternative as robust as possible?* *Any weaknesses that should be addressed*	Most important: Review results of site assessments and toxicity characterization. Prioritize clean up accordingly based upon toxicity to humans and biota. Least important: Meeting the 2017 deadline. Urgent: There is a need for rumor control and a reliable, responsive source of information dissemination to combat exaggerated claims of negative health and safety impacts emanating from the site. Possible positive impacts: Public health and safety will be protected; the SSFL site will be restored to open space; and native habitat will be protected and restored as necessary. There is a lessening of fear levels in surrounding communities, a growing appreciation of the natural beauty and cultural history of the site, and involvement by local residents in staffing and in volunteering at the onsite Education Center. Possible negative impacts: Transportation of hazardous waste and non-hazardous waste and infrastructure and all transportation associated risks and drawbacks, including damage to the site environment, roads, etc., health and safety impacts for the community living in the area which include potential lung and other illnesses associated with traffic, the potential for accidents and spills, and noise. Increased contamination of other areas (other landfills) that may be impacted by AREA IV and NBZ remediation. Maintenance and security considerations may impact long-term site access for humans and wildlife. Weakness to be addressed: There is a potential for failures of treatment methodologies, lack of clarity as to the end state desired, failures or obstruction due to political interference, failures or obstruction from a proliferation of misinformation, and / or deliberate disinformation campaigns.

From:	Fettus, Geoffrey
To:	MSFC-SSFL-EIS
Subject:	NRDC comments on Draft EIS
Date:	Tuesday, October 01, 2013 3:56:01 PM
Attachments:	NRDC Comments on NASA Demolition Draft EIS 1 Oct 2013.pdf

Please find attached NRDC's Comments on NASA's Draft EIS for SSFL. Please do not hesitate to contact me if there is any difficultly in opening the attached file.

Regards,

Geoff Fettus

Geoffrey H. Fettus
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Mr. Allen Elliott
SSFL Program Director
NASA MSFC AS01
Building 4494
Huntsville, AL 35812

Via e-mail to msfc-ssfl-eis@mail.nasa.gov

RE: Comments on Draft EIS for Demolition and Cleanup Activities at the Santa Susana Field Laboratory

Dear Mr. Elliott:

The Natural Resources Defense Council (NRDC) appreciates the opportunity to comment on the Draft Environmental Impact Statement for the cleanup of NASA's portion of the Santa Susana Field Laboratory (SSFL). NRDC is a national, non-profit organization of scientists, lawyers, and environmental specialists, dedicated to protecting public health and the environment. Founded in 1970, NRDC serves more than one million members, supporters and environmental activists with offices in New York, Washington, Los Angeles, San Francisco, Chicago and Beijing. NRDC has worked on nuclear cleanup issues for over four decades, and continues to be engaged in shaping U.S. law and policy on the nuclear fuel cycle.

NRDC has been involved in the SSFL matter for nearly a quarter of a century. We were parties in nuclear proceeding over whether the "Hot Lab" should be relicensed. More recently, we were the lead plaintiff, along with the City of Los Angeles and the Committee to Bridge the Gap, in a successful lawsuit in federal court against the Department of Energy (DOE) regarding compliance of its cleanup activities with the National Environmental Policy Act. We also played a role in the 2010 adoption of the Administrative Orders on Consent (AOC) entered into by NASA and DOE with the State of California, requiring the NASA and DOE portions of SSFL to be cleaned up to background. The Draft EIS was prepared for the activities NASA is to carry out under its AOC obligations. As NASA and the Council on Environmental Quality have made clear, the EIS is to examine ways to implement the requirements of the AOC and to mitigate impacts.

NASA has repeatedly re-affirmed its commitment to the AOC, indeed, as recently as September 20, 2013. In testimony before the U.S. House of Representatives' Committee on Science and Technology, Associate Administrator Richard Keegan stated:

> The draft EIS is open for public comment until October 1 and we expect the final EIS in November. NASA is *committed to fulfilling our obligations under the AOC*. There is sufficient funding in our FY14 request to accomplish all the activities that are planned for FY14 leading to fulfilling our commitments under the AOC. (emphasis added)

Congresswoman Julia Brownley, who represents communities near SSFL and serves on the Committee, followed up, stating, "[s]o, regardless then of what the IG may be recommending, *your commitment is still to the agreement with the AOC*." Mr. Keegan reiterated: "We are *committed to the agreement under the AOC*." (emphases added)

These reaffirmations of commitment to carrying out fully NASA's obligations under the AOC are gratifying, and NRDC's primary comment on the Draft EIS is simply to reinforce the expectation that NASA will do as promised in the AOC and its statements to Congress.

As to the draft EIS, we make the following suggestions:

- The draft EIS spends significant time on the issue of truck transportation and very little attention to the environmental issues associated with the contamination at the site that creates the need for the project in the first place. Such priorities are misplaced and should be rectified. Each and every contaminant present at the site in greater than background concentration amounts should be identified, their health effects described, the extent of the contamination for each specified, and the nature of the environmental media affected (surface soil, subsurface soil, groundwater, surface water, vegetation, buildings, etc.) described and analyzed.

- The history of violations of pollution discharge requirements should be examined, including identification of instances where limits and benchmarks for offsite migration of the pollutants were exceeded. Most important, the degree to which those limits were exceeded should be analyzed in detail.

- Health studies conducted onsite for workers and offsite for members of the public should be examined and analyzed, with special attention to any findings of potential detrimental effects from the toxic releases.

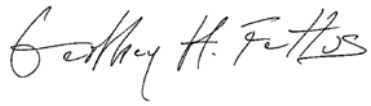
- Potential mitigation measures should be examined is substantially more detail, such as use of natural gas or electric trucks or use of rail for shipments, and plans for re-vegetation. The contaminated areas have long been degraded by NASA activities and are not pristine by any quantitative measure; once the decades of significant pollution have been addressed, thoughtful restoration plans should be commenced to attempt to restore it to the condition it was in before NASA's activities began.

- The Draft EIS appears to consider not demolishing some of the rocket test stands and other structures and simply declaring them historical. There is no analysis of how the agency could take such action and still comply with the requirements in the AOC to clean up all soil to

background. Much of the contamination is centered at the test stands and the agency cannot realistically clean up the soil without getting the test stands or similar structures out of the way. The discussion of the option of leaving these structures should be removed if NASA does not have a plan for cleaning up the contamination beneath them.

In conclusion, the most important matter is that NASA should, as it has promised Congress and the public, carry out all its obligations under the AOC.

Sincerely,



Geoffrey H. Fettus
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From:	Denise Duffield
To:	MSFC-SSFL-EIS
Cc:	Barbara_Boxer@boxer.senate.gov; grant.cope@boxer.senate.gov; bettina.poirier@boxer.senate.gov; dianne_feinstein@feinstein.senate.gov; Molly_O"Brien@feinstein.senate.gov; Elizabeth.Fenton@sen.ca.gov; William.Craven@sen.ca.gov; louise.rishoff@sen.ca.gov; nicole.bernson@lacity.org; councilmember.englander@lacity.org; damon.wing@ventura.org; linda.parks@ventura.org; bsaltsman@lacbos.org; zev@bos.lacounty.org; jdegonia@lacbos.org; Kelly.ThomasP@epa.gov
Subject:	Physicians for Social Responsibility comments on NASA SSFL DEIS
Date:	Tuesday, October 01, 2013 8:01:16 PM
Attachments:	PSR-LA Comments on NASA SSLF DEIS 10-1-13.pdf PSR-LA to NASA 9-19-11.pdf

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Dear Mr. Elliott,

Attached and copied below please find comments from Physicians for Social Responsibility-Los Angeles on NASA's Draft Environmental Impact Statement on the cleanup of the Santa Susana Field Laboratory. I have also attached, as referenced in the comments, the comments that were submitted in September 2011 regarding NASA's Notice of Intent on an SSFL EIS.

Sincerely,

Denise Duffield

--

October 1, 2013

Mr. Allen Elliott
SSFL Program Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

Via email: msfc-ssfl-eis@mail.nasa.gov

Re: Physicians for Social Responsibility-Los Angeles Comments on Draft Environmental Impact Statement for Cleanup of NASA Property at the Santa Susana Field Laboratory

Dear Mr. Elliott:

Physicians for Social Responsibility-Los Angeles (PSR-LA) represents over 4,000 physicians, health professionals, and concerned residents in Southern California. Our mission is to reduce threats to public health related to nuclear and environmental toxins.

PSR-LA has been involved in efforts to clean up the Santa Susana Field Laboratory (SSFL) since 1979, when we joined with community members and other advocates to stop nuclear work at the site and to remediate the radiological and chemical contamination in a manner that is fully protective of public health. As physicians and health advocates, we therefore strongly support the Agreement on Consent (AOC) reached with the California Department of Toxic Substances Control (DTSC) regarding the cleanup of Department of Energy's and NASA's portions of SSFL.

NASA’s portion of SSFL is extensively contaminated with very hazardous chemicals

that negatively impact health and the environment – this is the reason for the cleanup. The vast majority of the community that participated in the two public comment periods before NASA signed the AOC, over 3,700 people, made it clear they want SSFL strongly supported the AOC and its requirement of a cleanup to background. Yet, NASA's Draft Environmental Impact Statement (DEIS) barely mentions the contamination and its effects on health. The DEIS focuses almost exclusively on the purported negative impacts of cleaning up and never even attempts to substantively address the impact of the contamination on the environment and public that would continue were that pollution not remediated. NASA also fails to address mitigation measures seriously, rendering the DEIS grossly inadequate and making it appear to be designed to mislead the community into being more concerned about the cleanup than the toxic chemicals that plague the site that necessitate the cleanup.

That the DEIS omits an examination of the contamination and its impact on the environment is of grave concern considering the types of chemicals and quantities that pollute NASA's property. Tens of thousands of rocket tests were conducted at that NASA portion of SSFL, resulting in significant chemical contamination. Hundreds of thousands of gallons of trichloroethylene (TCE) were used to flush out rocket test engines and then allowed to percolate into the soil and groundwater. The site is also contaminated with perchlorate, dioxins, heavy metals, and volatile and semi-volatile organic compounds that can cause harm to human health.

These are very toxic materials, and NASA spilled large quantities of them. They can cause solid tumor cancers as well as leukemia, and developmental, genetic, neurological, and immune system disorders, and more. TCE can impair immune system function, damage liver and kidney, impairs fetal development and causes dizziness, lung irritation, headaches and poor coordination. In larger amounts it may cause impaired heart function, unconsciousness and death. Perchlorate, an oxidizer in rocket fuel that was used in ton quantities at SSFL, interferes with iodide uptake into the thyroid gland, causing hypothyroidism in mothers and negatively impacting proper childhood development such as decreased learning capability. Dioxins are carcinogenic and can cause reproductive, developmental, immunological, and endocrine side effects. PCBs can serious effects on the liver, immune, endocrine, and reproductive are classified as a probable carcinogen. These are only a few of the harmful contaminants on NASA's SSFL property. Not addressing them in the DEIS is misleading and irresponsible.

The DEIS should also have included information that SSFL's contamination has already impacted public health. Several studies have indicated elevated cancer rates associated with proximity to the site. An extensive, multi-year epidemiological study by the UCLA School of Public Health found significant increases in death rates among the most exposed workers from cancers of the lung, lymph, and blood systems. A study for the U.S. Agency for Toxic Substances and Disease Registry (ASTDR), Professor Hal Morgenstern found rates for key cancers in members of the nearby public increased the closer the person lived to SSFL. In another study for ASTDR, Professor Yoram Cohen found evidence of toxic exposures to the offsite population in excess of EPA standards. And, studies by cancer registries found elevated rates of bladder cancer associated with proximity to SSFL. In addition, a cluster of retionoblastoma cases, a rare eye cancer affecting young children, was identified within an area in the community that was downwind of the site. And the Public Health Institute's 2012 California Breast Cancer Mapping Project found that the rate of cancer is higher in Thousand Oaks, Simi Valley, Oak Park and Moorpark

than in almost any other place in the state.

The DEIS should have addressed the fact that if SSFL is not cleaned up, the site will continue to threaten nearby communities via toxic migration. There have been over a hundred exceedances of pollution standards in runoff from the site reported to the LA Regional Water Quality Control Board in the last few years. A TCE plume extends offsite. Perchlorate has been found in numerous wells in Simi Valley and in Dayton Creek in Dayton Canyon. Strontium-90 was found at Runkle Ranch. Other contamination has been found at Brandeis Camp, where a recent well tested over 100 times background for a radionuclide, and Sage Ranch where hundreds of cubic yards of toxic soil were removed. The headwaters of the Los Angeles River are located at the NASA portion of SSFL, and have already been impacted by stormwater run off from the contaminated site. This is why PSR-LA has advocated that a thorough remediation of SSFL is critical for the health and well-being of Southern Californians and the environment.

Asserting that the site may possibly be declared uninhabitable and public access restricted to a few hours of day hikes, and the groundwater declared forever polluted and its use barred, as some have suggested, would breach longstanding environmental requirements. Beneficial water supplies are supposed to be protected and when impacted, treated to return them to unpolluted status. Contaminated land is supposed to be remediated so that the environmental damage is undone. Polluting soil, groundwater and surface water are fundamental significant negative environmental impacts, and refusal to clean up that pollution would have continued significant negative environmental impacts. That is why cleanup is required. Furthermore, there are tens of thousands of people living near the site, so any claim about future use of SSFL is irrelevant. NASA cannot propose that all the people living near SSFL move out of their homes and declare their neighborhoods uninhabitable open space. The AOC requirements for full cleanup must be met and the EIS must provide a thorough description of the extraordinary damage to the environment NASA has done at the site and the beneficial impacts of restoring the site and undoing that damage.

PSR-LA became concerned that NASA was trying to break out of the AOCs in 2011, when NASA released its Notice of Intent to create an EIS that focused on cleanup standards. We made it clear, in our letter of September 19, 2011, that NASA had no discretion about the cleanup standard. Our letter, attached, stated:

“PSR-LA urges NASA to now put the matter to rest once and for all by explicitly limiting the scope of any NEPA review to that which is discretionary to NASA. This would involve completely dropping any consideration of what the cleanup standard should be, as that is not within NASA’s discretion. It would drop any consideration of whether to leave the structures in place, as it is DTSC which must determine if the structures have to come down to permit site characterization and cleanup of the contamination beneath them. It would limit any review to that which is discretionary to NASA about how to implement the cleanup to background; but since virtually all of the major implementation decisions for the cleanup are DTSC’s, not those of NASA the RP, the residual discretionary matters do not rise to the level of an EIS. Should there be any federal environmental review, strictly limited as we say to that which is discretionary to NASA, it should be, as required in the AOC, coordinated with DTSC, preferably as a joint EIS/EIR in which NASA’s role is limited solely to that which is discretionary to it.

Public health has long demanded the cleanup of the contamination that resulted from decades of poor practices by NASA. The AOCs were the breakthrough that so many people had worked so hard to obtain. NASA should do nothing that slows that process down or spreads any doubt about its full and complete compliance with the AOC, in its entirety, and in particular, the required cleanup to background."

Many other community members, elected officials, and organizations submitted comments to NASA as well, also urging that the EIS address how to cleanup to background, not whether to do so. The Council on Environmental Quality (CEQ), in a formal written opinion, made clear that NASA was not required by NEPA, as it had claimed, to examine cleanup standard alternatives. The California Department of Toxic Substances Control also wrote NASA that its proposed course of action would violate the AOC. In response, NASA promised to limit the scope of the EIS to how to implement the AOC, and a "No Action" alternative.

Yet the DEIS that NASA has released does in fact include several alternatives that would breach the AOC and associated federal and state law. NASA appears to have broken its word.

Evading Cleanup by Leaving Rocket Test Stands

In the DEIS, NASA suggests that the old rocket test stands not be demolished and instead be considered "historical." However, NASA is fully aware that much of the contamination is located at the test stands, and that there is no way to clean up the contamination without removing them. This is a direct violation of the AOC, and would also have impact on the surrounding communities as the contaminants continue to migrate offsite.

Misleading and Inadequate Information on Truck Traffic

The DEIS states how many fewer truck trips there would be if NASA does not cleanup the majority of the contamination. The DEIS also misleads by inflating truck trips, and failing to identify mitigation measures such as additional routes, spreading the trucks over the other routes available, or utilizing an existing fire road or rail spur. NASA could also use natural gas trucks or electric trucks to reduce diesel emissions and global warming effects, but these options are not examined in the DEIS. The DEIS provides no reference to the number of trucks that have gone in and out of the facility for decades, and that the truck trips used for cleanup would actually be a small fraction of that.

Failure to Address Impact of Contaminants on Environment

The DEIS claims negative impacts on biological resources, surface water and groundwater from cleaning up contamination, yet does not address harmful impacts of the pollution of these beneficial resources and the impact on the environment contaminated aquifer if one didn't clean up the aquifer, or if one allowed contamination to continue to pollute the streams leading off the property. The DEIS should address the environmental damage that NASA has done, the type and quantity of the contaminants left behind, what negative they have on health and ecological systems.

Ignoring Important AOC provisions

The DEIS states that the cleanup to AOC would damage the cave paintings at the Burro Flats area. But the AOC is entirely protective of cave paintings, and explicitly exempts from the cleanup to background requirement anything that might damage recognized Native American artifacts. Every time this issue is brought up at various

SSFL meetings, NASA remains silent and refuses to educate the community on what the AOC actually says, intentionally fanning the flames of a few deeply misinformed community members. The AOC allow allows for the protection of endangered species, yet the DEIS uses this issue to also suggest the cleanup is harmful.

The purpose of NASA's DEIS should have been to examine the impacts of the contamination, the impacts of cleanup, and the best ways to cleanup per the AOC that would mitigate potentially negative impacts. Instead, NASA refused to address the effects of the contamination, and deliberately portrayed the cleanup as unnecessary and harmful – when it is just the opposite that is true. The cleanup, per the AOC standards and provisions, is necessarily to protect public health, and myriads of mitigation measures were left unexplored.

PSR-LA urges NASA to uphold the commitment it made to the community, elected officials, and the public when it signed the AOC, so that current and future generations are not at risk from NASA's toxic legacy at SSFL. It must thoroughly and diligently live up to the AOC and its requirement of cleaning up to background, i.e. cleaning up all the contamination that can be detected.

Sincerely,

Denise Duffield

Denise Duffield
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The physician and health advocate voice for a world free from nuclear threats and a safe, healthy environment for all communities.

PSR LA
Physicians for Social Responsibility
Los Angeles

October 1, 2013

Mr. Allen Elliott
SSFL Program Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

Via email: msfc-ssfl-eis@mail.nasa.gov

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Ignoring Important AOC provisions
The DEIS states that the cleanup to AOC would damage the cave paintings at the Burro Flats area. But the AOC is entirely protective of cave paintings, and explicitly exempts from the cleanup to background requirement anything that might damage recognized Native American artifacts. Every time this issue is brought up at various SSFL meetings, NASA remains silent and refuses to educate the community on what the AOC actually says, intentionally fanning the flames of a few deeply misinformed community members. The AOC allow allows for the protection of endangered species, yet the DEIS uses this issue to also suggest the cleanup is harmful.

The purpose of NASA's DEIS should have been to examine the impacts of the contamination, the impacts of cleanup, and the best ways to cleanup per the AOC that would mitigate potentially negative impacts. Instead, NASA refused to address the effects of the contamination, and deliberately portrayed the cleanup as unnecessary and harmful – when it is just the opposite that is true. The cleanup, per the AOC standards and provisions, is necessarily to protect public health, and myriads of mitigation measures were left unexplored.

PSR-LA urges NASA to uphold the commitment it made to the community, elected officials, and the public when it signed the AOC, so that current and future generations are not at risk from NASA's toxic legacy at SSFL. It must thoroughly and diligently live up to the AOC and its requirement of cleaning up to background, i.e. cleaning up all the contamination that can be detected.

Sincerely,

Denise Duffield
Associate Director

The physician and health advocate voice for a world free from nuclear threats and a safe, healthy environment for all communities.

PSR LA

Physicians for Social Responsibility
Los Angeles

September 19, 2011

Mr. Allen Elliott
Marshall Space Flight Center
AS 01, Building 4494
Huntsville, AL 35812

Re: Santa Susana Field Laboratory Scoping Comments [76 FR 39443]

Dear Mr. Elliott:

We appreciate the opportunity to submit comments in response to NASA's Notice of Intent (NOI) regarding a possible Environmental Impact Statement (EIS) related to NASA's portion of the Santa Susana Field Laboratory (SSFL).

Physicians for Social Responsibility-Los Angeles (PSR-LA) is the Los Angeles chapter of the international physicians organization that won the Nobel Peace Prize in 1985 for its work on the nuclear threat. PSR-LA represents over 4,000 physicians, health professionals, and concerned residents in Southern California, a number of whom live within five miles of SSFL. PSR-LA works to reduce public health threats, with a special focus on environmental toxins, and has been involved with the SSFL matter since at least 1979, working for a cleanup of the contamination at the site that would fully protect public health.

We are concerned about the confusion created in the community by the poorly crafted NOI, which has led many to worry that NASA may be attempting to break out of its obligation under the recent Agreement on Consent (AOC) to clean up SSFL to background. NASA, recognizing the confusion it has created, has attempted to clarify matters in an August 9 letter to the California Department of Toxic Substances Control and in some public statements reaffirming its commitment to the AOC-required cleanup to background. We believe that NASA now needs to, in response to scoping comments, resolve the matter by either abandoning plans for an EIS on cleanup standards, a matter which is outside its discretion and thus doesn't trigger the National Environmental Policy Act, or, if an EIS is to proceed, limits its scope, as required by the AOC, to those matters related to the implementation of the required cleanup to background which are indeed within NASA's discretion.

The AOC

PSR-LA was and remains a strong supporter of the AOC that NASA entered into in December, 2010 with the DTSC. The AOC put to rest years of controversy in which NASA appeared to have been resisting cleaning up the contamination it created at the site. Two public comment periods were held on the proposed AOC, resulting in 1700 comments in the first period and 2000 in the second. The public support was remarkable—approximately 99% of the comments were in favor of the AOC. When, in December, the AOC was formally executed and took effect, there was palpable joy in the affected communities that at long last the contamination would be fully remediated and the threats to their health eliminated.

Over the years, various public health studies had identified potential impacts from the site's pollution. Studies performed by the UCLA School of Public Health in the 1990s found significantly elevated death rates from key cancers among SSFL workers associated with their exposure to the chemicals at the rocket test stands. Reviews by the Los Angeles Cancer Registry found elevated urinary bladder cancers in the

offsite population associated with proximity to SSFL. A review by the Tri-County Cancer Registry similarly found elevated lung cancer rates in Ventura County associated with proximity to SSFL. A study for the federal Agency for Toxic Substances and Disease Registry (ATSDR) by Professor Hal Morgenstern found indications of elevated cancer incidence for a number of cancer types associated with distance to SSFL. And a large study for ATSDR by a team of University of California experts led by Professor Yoram Cohen found that releases from the hazardous materials employed in the rocket testing facilities at SSFL exposed offsite populations to excessive levels of these materials that could result in deleterious health effects.

The AOC requires cleanup of NASA's portion of SSFL to background. That standard is not optional; the AOC says the cleanup "shall" be to background. NASA thus has no discretion about cleanup standard; the cleanup to background is mandatory, and NASA's role is solely ministerial, which does not trigger NEPA, which is limited to *discretionary* federal agency actions.

There are a few special circumstances identified in the AOC that are potential exceptions to the cleanup to background requirement – detection limits, Native American artifacts, Endangered Species Act matters — but NASA is not the decision-maker about any of them. DTSC is to determine detection limits and approve any exception to the cleanup standard that involves Native American artifacts, and the Endangered Species Act decisions are in the hands of the Fish and Wildlife Service.

Thus, NASA has no discretion to choose a cleanup standard—it is bound to cleanup to background by the AOC. Since NEPA is for discretionary federal agency actions, an EIS on which cleanup standard to employ is inappropriate. NASA has no discretion in the matter, and any implication that the scope of an EIS would include evaluating what cleanup standard will be employed needs to be remedied by narrowing the scope accordingly.

This is, of course, already made clear in the AOC, which requires that a NEPA review, if any needs be performed, shall be limited to <u>how</u> to implement the cleanup to background required by the AOC, not <u>whether</u> to cleanup to background or to some other standard. (AOC§4.2.1) NASA acknowledges this requirement in its clarifying letter to DTSC, but even if it didn't, it is part of the legally binding AOC and in consistent with NEPA's limits to discretionary agency actions.

Therefore, NASA should narrow the scope of any EIS to those matters that are within its discretion as to <u>how</u> to implement the required cleanup to background and drop any plan to consider a scope that includes what cleanup standard will be employed. However, virtually all of the major decisions about how to carry out the cleanup to background rest with DTSC, NASA's regulator. It will determine mitigation measures such as replanting, dust abatement, alternative truck routes, covering of truck loads, etc. Only the relatively inconsequential decisions about which DTSC does not weigh in would remain as matters for NASA, and those don't rise to the level that trigger NEPA, i.e., they are not *major* federal actions that can significantly impact the human environment.

NASA has no discretion over the cleanup standard matter, and thus can't do an EIS about it.[1] Nor does it have discretion about the major aspects of how to implement the cleanup to background. The remaining matters that are within its discretion do not rise to the level of an EIS.

<u>Even Absent the AOC, It Is DTSC, Not NASA, That Decides Cleanup Standards for SSFL</u>

NASA is a Responsible Party (RP), and RPs don't get to choose how much of their pollution they have to clean up. That is the responsibility of their regulator. In this case, that is DTSC. DTSC chooses the cleanup standard. That authority was delegated long ago to DTSC, and it covers regulation of federal entities such as NASA. NASA has long been under DTSC's regulatory authority for cleanup of SSFL. There thus is no discretionary NASA action about choosing a cleanup standard, and it can't do an EIS on that issue.

[1] The issue is not whether, if the fundamental decision is within an agency's discretion, it can, in addition to considering alternatives that are within its jurisdiction, analyze one or more additional alternatives that are not within its jurisdiction. The fundamental agency action, however, that triggers the NEPA review must be a decision that is the agency's to make. Here, the decision on cleanup standard is not a NASA decision, as discussed herein. NASA has no discretion to pick any cleanup standard. It must clean up to background. It therefore can't do an EIS to decide a cleanup standard.

The Building Demolition Issue

NASA's NOI proposed to consider two issues in an EIS: what the cleanup standard should be, and whether to demolish or leave in place various structures at the site such as buildings or rocket test standards. The first issue, as we have shown above, is outside NASA's discretion and inappropriate for inclusion in an EIS and should be eliminated from the scope. The second issue is in large measure also not within NASA's discretion, and to the extent it isn't, should also be eliminated.

The contamination at SSFL is centered to a significant degree around and beneath the buildings and test stands, because that is where the toxic materials were used and spilled, dumped, and otherwise released. To characterize the contamination will likely require the removal of those structures so that one can get at the soil beneath them to sample for the spread of the contamination. Additionally, cleanup will almost certainly require removal of the structures so one can get to the contaminated soil beneath them.

However, that decision is not NASA's to make. DTSC, as the regulator, is the decision-maker as to whether the buildings can somehow be left in place or must be removed so as to permit cleanup. As such, NASA has no discretion and inclusion of this issue in an EIS is inappropriate. The environmental implications of leaving the structures is DTSC's to consider and then decide. This issue should also be dropped from any contemplated EIS.

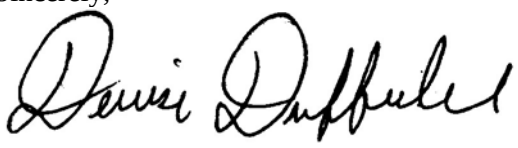
Conclusion

NASA created tremendous relief in communities residing near its contaminated SSFL site when, after years of resisting cleanup, NASA executed a legally binding AOC to clean the site to background. Its recent NOI was so poorly crafted that significant confusion has resulted in the community as to whether NASA was trying to break out of the AOC requirement to clean up to background. NASA, recognizing the confusion it created, has attempted to clarify the matter by a letter to DTSC and various public statements to the effect that it remains committed to the AOC's requirements of cleaning up to background and limiting any NEPA review to *how* to implement the required cleanup to background.

PSR-LA urges NASA to now put the matter to rest once and for all by explicitly limiting the scope of any NEPA review to that which is discretionary to NASA. This would involve completely dropping any consideration of what the cleanup standard should be, as that is not within NASA's discretion. It would drop any consideration of whether to leave the structures in place, as it is DTSC which must determine if the structures have to come down to permit site characterization and cleanup of the contamination beneath them. It would limit any review to that which is discretionary to NASA about how to implement the cleanup to background; but since virtually all of the major implementation decisions for the cleanup are DTSC's, not those of NASA the RP, the residual discretionary matters do not rise to the level of an EIS. Should there be any federal environmental review, strictly limited as we say to that which is discretionary to NASA, it should be, as required in the AOC, coordinated with DTSC, preferably as a joint EIS/EIR in which NASA's role is limited solely to that which is discretionary to it.

Public health has long demanded the cleanup of the contamination that resulted from decades of poor practices by NASA. The AOCs were the breakthrough that so many people had worked so hard to obtain. NASA should do nothing that slows that process down or spreads any doubt about its full and complete compliance with the AOC, in its entirety, and in particular, the required cleanup to background.

Sincerely,



Denise Duffield
Associate Director

From: Chester King
To: MSFC-SSFL-EIS
Subject: Re: Santa Susana Field Lab DEIS
Date: Tuesday, September 24, 2013 10:39:54 AM
Attachments: Burro Flats DEIS Cultural Resources.pdf

Dear Allen Elliott,
The attached should replace my earlier submittal. Ii differs only by having Draft removed from the beginning of the title.
Chester

From: Chester King <topangaac@verizon.net>
Date: Tuesday, September 24, 2013 8:22 AM
To: <msfc-ssfl-eis@mail.nasa.gov>
Subject: Santa Susana Field Lab DEIS

Dear Allen Elliott,
The attached pdf contains my comments concerning the Santa Susana Field Laboratory DEIS.
Chester King

Comments by Chester King concerning Draft Cultural Resources Study for Environmental Cleanup and Demolition at Santa Susana Field Laboratory, NASA Areas I and II, Ventura County, California

by Chester King 9-24-2013

I am a professional archaeologist and I specialize in the study of the prehistory of California. I have served as President and Vice-president of the Society of California Archaeology. I began studying the archaeology of southern California in 1960 and have continued to study the archaeology and ethnohistory of southern California native peoples until the present. I have written chapters of the Handbook of North American Indians volume on California produced by the Smithsonian Institution. My dissertation, *Evolution of Chumash Society*, was selected for publication in a series of 31 outstanding dissertations concerning the archaeology of North American Indians. My writings are frequently referenced, and I am recognized as a leading specialist in the field of California Native American archaeology and ethnohistory. I have concentrated on study of the Native American archaeology of the Santa Monica Mountains and the Simi Hills. I have conducted many archaeological studies for the Santa Monica Mountains National Recreation Area and have conducted surface surveys of lands administered by the MRCA adjacent to the project area. I have experience conducting inventory studies, significance testing programs, and data recovery programs for federal, state, and local agencies and private developers. Over the past several years, I have been studying beads, other ornaments, bone tools, and stone projectile points from collections excavated from project area Burro Flats site recorded as VEN-1072. The collections were obtained from a small central area of the site during excavations conducted in the 1950s by an archaeology society and a college field class. I have also visited project area site VEN-1072.

The discussion of archaeological sites in the DEIS is based on a report attached to the DEIS as Appendix C. The Appendix C study is inadequate. A study by archaeologists with local knowledge and experience that includes the results of subsurface testing and provides real estimates of the costs of a data recovery program is necessary to complete the EIS and make informed decisions concerning impacts to National Register eligible properties. The new report should be subject to public review and its recommendations should be included in a new DEIS that will also be subject to public review. The archaeologists who conduct the study should not be employed by a company that stands to benefit from the cleanup project.

The report does not adequately assess the project area

The most serious problem with the cultural resources report is absence of information necessary to assess the impact of the project on Native American sites. The report fails to describe all cultural resources that may be disturbed by the project. The report does not contain information adequate to design a data recovery program and estimate its cost.

The report relies exclusively on surface observations. Adequate assessment of the project impacts requires controlled archaeological subsurface testing to identify the boundaries, depths, and contents of archaeological deposits.

The report indicates artifacts were recorded as isolates. These isolates are apparently outside the areas described in the report as archaeological sites. The isolates are not described in the report. In my experience after subsurface testing or careful observation of the surface under good conditions near areas where 'isolated' artifacts were recorded during an initial surface survey, more than five artifacts are usually discovered. Isolates then gain the status of sites whose boundaries and significance need to be determined.

Surface observations by archaeologists are largely affected by ability to see the ground surface. Impediments include plant cover, leaf litter, presence of road fill or other recent deposits such as graded pads, recent grading, or presence of piles of rodent-hole back-dirt. Sometimes disturbance results in exposure of buried deposits at other times it results in burial of artifacts. Surface observations are also dependent on ability of archaeological crew to identify artifacts commonly observed on the surface of sites in the Simi Hills. In my experience, even well trained crews include some surveyors who observe more artifacts than other surveyors. After indications such as an artifact are discovered the degree of persistence in following leads often makes the difference between designating a find a site or an isolate. When artifacts are discovered the area around them should be carefully searched. If additional artifacts are found, the areas around them and on the same landform should be carefully checked. This may require walking or crawling transects no more than a meter apart. The report notes that a large portion of the landscape is bedrock and is devoid of soil and uses this as an excuse for not walking over parts of the project site. Bedrock at Burro Flats contains cupules, mortars and other culturally significant modifications, some of which are extensive. All areas of bedrock should all be carefully checked. The soil bodies between the bedrock should also be carefully checked, the description of survey procedures indicate some soil bodies may have been walked across once at best. Rockshelters that contain soil deposits are normally recorded as features and therefore as sites.

The report recognizes that it is inadequate. It admits site deposits may be present that would have been identified using standard techniques. It states:

> Plant Area I and Area II has some potential to result in adverse effects to buried archaeological resources. The areas possessing low to moderate sensitivity for buried deposits are within alluvial deposits, particularly Holocene-age sediments. Areas with a higher sensitivity for buried resources are near and within the boundaries of archaeological sites CA-VEN-1072, where known subsurface deposits have been documented in previous studies, and sites CA-VEN-1800 and CA-VEN-1803 [page C-51].

Also,

> Aside from the initial recordation, neither site CA-VEN-1800 nor site CA-VEN-1803 have been subject to further study and the depth of deposits is unknown. Important archaeological deposits with no surface expression may be buried beneath Holocene alluvial sediments.
>
> Appropriate measures, such as preparing a plan for unanticipated discoveries, should be implemented to address the possibility of impacts on buried resources from the undertaking [page C-52].

The report recommends developing plans to save information from undiscovered sites after they are discovered during earthmoving activities. If for instance a cemetery is discovered, a decision made on the basis of this DEIS to remove the soil containing the cemetery will result in destruction of the cemetery.

The EIS can't be complete until the impact of the project on all project area archaeological deposits is determined. It is necessary to use archaeological techniques traditionally used to determine the presence of archaeological deposits. The techniques should be adequate to demonstrate presence or absence of human activities. Conduct of an adequate number of controlled subsurface excavations with soil being sifted through fine mesh water screens, laboratory sorting by people experienced in the identification of artifacts found at local sites, study of significant soil constituents, and report preparation by people who have knowledge of local archaeology, can determine the presence or absence of site deposits in the project area. It should not be necessary for volunteers or paid monitors to pick up pieces of significant and sensitive site areas discovered after the review process while they are being destroyed during monitoring because a consultant did not adequately evaluate the project area. Monitoring is not adequate to recover information concerning many significant categories of artifacts or features.

The boundaries of the sites identified in the DEIS are based only on surface observations. In some cases the sites may be surrounded by bedrock and their boundaries appear to be clear. However, it is possible that the sites recorded in the project area are all parts of a larger site that may include VEN-1072 (VEN-1072 includes many previously separate sites now recorded as one large site as a consequence of an intensive surface survey). Possibly all surrounding bodies of soil contain archaeological materials.

In addition to determining the boundaries of sites, the cultural resource study needs to determine the scope and costs of archaeological data recovery programs. The report should contain enough information to allow archaeologists to design and estimate the costs of data recovery programs. These costs are largely dependent on volume of site deposits that are present and the numbers of artifacts and features

that are expected to be encountered. Information necessary to estimate the costs of data recovery can only be obtained by conducting excavations similar to those that will be conducted during data recovery.

The existing information is not adequate to estimate the cost of data recovery programs. If bids are sought using the available information, local experienced archaeologists will not be able to make bids because they will fear the consequences of underbidding. Only non-local archaeologists who make low bids on the basis of inadequate information will be chosen and the data recovery program will be inadequate, both because the archaeologists will not recognize the resources and they will not have adequate funds.

The Burro Flats area probably contains one or more cemeteries

The residential midden at VEN-1072, contains all of the types of artifacts and types of faunal remains found in residential sites in the area. The remains have similar relative frequencies to the remains in documented village sites. The size of the midden and distribution of temporally sensitive artifacts within the midden indicates the presence of several households with regular residence at the site. A cemetery was found 1000 feet from the contemporary Late Period residential deposit at the Medea Creek site in Agoura Hills and the cemetery could be located a similar or greater distance from the residential area at Burro Flats. No cemetery has been identified during archaeological excavations at Burro Flats and it is expected that one or more cemeteries (probably from different time periods) are present within or in the vicinity of the site in areas that have not been tested, or disturbed by development at Burro Flats. The cemetery or cemeteries may contain the bodies of many people including important leaders. A recent Section 106 study at a project in west Los Angeles avoided identification of a cemetery using the excuse of inability to test the site because of the presence of recently deposited overburden. Because it was not discovered during the planning phase, the cemetery containing over 500 bodies was removed at a cost of approximately five million dollars and there is no report of what was discovered. If the cemetery had been identified during the planning stage of the project, the creek could have been placed in its old channel adjacent to the cemetery in an area that is now open space without reducing the number of units developed or making significant changes in the development footprint. A similar situation could develop at Burro Flats where there is no excuse of difficulty caused by deep overburden. Testing is necessary to determine the significance of site areas and needs to be adequate to develop meaningful data recovery programs or design special avoidance programs if highly sensitive areas will be damaged by the project.

There are indications that the Burro Flats area served as the site of important festivals and may have been a trade center.

The main panel at the site includes what have been identified as *Ko-too-mut* poles (Edberg 1985). Merriam described a Tongva mourning ceremony at Tejon where the poles covered by pierced baskets were prepared and erected at the ceremony site and near the end of the ceremony were moved to and erected at the

cemetery. The people at El Escorpion possessed a song that probably organized their mourning ceremony. It is probable that ceremonies were held at the Burro Flats sites. People who attended ceremonies from settlements other than El Escorpion, including people from distant tribes such as the Mojave of the Colorado River and the Yokuts of the San Joaquin Valley (peoples who visited San Fernando Mission after the El Escorpion people were recruited there), probably camped during the festival at places in the Burro Flats area. Camps of visitors at ceremonies may contain little manufacturing refuse and few shaped artifacts used to prepare food. Such sites are most likely to be identified as isolates during surface surveys. Campsites of distant people may contain fragments of exotic materials from repairing or breaking artifacts. They may contain fragments of pottery made in distant places. There may also be other exotic goods in the sites that were brought for trade.

The background section discussion of Native American history demonstrates lack of knowledge of archaeology in the region.

The cultural resources report background section appears to be adapted from a poor boilerplate that concerns archaeology in Orange or San Diego Counties.

On page C-24 it is suggested that Indians overexploited and reduced their available resources. This suggestion has a great deal of appeal to those archaeologists who like to denigrate traditional societies. It basically holds that American Indians had no better ethics regarding land use than European colonists. This justifies expropriation of Indian land by Europeans. The archaeologists propose overexploitation despite the presence of Native beliefs that required extensive purification of hunters and often restrictions on consumption of kills by hunters. If European colonists had to refrain from sexual intercourse, refrain from eating desired foods, and sweat and pray before hunting, they would not kill as many animals. It is reasonable to assume that Native people recognized the benefits of enhancing the sizes of deer populations and the populations of other animals and plants they used for food. If population growth required the eating of more small animals, an increase in proportion of small animal bones doesn't indicate a decrease in the number of living large animals as claimed by proponents of overexploitation. The large animals may have continued to be managed at optimum herd sizes. It is also probable that reduction of small animal bones due to differential breakdown has influenced the portions of bones of different sizes recovered from sites of different ages.

It is stated that new studies indicate rapid rather than gradual culture change. There is no uncontested data that demonstrates anything other than a continuous, gradual growth of Chumash society over at least the last 7000 years. There is a continuous development of bead and ornament types with addition of new types and discontinuation of old types. The changes can be explained as consequences of historic events and changes in the relative importance of economic, political, and religious subsystems.

On page C-22, it is stated that there is no accepted chronology. Perhaps the author of the report does not accept the California chronology. However, archaeologists who publish peer reviewed articles reference an accepted chronology. In 1939 Lillard, Heizer, and Fenenga published a report that described three successive chronological time periods in Central California. Identification of the periods was largely based on differences in burial practices and burial goods including beads and ornaments. James Bennyhoff used burial lot seriation to further refine the periods. In the San Francisco Bay and the Plains Miwok area, Bennyhoff recognized five subdivisions of the Middle Period, a Middle-Late Transition Period, and five subdivisions of the Late Period before the establishment of Spanish Missions (Elsasser 1978). Research for my dissertation involved the use of burial lot seriation to document the sequence of beads and ornaments in the Santa Barbara Channel. I identified three discontinuous phases of the Early Period and a continuous terminal Early to the period of Spanish missions sequence that includes eight subdivisions of the Middle Period (it includes a sub-phase corresponding to Bennyhoff's Middle-Late transition) and five or six subdivisions of the Late Period that preceded the establishment of Spanish missions. The Central California sequence includes many diagnostic types that were traded from the Chumash area and the sequences are correlated. Most temporal subdivisions recognized in the Chumash area between AD 1150 and 1770 lasted less than 100 years. California archaeologists have not disputed this temporal sequence. There is constant dispute and refinement of the actual dates marking the beginnings and ends of subdivisions and whether or not beginnings and endings correlate with imagined or real catastrophic environmental changes. I am presently working on studying the distribution of types in California from the Southwest and types in the Southwest from California to cross-date the southern California and Southwestern sequences and thereby refine the absolute dating of the phases at the end of the Middle Period and during the Late Period. I know of no dispute regarding the sequence and identity of the temporal subdivisions. Archaeologists who have theories diametrically opposed to mine who deny the validity of my interpretations regarding the causes and sequence of social development, but who work within historic Chumash boundaries, reference the sequence described in my dissertation. The sequence described in my dissertation was in large part discovered in central California before I started my research with collections from the Chumash area, it is not my creation. Although they were brilliant people, the archaeologists who discovered the central California sequence (Heizer, Fenenga, and Bennyhoff) held theories and perceptions that differ significantly from mine. All of us agreed on the detailed chronologies of artifacts that we discovered through use of burial lot seriation. Burial lot seriation is based on a assumption that objects placed with burials were placed at the times of burial. Changes in types and frequencies over time result in the ability to arrange burial lots in temporal sequences and observe changes in artifacts over time in relation to changes and continuity in use of other artifact types. Burial lots and other caches of artifacts that represent events allow archaeologists to discover the most refined sequences of changes in artifacts allowed by archaeological data. Californian bead and ornament sequences are supported by information besides lot seriation

including: stratigraphic superimposition, AMS radiocarbon dates on beads, and cross-dating with sequences in the Great Basin and the Southwest that were independently established using sources of information including tree rings, radiocarbon dates, and stratigraphic context. Evidence indicates the Chumash manufactured many temporally significant bead types found in central California, Nevada, and Utah.

Other comments

On page C-55 it is stated that if human remains are discovered NASA will follow California state requirements. California law places decisions in the hands of a most likely descendant. Federal law places decisions in the hands of a recognized tribe. How will the discrepancy be handled?

Presumably grading and filling will occur at a site used to dispose of the soil taken from the project site. The DEIS does not address impacts to historic properties at disposal sites. It is possible that the impacts at disposal sites could be as severe as the impacts at the Burro Flats project site.

Conclusion

In conclusion, the Chumash cultural sites in the Burro Flats area are too significant to be managed by people who lack expertise. Perhaps a panel including Chumash, other concerned local Native Americans, and archaeologists with experience and knowledge of archaeology in the vicinity of Burro Flats could be formed to review cultural resource studies and review proposals to conduct data recovery. The panel would be responsible for insuring that money and resources are not squandered as has been the case on some other large projects. The panel would attempt to insure that adequate and sensitive data recovery or other mitigations are designed and conducted. If the cultural resource study in the DEIS had been adequately reviewed, and if reviewers comments were adequately responded to prior to report drafting, there would be fewer substantial comments, and the EIS and NHPA Section 106 process would be able to more easily move forward, at least as regards cultural resources.

The report admits it does not identify and assess cultural resources that may be damaged by the project. The presence or absence of the possible resources can be identified using standard subsurface testing procedures. These procedures have been used during evaluation of similar projects. It is necessary to conduct studies using accepted procedures to evaluate the locations, boundaries, and contents of cultural resources that will be affected. This information is necessary to make informed decisions regarding the fate of cultural resources and types of remedial action that can be performed. Removal of a cemetery has different social, emotional, and cost impacts than removal of a camping area after conduct of a data recovery program. The contents of archaeological site areas that will be affected need to be determined to design the best possible mitigation program. Perhaps procedures could be used to remove contamination without significantly disturbing sensitive areas such as cemeteries.

Referenced sources

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King, Chester
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1990a *Evolution of Chumash Society: A Comparative Study of Artifacts Used in Social System Maintenance in the Santa Barbara Channel Region Before A.D. 1804*. Revised Ph.D. dissertation, with a new preface and updated bibliography. In The Evolution of North American Indians, a 31-Volume series of outstanding dissertations edited by David Hurst Thomas. New York, Garland Publishing.

I have a general non-specialist comment. The project will certainly have adverse impacts to cultural and natural resources and will be, at best, a public bother from traffic and pollution. The DEIS fails to address what should be a central question of whether conduct of the project will lessen or increase exposure of people to pollutants proposed to be removed from the site and whether it will cause more death and disease than alternatives. The use of earth excavating and earthmoving equipment will result in removing plant cover and loosening soil. Soil is more apt to become air borne. Sometimes during Santa Ana Winds or heavy winds from other directions dust clouds are formed that cover the entire San Fernando and Simi Valleys. Accidents on roads possibly followed by rains could result in uncontrolled dispersal of pollutants in runoff. Also deaths from truck accidents could result aside from pollution. Exposure during use of heavy equipment and post disposal pollution at disposal sites may also occur. What will the net public health benefit be from conduct of the project, as opposed to the no project or lesser project alternatives? This question needs to be answered in the EIS. The EIS should not protect a politically motivated agreement. It should provide objective information necessary to make good decisions. If the project will save one life at the expense of the death three as well as destroy significant cultural and natural areas, it is not a good project. Perhaps designation of the area as passive recreation and natural preserve land with limited public access and maintenance of existing ground cover would result in less exposure of people to pollutants than the proposed project. An alternative project that would reduce the most dangerous concentrations of pollutants to acceptable public health standards, might be best.

From:	Mark Osokow
To:	MSFC-SSFL-EIS
Subject:	San Fernando Valley Audubon Society comments on NASA SSFL Draft Environmental Impact Statement
Date:	Tuesday, October 01, 2013 10:50:34 PM
Attachments:	NASA DEIS Comments Final Draft.doc

Dear Mr. Elliott or other NASA personnel,

Attached are the comments on the NASA SSFL Draft Environmental Impact Statement.

Thank you for the opportunity to comment on this important subject.

Mark Osokow
Mark.Osokow@sfvaudubon.org

San Fernando Valley Audubon Society

Incorporated as California Audubon Society 1913

P.O. Box 7769 Van Nuys, CA 91409-7769

"For nature education and the conservation of wildlife"

October 1, 2013

Allen Elliott, SSFL Program Director,
NASA MSFC AS01, Building 4494,
Huntsville, AL 35812
Via e-mail to msfc-ssfl-eis@mail.nasa.gov

Re: SFVAS comments on NASA SSFL DEIS

Dear Mr. Elliot:

San Fernando Valley Audubon Society (SFVAS), a 2000 plus member chapter of the National Audubon Society, submits the following comments on the Draft Environmental Impact Statement (DEIS) concerning the clean-up of the NASA portion of the Santa Susana Field Laboratory (SSFL).

SUMMARY

Regarding the removal of contaminants from soil, the DEIS considers only the "no action" alternative and the Administrative Order on Consent (AOC) alternative of cleaning up to "background" standards. Cleaning up to such a standard will be devastating to the natural, cultural, and historical environments at SSFL. This is indicated to some extent in the DEIS. However, as discussed below, the DEIS does not fully reflect comprehension of or describe the severity of the adverse impacts that will occur; including, the potential for harm to public health. Under these circumstances, SFVAS has no choice but to recommend that the deciding official select the "no action" alternative, which will be less adverse to the environment and more protective of public health.

Unfortunately, NASA has chosen a course of action precluding reasonable alternatives less damaging to the environment. Such alternatives will only be available under a revised DEIS, if, and only if, the AOC is modified or thrown out entirely. SFVAS favors the latter approach, as it is unlikely that modification will correct the many flaws in the AOC, which underlies much of the purpose and need of the action.

Looked at another way, implementation of the "no action" alternative will be less hazardous to human and ecological health and more protective of vegetative cover, topographical, hydrological, and geological features that protect communities and

ecological systems down-slope from landslides, slippage, erosion, dry creep, flooding, dust, and pollution from runoff, dust, vehicular traffic, and potential spills of soils containing toxic materials than the alternative of clean up of soils to the AOC's background standard. To use a seemingly worn out but apt cliché, the cure that NASA has proposed is worse than the disease.

INITIAL CONSIDERATIONS

The comments below advocate throwing out the existing AOC and drawing up a new agreement with the California Department of Toxic Substances Control. However, the bulk of the comments assume, *arguendo*, that the DEIS will give rise to a Final EIS that is substantively unchanged from the Draft version, in spite of the opposition from many community members and groups, due to the same kinds of political pressures that gave rise to NASA agreeing to the AOC in the first place. In support of this theory, the following is noted.

Several months ago SFVAS sent a letter to Olga Dominguez, NASA Assistant Administrator for Infrastructure, regarding the narrowing of the EIS scope following a series of communications on the subject of NASA's responsibilities under NEPA. These communications involved letters from Senator Barbara Boxer of California, Deborah Rafael, head of the California DTSC, and Nancy Sutley of the President's Council on Environmental Quality. Specifically, these responsibilities concerned whether NASA was required to include analyses of various alternative clean-up scenarios in the EIS along with the clean-up to background standard previously agreed upon by NASA in the AOC. The SFVAS letter was incorporated into a report (Report No. IG-13-007, February 14, 2013) produced by the NASA Office of the Inspector General (OIG). That report, which is herein incorporated by reference, includes copies of all of the relevant communications referenced above. It also contains a number of conclusions and recommendations, based on the OIG's audit of NASA's SSFL clean-up.

The report concludes the following in part:

> We question whether NASA's agreement to clean its portion of the SSFL to background levels is the best use of limited NASA environmental remediation funds, *particularly in light of the expected use of the property* and the Agency's need to address other higher-risk environmental issues. NASA's estimate of more than $200 million to clean the site to background levels is more than two times the cost of restoring the land for residential use and more than eight times the estimated cost of restoring the site for recreational use. Given NASA's other environmental commitments and the fiscal constraints facing the Agency and the Nation, *NASA can ill afford to spend tens of millions of dollars to clean up an area beyond its risk level or expected land use. Moreover, we are concerned about the potential adverse effects on the surrounding community and on natural and archeological resources at the site* should NASA press forward with a cleanup to background levels. (OIG Report, p. 16) [*Emphasis added.*]

The key points will be discussed further below.

The DEIS contains, in an appendix, only one of the letters reproduced in the OIG's report; namely, the letter from Nancy Sutley justifying the consideration of only the two alternatives for soil clean-up indicated. It does not include the OIG report in its entirety, nor does it include the letter from SFVAS challenging the assumptions of the Sutley letter. Therefore, the DEIS is inherently incomplete both in its statement of Purpose and Need and in the ensuing analysis. The failure to include the OIG Report or any reference to it or the SFVAS letter appears deceptive, and it may be reasonable to infer that this was done deliberately in order to deprive the public and other governmental agencies of information that does not favor NASA's approach to the clean-up as represented by the DEIS.

Moreover, the OIG Report states "According to NASA officials, input from members of Congress and local California leaders as well as advice from the CEQ played a significant role in the Agency's decision to agree to the terms of the AOC and in its subsequent decision to exclude clean-up alternatives other than background levels from further consideration in the NEPA process." Such "input," particularly when it arises from a U. S. Senator, must be regarded as inherently threatening to NASA officials and biases the NEPA process towards a particular outcome that tends to favor certain groups while others, possibly representing a majority of constituents, are effectively excluded. The deliberative processes of NEPA cannot take place effectively in such an atmosphere of intimidation. Furthermore, this type of meddling may be construed as a violation of the doctrine of separation of powers between the Executive Branch of government (viz. NASA) and the Legislative Branch, *i.e.*, Congress.

Unfortunately, time and space constraints do not allow for a complete analysis of all of the issues addressed in the OIG Report. Suffice it to reiterate that the entire report should have been included in the DEIS, and NASA administrators should not have dismissed the OIG recommendations in what appears so casual a manner.

One further comment is in order here. The OIG Report notes the response received from NASA administration as follows:

> "Rather, after noting that NASA 'fully appreciates' our recommendation, the Associate Administrator stated that the Agency will continue to work with the DTSC and local community stakeholders 'within the requirements' of the AOC and at the same time will 'make every effort to implement a [cleanup] program that will achieve both cost avoidance and protection of cultural and natural resources.' "

However, as should be clear from the comments below, it appears that, based on the DEIS, NASA has no intention of implementing a program that will achieve cost avoidance and protection of resources. Instead, we are witnessing what appears to be a decision-making process that is arbitrary, capricious, an abuse of power, or otherwise not in accordance with law.

PURPOSE AND NEED

The DEIS is extremely vague regarding the purpose and need for the project. Section 1.1.3 indicates that metals, dioxins, polychlorinated biphenyls, volatile organics including TCE, and semivolatile organics are present in the soils and upper groundwater, known as the Surficial Media Operable Unit (SMOU), while volatile organics, metals, and semivolatile organics also are present in the deeper groundwater, known as the Chatsworth Formation Operable Unit (CFOU). However, the statement fails to relate the presence of these contaminants in any rational or reasonable way to a *need* for the clean-up being proposed.

The RI reports referenced do not suggest that there is undue risk to human or ecological health from the presence of these contaminants such that the clean-up of soils to the AOC's background standards would reduce those risks to an acceptable level while avoiding the added risks to human and ecological health from the clean-up action itself. The RI reports are, therefore, disconnected from and irrelevant to the determination of purpose and need, without specific reference to risk levels that are consistently sought in other NASA projects.

Implicit in NEPA is that the public has a right to expect that reasonably consistent clean-up standards will be applied in cases where a clean-up is necessary. Yet, as noted in the OIG Report, "According to [NASA] environmental management officials, several other projects pose greater risks to human health and the environment than Santa Susana." Such inconsistencies are, in this case, the probable result of political meddling that has forced the application of a peculiar standard based on emotion rather than on objective criteria governing risk to the extent practicable.

Furthermore, that standard is not consistent or applicable with the expected land use following the clean-up; namely, as open-space parkland. The parkland clean-up standard does not require meeting background values for contaminants. It, and the more stringent suburban residential standard, is more realistic and a far less costly standard to meet, as is indicated in the DEIS itself.

As noted above, the Proposed Action, with respect to the AOC, is not needed to protect human health and the environment, contrary to the statement in Section 1.2, and the assumption that it is needed for the benefit of property disposition is without basis. Numerous other properties have been disposed of without such a clean-up.

PROPOSED ACTION AND ALTERNATIVES

STRUCTURES EVALUATED FOR DEMOLITION

Section 2.2.1.1 states that plans for demolition include all structures, with certain very limited exceptions. The following should not necessarily be demolished:

- Aboveground and subsurface structures, if they are of historic nature
- Water tanks, needed to provide water to ponds for wildlife
- Observation lookouts, roadways, and drainageways: lookouts may be used by the public for viewing the landscape, wildlife, and historic areas; roads will be needed for continued access; drainageways will be continuously needed for proper drainage from the site.

As a general rule, no structure should be demolished during the bird nesting season, if the structure supports nesting birds. Outside of the nesting season, structures that are to be demolished but have supported bird nesting should be replaced with nesting structures prior to the next nesting season. Special attention should be given to owls and hawks, which may nest at any time of year. In such cases, new nesting structures should be provided before old ones are demolished.

PROPOSED DEMOLITION ACTIVITIES

Section 2.2.1.3 states that "[d]emolition would include the removal of structures and soil under the structures up to 5 ft below grade." The inclusion of soil removal in demolition adds to the volume of soil to be removed in the Proposed Action and the additional amount should be added to the total. The soil volume, haul trips, and related items should then be re-calculated to accord with this reality. Along these same lines is the failure to include the total number of haul trips for demolished material (3476 trips) in the total for the number of haul trips from the site. Thus, the DEIS is misleading in that regard and underestimates the impact.

A very serious defect in the DEIS is the failure to describe the timing of demolition activities or of efforts to avoid unnecessary destruction of habitat or soil compaction during that process. In particular, there is no mention of planning the demolition to avoid bird nesting seasons.

PROPOSED SOIL REMEDIATION ACTIVITIES

The section states that temporary access roads will be constructed. These will add to the adverse impact directly by further fragmenting wildlife habitat. In addition, these temporary roads will have to be removed at some point, thereby adding to the number of haul trips.

Table 2.2-3 SSFL AOC Soil Cleanup Values Comparison–April 2013 speaks very loudly against imposition of the AOC background standard for cleanup. Little more need be said on this point. The AOC is at the core of problems with the DEIS. Its defects have been noted above to some extent and in the OIG Report.

Section 2.2.2.3 Soil Cleanup Technologies notes that technologies were eliminated if they were not in compliance with the 2010 AOC or were considered likely to be ineffective given the geologic setting or contaminant profile. Here, again, the AOC is responsible for the presumed requirement to implement environmentally damaging

excavation when other, less damaging, technologies are available. Part of this problem is that the AOC mandated completion date of 2017 limits the use of some alternative technologies, which, though less damaging or costly, may require more time to implement.

Table 2.2-5: Estimated Total Soil Volumes and Truck Requirements under the Proposed Action Excavation and Offsite Disposal Cleanup Technology contains additional serious errors. The number of trucks required for soil removal is underestimated by more than half, as it does not include trips by trucks coming *to* the site, nor, as noted above, does it include the number of trips to and from the site in connection with hauling of demolished materials. Thus, the actual number of one-way trips to or from the site will be closer to 82,000! The number of trips per day, as well as the contribution to pollution, must be re-calculated based on this figure.

Action Alternatives Eliminated from Further Consideration (Section 2.4.1)

This section states that "risk-based alternatives were eliminated from further consideration because they would not meet the requirements of the 2010 AOC. In addition, a CEQ letter dated June 19, 2012 Appendix A), states that NASA is not compelled to consider comprehensive cleanup measures as alternatives that are less than the cleanup to local background levels described in the 2010 AOC." Once again, NASA's commitment to the AOC will result in unnecessary adverse environmental impacts and waste of funds. Per the OIG Report, the court found that the less restrictive standards [than background] were fully protective of public health. As noted in the SFVAS letter to Olga Dominguez, the skirting of NEPA required analyses and the lack of consideration of reasonable alternatives by engaging in, what is essentially, nullification of the law by prior agreement is contrary to the entire intent of NEPA and may, in fact, be a violation of law. There are certainly grounds for civil action.

Soil Technologies Eliminated (2.4.2.1)

Phytoremediation was eliminated as a soil treatment technology without proper study. In this case, NASA chose to wait for DOE to complete its feasibility study, in spite of the fact that phytoremediation techniques exist now and have been used for years for eliminating some contaminants from soils, especially TCE, the most widespread contaminant at SSFL. All of the technologies listed in Table 2.2-7 were eliminated because they might not meet the standards of the AOC. Yet, some or all of them might meet standards of suburban residential or others.

Resources Eliminated from Further Consideration (Section 2.5)

The following comments apply to Table 2.5-1:

Land use: This summary is speculative and should be modified to reflect changes that may be necessitated by interest in the property expressed by the Santa Ynez Band of the Chumash.

Reclaimed Water: System Infrastructure: Dismantling of system infrastructure will create an adverse impact. The reclaimed water system could be re-activated and used to provide water to the various ponds at SSFL that support wildlife. If dismantling occurs, a new system would have to be constructed at significant cost and will create further disruption to the environment. The summary is incorrect and short-sighted.

Critical Habitat: Discussed elsewhere in these comments. (See below.)

Particulate Matter Hot Spot: As noted above, calculations regarding the number of truck trips up and down Woolsey Canyon have been severely underestimated in the DEIS. More than 80,000 truck trips down Woolsey Canyon Road must constitute a particulate matter hotspot during the two years or so of the action.

Mobile Source Air Toxics: See comment at "Particulate Hot Spot." In addition, toxic discharges will be concentrated in the area of Woolsey Canyon Rd. and Valley Circle Bl. between Woolsey Canyon. Rd. and Roscoe Bl. . The former accommodates, at most, only a few thousand cars per day. Thus, the contribution from trucks approaches 10% or more trips locally and diesel fumes are not controlled as well as regular auto exhausts. The analyses also fail to include cumulative impacts arising from area construction projects occurring simultaneously, such as *The Village at Westfield*, the Dayton Canyon development, *Woolsey View Estates*, as well as the clean-up of the DOE and Boeing portions of the SSFL.

Geology: Removal of test stands would impact geology locally. The actual impact will depend on the depths of excavations and other factors.

Seismicity: The assumptions are unduly optimistic. They fail to consider the impact on traffic from added contribution of truck trips. This could lead to interference with emergency operations, especially if trucks are involved in accidents. It is easy to imagine that this could easily result in serious injury or death of some earthquake victims, who might otherwise be spared.

Socioeconomics: The constant passage of trucks carrying waste will cause a general deterioration of quality of life in the neighborhoods along the routes from traffic, noise, and the potential hazards from spills and truck accidents. These neighborhoods will become less desirable as places to live resulting in erosion of property values and efforts by current residents to relocate to less disturbed areas.

Effects around Designated Landfills and Disposal Facilities: Regardless of the accuracy of the findings here, the impacts would be greatly lessened if the AOC background standard was not imposed. It is suspected that the actual impacts have been greatly underestimated.

In addition to the above, it is felt that potable water supply infrastructure should be retained to the extent that it will be needed to provide make-up water to the various

ponds supporting wildlife on site. Electrical connections sufficient to power the pumps that might be needed to circulate water for this and other purposes should also remain.

CULTURAL RESOURCES

The DEIS contains insufficient information to formulate coherent comments in the absence of an actual proposal affecting specific cultural areas or sites. Therefore comments are being withheld until such a time as more specific proposals are put forward. In general, however, cultural areas or sites, including historical areas (such as test stands and support facilities) should be free from adverse impact to the maximum extent possible. The AOC should be thrown out, as it will necessitate the maximum adverse impact.

BIOLOGICAL RESOURCES

Vegetation and Land Cover Types (Section 3.4.1)

The vegetation and land cover types described in this section appear to be adequate, except that Venturan coastal sage scrub could have been better delineated as Type I or Type II formations.

Wildlife and Migration Corridors (Section 3.4.2)

Figure 3.4-2 Purports to illustrate the wildlife corridor that traverses SSFL. This figure is extremely inaccurate and misleading, as it suspiciously truncates the corridor to the west just at the boundaries of NASA areas I and II. It is unlikely that this rendition of the corridor was actually produced by the U. S. Fish and Wildlife Service or any other responsible government wildlife agency. There is ample evidence for this.

In actuality the entire area of SSFL, including the NASA portions, is used by wildlife as a corridor. One example will suffice. Mountain lion ranges in the area have been carefully documented by radio tracking. Some ranges include the entire area of SSFL and adjacent areas to the west in the Upper Las Virgenes Canyon Open Space (Mountains Conservancy property), and the cats have been observed passing through the area from the Santa Susana Mountains and Los Padres National Forest on the north via the Simi Hills to the Santa Monica Mountains to the south. A recent sighting of a young mountain lion in the vicinity of SPA provides additional confirmation, as it is unlikely that this animal was born at SSFL.

Deer and other mammals, as well as birds and other wildlife, undoubtedly utilize the entire SSFL area as a corridor in a like manner. Wildlife does not alter its movements simply because a line is drawn on a map. There are no geological or other features on the site that would restrict animal movement across the NASA areas.

At the same time, the existence of the corridor on the rest of the site does not relieve NASA of its responsibility for this sensitive habitat in its areas. It must be kept in

mind that the entire area will be subject to adverse impacts from clean-up activities, and NASA should be willing to do its part to maintain the existing ecological functions of the area and to restore lost functions in cases where NASA is responsible for the loss. The failure of NASA to honestly address this issue in the DEIS is inexcusable and reflects a lack of willingness to deal honestly with the environmental impacts of the Proposed Action based, in large part, on its unwise commitment to the AOC. The statement that the "NASA administered portions of SSFL are outside of the critical habitat corridors in the region identified by the U.S. Fish and Wildlife Service (USFWS) (Figure 3.4-2) (Ventura County, 2005)" is irrelevant to the actual facts concerning this corridor and is obviously incorrect and unsupportable.

The list of Sensitive Species found on NASA administered property is deficient in a number of respects. The list should include the coast patch nosed snake, Golden Eagle (fully protected; nesting and wintering), and Oregon Vesper Sparrow (wintering). While these species may not have been observed during the very brief biological surveys conducted, they have been observed elsewhere at SSFL and are expected to occur on the NASA areas. Observations have been made by SFVAS or Southwestern Herpetologists Society volunteers as part of regular surveys or set-up activities. Furthermore, there are numerous other special status species recognized by DFW as watch list species and by USFWS as bird species of conservation concern that have been observed by SFVAS volunteers on neighboring areas. These have all been ignored in the DEIS. Hence, the importance of these areas to wildlife has been severely underestimated and understated as has the estimated adverse impact to them as a result.

Migration Corridors (Section 3.4.2)

The section states that no migration corridors exist in the vicinity of the demolition sites; consequently, there is no potential impact. Similar statements are repeated elsewhere in the DEIS. As noted earlier, this is incorrect.

A statement on p.204 defines the nesting season considered as Feb 1 to Aug 15; however, in Southern California, owls, Anna's Hummingbirds, Mourning Doves, House Finches, and some other species may nest well outside this period. Caution must be observed so as not to disturb nesting birds at any time of year. However, in this case, what is being proposed is not mere disturbance but outright destruction of both nesting and foraging habitat. The destruction of nesting habitat itself at any time of year will have severe adverse impacts on birds at the time nesting is attempted. Disturbances to foraging areas within or outside of the nesting season as, for example, will occur with the removal of all vegetation and soils in large areas, will likewise have severe adverse impacts. The upshot is that there will be nothing for birds to nest in or eat, when all vegetation and soil containing seeds and insects and burrowing animals are removed. Yes, birds can fly away to avoid immediate harm, but they will be harmed just the same.

Similar impacts will occur to those mammals and reptiles that survive the destruction by not being killed outright. Virtually all burrowing animals will be eliminated in the cleared areas. Backhoes will dump the living animals (including legless

lizards, slender salamanders, voles, harvest mice; ground-nesting bees and numerous others) and those crushed by heavy equipment while still in their burrows, along with the soil, into dump trucks. Raptors, predatory mammals (including ring -tailed cats) and snakes will be deprived of their food source and are likely to perish. While some of these impacts may be unavoidable, they can be sharply reduced by NASA abandoning the ruinous, costly, excessively stringent background standard for clean-up unwisely agreed to in the AOC.

Wetlands

As noted, NASA should participate in a program to maintain wetlands for the long-term. Perhaps, a fund could be set up in cooperation with DOE and Boeing for the purpose, since all of the responsible parties should bear some responsibility for this important maintenance of wildlife habitat.

BIOLOGICAL RESOURCES

Sensitive Species (4.4.1.1)

In this section the Loggerhead Shrike is described as a transient. It is unclear what is intended by this term. However, numerous observations of Loggerhead Shrikes have been made by volunteers of SFVAS over the past three years. This species is more accurately described as a post-breeding and winter visitor, present continuously from approximately late-July through mid-March. Although the population may be small, that is the nature of this predatory species, which requires a fairly large territory. The area is more important to this species than the DEIS indicates.

Wildlife

The DEIS states "Most wildlife would vacate the operation areas and return once vegetation had been reestablished." There is simply no basis for the assertion that wildlife will "return" to an area where existing vegetation has been replaced by an array of aggressive, invasive species. Continuous disturbance over a period of years will disrupt historical migration patterns. In addition, there may be no source population supporting such a return, after the populations have been reduced by the Proposed Action combined with the clean-up actions of DOE and Boeing. Likewise, there is no basis for the assertion that "mortality would be individualized."

Furthermore, there is no basis for the assertion that "[t]he beneficial impacts of the incremental excavation of treatable soils, because of the reduction in soil contamination, would be moderate, beneficial, local, and long term (Biology Impact-3e)." NASA has not demonstrated that soil contamination has caused any harm to wildlife at SSFL; therefore, there can be no basis for any inference that its removal will be beneficial. The DEIS contains no information bearing on wildlife population sizes, sampling of wildlife for contaminants in blood or other tissues, etc. While models exist and may have been presented in RFI Reports, they have not been validated with real data

from on site. Moreover, the DEIS admits that, when exaction and removal are employed, "Once the soil was removed, the existing micro-ecosystem might never be restored." P.4-35.

The above is emphasized by another section of the DEIS, Section 3.1.2, where it is stated that "(at a minimum) the top 2 ft of soil would be excavated, all existing biological resources within the contaminated areas, including 32 acres of sensitive habitats, would be eliminated. The Proposed Action would result in a significant, negative, regional, and long-term impact because of the amount of ground disturbance that would occur. Additionally, changes to soil profiles (the micro and macro fauna of the soil ecosystems) are expected to be significant. The extensive level of excavation necessary to meet the 2010 AOC would lead to soil instability, decreased vegetative biodiversity, and increased spread of invasive weeds." This is completely unacceptable and would be unnecessary if the AOC was thrown out.

APPENDIX D

Concerning surveys of birds by NASA consultants, it is noted that "migratory breeding birds were not [present] during surveys." It is further stated that

> "The time spent at each site within the study area was limited; therefore, wildlife observations were opportunistic rather than systematic. . . Active survey techniques, such as the use of kicknets to identify benthic invertebrates or searches under logs, rocks, and debris for herpetiles were not used due to time constraints."

This represents yet another serious deficiency in the attempt to characterize wildlife at SSFL. SFVAS has conducted systematic bird monitoring at SSFL since 2011. This includes monthly point counts and bi-weekly bird banding, as well as general surveys of the area by car, and occasional owl/poorwill surveys conducted at night. During this time, more than 115 species of birds have been observed. All of these, with the possible exception of a few water bird species found at Silvernale Pond, are expected to occur on NASA administered property, yet the consultant surveys have yielded only 61 species. Doubtless, the SFVAS species count would be higher if permitted access to the NASA sites; however, except for informal observations made during NASA-sponsored site visits and a few owl/poorwill surveys, this permission has not been granted. Nevertheless, NASA's estimates of environmental impact are not in accordance with actual importance of the area to wildlife.

Bird species overlooked, in addition to those mentioned above, include White-tailed Kite, Merlin, Sharp-shinned Hawk, Golden Eagle, Red-shouldered Hawk, Townsend's, Black-throated Gray, Yellow, and Hermit Warblers, Great Horned, Barn, and Western Screech Owls – just to name some. Notoriously absent is the Lesser Goldfinch one of the commonest species in the area.

The deficiency, however, is not limited to birds. A common reptile species, the side-blotched lizard is also overlooked, as is the amphibian, slender salamander.

WETLAND DELINEATION SECTIONS

In discussing wetlands, the DEIS fails to address the need to provide at least some water to drainages feeding Silvernale Reservoir, Coca Pond, and R2 ponds. Although these ponds may be man-made or highly modified natural depressions that held water on a primarily seasonal basis, over the years they have become important sources of water and habitat for wildlife. It does not seem too much to expect that the responsible parties be required to cooperatively draw up a plan to assure at least some continued water supply to these ponds and associated drainages sufficient to support their now historical functions on behalf of wildlife. After importing water and modifying the environment for more than 60 years, within the context of ever-expanding urban expansion that has turned much of SSFL into a habitat island, it would be the height of irresponsibility for NASA to simply to walk away from what they have created -- whether or not there is any specific regulatory authority that would require such action. It is likely that the modifications of drainages that have occurred will, in the absence of imported water, cause more rapid drainage of surface water from the site than was true historically. Thus, wildlife will be deprived of water that might otherwise have been available in the absence of these modifications -- only, now these habitat islands are far more critical to the health of wildlife populations than was true historically. This is especially important with respect to the areas function as a wildlife corridor or linkage.

CONCLUSION

For the reasons described above, NASA should either discard the AOC and begin afresh with a new DEIS that seriously considers alternative clean-up standards and actions or should adopt the "no action" alternative.

SFVAS appreciates the opportunity to comment on the DEIS and may submit addenda to these comments to provide additional detail and justification for the position taken.

Sincerely,

Mark B. Osokow,
SFVAS Member of the Board,
Chair, San Fernando Valley Bird Observatory .

From:	Chester King
To:	MSFC-SSFL-EIS
Subject:	Santa Susana Field Lab DEIS
Date:	Tuesday, September 24, 2013 10:22:17 AM
Attachments:	Burro Flats DEIS Cultural Resources.pdf

Dear Allen Elliott,

The attached pdf contains my comments concerning the Santa Susana Field Laboratory DEIS.

Chester King

Draft comments by Chester King concerning Draft Cultural Resources Study for Environmental Cleanup and Demolition at Santa Susana Field Laboratory, NASA Areas I and II, Ventura County, California

by Chester King 9-24-2013

I am a professional archaeologist and I specialize in the study of the prehistory of California. I have served as President and Vice-president of the Society of California Archaeology. I began studying the archaeology of southern California in 1960 and have continued to study the archaeology and ethnohistory of southern California native peoples until the present. I have written chapters of the Handbook of North American Indians volume on California produced by the Smithsonian Institution. My dissertation, *Evolution of Chumash Society*, was selected for publication in a series of 31 outstanding dissertations concerning the archaeology of North American Indians. My writings are frequently referenced, and I am recognized as a leading specialist in the field of California Native American archaeology and ethnohistory. I have concentrated on study of the Native American archaeology of the Santa Monica Mountains and the Simi Hills. I have conducted many archaeological studies for the Santa Monica Mountains National Recreation Area and have conducted surface surveys of lands administered by the MRCA adjacent to the project area. I have experience conducting inventory studies, significance testing programs, and data recovery programs for federal, state, and local agencies and private developers. Over the past several years, I have been studying beads, other ornaments, bone tools, and stone projectile points from collections excavated from project area Burro Flats site recorded as VEN-1072. The collections were obtained from a small central area of the site during excavations conducted in the 1950s by an archaeology society and a college field class. I have also visited project area site VEN-1072.

The discussion of archaeological sites in the DEIS is based on a report attached to the DEIS as Appendix C. The Appendix C study is inadequate. A study by archaeologists with local knowledge and experience that includes the results of subsurface testing and provides real estimates of the costs of a data recovery program is necessary to complete the EIS and make informed decisions concerning impacts to National Register eligible properties. The new report should be subject to public review and its recommendations should be included in a new DEIS that will also be subject to public review. The archaeologists who conduct the study should not be employed by a company that stands to benefit from the cleanup project.

The report does not adequately assess the project area

The most serious problem with the cultural resources report is absence of information necessary to assess the impact of the project on Native American sites. The report fails to describe all cultural resources that may be disturbed by the project. The report does not contain information adequate to design a data recovery program and estimate its cost.

The report relies exclusively on surface observations. Adequate assessment of the project impacts requires controlled archaeological subsurface testing to identify the boundaries, depths, and contents of archaeological deposits.

The report indicates artifacts were recorded as isolates. These isolates are apparently outside the areas described in the report as archaeological sites. The isolates are not described in the report. In my experience after subsurface testing or careful observation of the surface under good conditions near areas where 'isolated' artifacts were recorded during an initial surface survey, more than five artifacts are usually discovered. Isolates then gain the status of sites whose boundaries and significance need to be determined.

Surface observations by archaeologists are largely affected by ability to see the ground surface. Impediments include plant cover, leaf litter, presence of road fill or other recent deposits such as graded pads, recent grading, or presence of piles of rodent-hole back-dirt. Sometimes disturbance results in exposure of buried deposits at other times it results in burial of artifacts. Surface observations are also dependent on ability of archaeological crew to identify artifacts commonly observed on the surface of sites in the Simi Hills. In my experience, even well trained crews include some surveyors who observe more artifacts than other surveyors. After indications such as an artifact are discovered the degree of persistence in following leads often makes the difference between designating a find a site or an isolate. When artifacts are discovered the area around them should be carefully searched. If additional artifacts are found, the areas around them and on the same landform should be carefully checked. This may require walking or crawling transects no more than a meter apart. The report notes that a large portion of the landscape is bedrock and is devoid of soil and uses this as an excuse for not walking over parts of the project site. Bedrock at Burro Flats contains cupules, mortars and other culturally significant modifications, some of which are extensive. All areas of bedrock should all be carefully checked. The soil bodies between the bedrock should also be carefully checked, the description of survey procedures indicate some soil bodies may have been walked across once at best. Rockshelters that contain soil deposits are normally recorded as features and therefore as sites.

The report recognizes that it is inadequate. It admits site deposits may be present that would have been identified using standard techniques. It states:

> Plant Area I and Area II has some potential to result in adverse effects to buried archaeological resources. The areas possessing low to moderate sensitivity for buried deposits are within alluvial deposits, particularly Holocene-age sediments. Areas with a higher sensitivity for buried resources are near and within the boundaries of archaeological sites CA-VEN-1072, where known subsurface deposits have been documented in previous studies, and sites CA-VEN-1800 and CA-VEN-1803 [page C-51].

Also,

> Aside from the initial recordation, neither site CA-VEN-1800 nor site CA-VEN-1803 have been subject to further study and the depth of deposits is unknown. Important archaeological deposits with no surface expression may be buried beneath Holocene alluvial sediments.
>
> Appropriate measures, such as preparing a plan for unanticipated discoveries, should be implemented to address the possibility of impacts on buried resources from the undertaking [page C-52].

The report recommends developing plans to save information from undiscovered sites after they are discovered during earthmoving activities. If for instance a cemetery is discovered, a decision made on the basis of this DEIS to remove the soil containing the cemetery will result in destruction of the cemetery.

The EIS can't be complete until the impact of the project on all project area archaeological deposits is determined. It is necessary to use archaeological techniques traditionally used to determine the presence of archaeological deposits. The techniques should be adequate to demonstrate presence or absence of human activities. Conduct of an adequate number of controlled subsurface excavations with soil being sifted through fine mesh water screens, laboratory sorting by people experienced in the identification of artifacts found at local sites, study of significant soil constituents, and report preparation by people who have knowledge of local archaeology, can determine the presence or absence of site deposits in the project area. It should not be necessary for volunteers or paid monitors to pick up pieces of significant and sensitive site areas discovered after the review process while they are being destroyed during monitoring because a consultant did not adequately evaluate the project area. Monitoring is not adequate to recover information concerning many significant categories of artifacts or features.

The boundaries of the sites identified in the DEIS are based only on surface observations. In some cases the sites may be surrounded by bedrock and their boundaries appear to be clear. However, it is possible that the sites recorded in the project area are all parts of a larger site that may include VEN-1072 (VEN-1072 includes many previously separate sites now recorded as one large site as a consequence of an intensive surface survey). Possibly all surrounding bodies of soil contain archaeological materials.

In addition to determining the boundaries of sites, the cultural resource study needs to determine the scope and costs of archaeological data recovery programs. The report should contain enough information to allow archaeologists to design and estimate the costs of data recovery programs. These costs are largely dependent on volume of site deposits that are present and the numbers of artifacts and features

that are expected to be encountered. Information necessary to estimate the costs of data recovery can only be obtained by conducting excavations similar to those that will be conducted during data recovery.

The existing information is not adequate to estimate the cost of data recovery programs. If bids are sought using the available information, local experienced archaeologists will not be able to make bids because they will fear the consequences of underbidding. Only non-local archaeologists who make low bids on the basis of inadequate information will be chosen and the data recovery program will be inadequate, both because the archaeologists will not recognize the resources and they will not have adequate funds.

The Burro Flats area probably contains one or more cemeteries

The residential midden at VEN-1072, contains all of the types of artifacts and types of faunal remains found in residential sites in the area. The remains have similar relative frequencies to the remains in documented village sites. The size of the midden and distribution of temporally sensitive artifacts within the midden indicates the presence of several households with regular residence at the site. A cemetery was found 1000 feet from the contemporary Late Period residential deposit at the Medea Creek site in Agoura Hills and the cemetery could be located a similar or greater distance from the residential area at Burro Flats. No cemetery has been identified during archaeological excavations at Burro Flats and it is expected that one or more cemeteries (probably from different time periods) are present within or in the vicinity of the site in areas that have not been tested, or disturbed by development at Burro Flats. The cemetery or cemeteries may contain the bodies of many people including important leaders. A recent Section 106 study at a project in west Los Angeles avoided identification of a cemetery using the excuse of inability to test the site because of the presence of recently deposited overburden. Because it was not discovered during the planning phase, the cemetery containing over 500 bodies was removed at a cost of approximately five million dollars and there is no report of what was discovered. If the cemetery had been identified during the planning stage of the project, the creek could have been placed in its old channel adjacent to the cemetery in an area that is now open space without reducing the number of units developed or making significant changes in the development footprint. A similar situation could develop at Burro Flats where there is no excuse of difficulty caused by deep overburden. Testing is necessary to determine the significance of site areas and needs to be adequate to develop meaningful data recovery programs or design special avoidance programs if highly sensitive areas will be damaged by the project.

There are indications that the Burro Flats area served as the site of important festivals and may have been a trade center.

The main panel at the site includes what have been identified as *Ko-too-mut* poles (Edberg 1985). Merriam described a Tongva mourning ceremony at Tejon where the poles covered by pierced baskets were prepared and erected at the ceremony site and near the end of the ceremony were moved to and erected at the

cemetery. The people at El Escorpion possessed a song that probably organized their mourning ceremony. It is probable that ceremonies were held at the Burro Flats sites. People who attended ceremonies from settlements other than El Escorpion, including people from distant tribes such as the Mojave of the Colorado River and the Yokuts of the San Joaquin Valley (peoples who visited San Fernando Mission after the El Escorpion people were recruited there), probably camped during the festival at places in the Burro Flats area. Camps of visitors at ceremonies may contain little manufacturing refuse and few shaped artifacts used to prepare food. Such sites are most likely to be identified as isolates during surface surveys. Campsites of distant people may contain fragments of exotic materials from repairing or breaking artifacts. They may contain fragments of pottery made in distant places. There may also be other exotic goods in the sites that were brought for trade.

The background section discussion of Native American history demonstrates lack of knowledge of archaeology in the region.

The cultural resources report background section appears to be adapted from a poor boilerplate that concerns archaeology in Orange or San Diego Counties.

On page C-24 it is suggested that Indians overexploited and reduced their available resources. This suggestion has a great deal of appeal to those archaeologists who like to denigrate traditional societies. It basically holds that American Indians had no better ethics regarding land use than European colonists. This justifies expropriation of Indian land by Europeans. The archaeologists propose overexploitation despite the presence of Native beliefs that required extensive purification of hunters and often restrictions on consumption of kills by hunters. If European colonists had to refrain from sexual intercourse, refrain from eating desired foods, and sweat and pray before hunting, they would not kill as many animals. It is reasonable to assume that Native people recognized the benefits of enhancing the sizes of deer populations and the populations of other animals and plants they used for food. If population growth required the eating of more small animals, an increase in proportion of small animal bones doesn't indicate a decrease in the number of living large animals as claimed by proponents of overexploitation. The large animals may have continued to be managed at optimum herd sizes. It is also probable that reduction of small animal bones due to differential breakdown has influenced the portions of bones of different sizes recovered from sites of different ages.

It is stated that new studies indicate rapid rather than gradual culture change. There is no uncontested data that demonstrates anything other than a continuous, gradual growth of Chumash society over at least the last 7000 years. There is a continuous development of bead and ornament types with addition of new types and discontinuation of old types. The changes can be explained as consequences of historic events and changes in the relative importance of economic, political, and religious subsystems.

On page C-22, it is stated that there is no accepted chronology. Perhaps the author of the report does not accept the California chronology. However, archaeologists who publish peer reviewed articles reference an accepted chronology. In 1939 Lillard, Heizer, and Fenenga published a report that described three successive chronological time periods in Central California. Identification of the periods was largely based on differences in burial practices and burial goods including beads and ornaments. James Bennyhoff used burial lot seriation to further refine the periods. In the San Francisco Bay and the Plains Miwok area, Bennyhoff recognized five subdivisions of the Middle Period, a Middle-Late Transition Period, and five subdivisions of the Late Period before the establishment of Spanish Missions (Elsasser 1978). Research for my dissertation involved the use of burial lot seriation to document the sequence of beads and ornaments in the Santa Barbara Channel. I identified three discontinuous phases of the Early Period and a continuous terminal Early to the period of Spanish missions sequence that includes eight subdivisions of the Middle Period (it includes a sub-phase corresponding to Bennyhoff's Middle-Late transition) and five or six subdivisions of the Late Period that preceded the establishment of Spanish missions. The Central California sequence includes many diagnostic types that were traded from the Chumash area and the sequences are correlated. Most temporal subdivisions recognized in the Chumash area between AD 1150 and 1770 lasted less than 100 years. California archaeologists have not disputed this temporal sequence. There is constant dispute and refinement of the actual dates marking the beginnings and ends of subdivisions and whether or not beginnings and endings correlate with imagined or real catastrophic environmental changes. I am presently working on studying the distribution of types in California from the Southwest and types in the Southwest from California to cross-date the southern California and Southwestern sequences and thereby refine the absolute dating of the phases at the end of the Middle Period and during the Late Period. I know of no dispute regarding the sequence and identity of the temporal subdivisions. Archaeologists who have theories diametrically opposed to mine who deny the validity of my interpretations regarding the causes and sequence of social development, but who work within historic Chumash boundaries, reference the sequence described in my dissertation. The sequence described in my dissertation was in large part discovered in central California before I started my research with collections from the Chumash area, it is not my creation. Although they were brilliant people, the archaeologists who discovered the central California sequence (Heizer, Fenenga, and Bennyhoff) held theories and perceptions that differ significantly from mine. All of us agreed on the detailed chronologies of artifacts that we discovered through use of burial lot seriation. Burial lot seriation is based on a assumption that objects placed with burials were placed at the times of burial. Changes in types and frequencies over time result in the ability to arrange burial lots in temporal sequences and observe changes in artifacts over time in relation to changes and continuity in use of other artifact types. Burial lots and other caches of artifacts that represent events allow archaeologists to discover the most refined sequences of changes in artifacts allowed by archaeological data. Californian bead and ornament sequences are supported by information besides lot seriation

including: stratigraphic superimposition, AMS radiocarbon dates on beads, and cross-dating with sequences in the Great Basin and the Southwest that were independently established using sources of information including tree rings, radiocarbon dates, and stratigraphic context. Evidence indicates the Chumash manufactured many temporally significant bead types found in central California, Nevada, and Utah.

Other comments

On page C-55 it is stated that if human remains are discovered NASA will follow California state requirements. California law places decisions in the hands of a most likely descendant. Federal law places decisions in the hands of a recognized tribe. How will the discrepancy be handled?

Presumably grading and filling will occur at a site used to dispose of the soil taken from the project site. The DEIS does not address impacts to historic properties at disposal sites. It is possible that the impacts at disposal sites could be as severe as the impacts at the Burro Flats project site.

Conclusion

In conclusion, the Chumash cultural sites in the Burro Flats area are too significant to be managed by people who lack expertise. Perhaps a panel including Chumash, other concerned local Native Americans, and archaeologists with experience and knowledge of archaeology in the vicinity of Burro Flats could be formed to review cultural resource studies and review proposals to conduct data recovery. The panel would be responsible for insuring that money and resources are not squandered as has been the case on some other large projects. The panel would attempt to insure that adequate and sensitive data recovery or other mitigations are designed and conducted. If the cultural resource study in the DEIS had been adequately reviewed, and if reviewers comments were adequately responded to prior to report drafting, there would be fewer substantial comments, and the EIS and NHPA Section 106 process would be able to more easily move forward, at least as regards cultural resources.

The report admits it does not identify and assess cultural resources that may be damaged by the project. The presence or absence of the possible resources can be identified using standard subsurface testing procedures. These procedures have been used during evaluation of similar projects. It is necessary to conduct studies using accepted procedures to evaluate the locations, boundaries, and contents of cultural resources that will be affected. This information is necessary to make informed decisions regarding the fate of cultural resources and types of remedial action that can be performed. Removal of a cemetery has different social, emotional, and cost impacts than removal of a camping area after conduct of a data recovery program. The contents of archaeological site areas that will be affected need to be determined to design the best possible mitigation program. Perhaps procedures could be used to remove contamination without significantly disturbing sensitive areas such as cemeteries.

Referenced sources

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1990a *Evolution of Chumash Society: A Comparative Study of Artifacts Used in Social System Maintenance in the Santa Barbara Channel Region Before A.D. 1804*. Revised Ph.D. dissertation, with a new preface and updated bibliography. In The Evolution of North American Indians, a 31-Volume series of outstanding dissertations edited by David Hurst Thomas. New York, Garland Publishing.

I have a general non-specialist comment. The project will certainly have adverse impacts to cultural and natural resources and will be, at best, a public bother from traffic and pollution. The DEIS fails to address what should be a central question of whether conduct of the project will lessen or increase exposure of people to pollutants proposed to be removed from the site and whether it will cause more death and disease than alternatives. The use of earth excavating and earthmoving equipment will result in removing plant cover and loosening soil. Soil is more apt to become air borne. Sometimes during Santa Ana Winds or heavy winds from other directions dust clouds are formed that cover the entire San Fernando and Simi Valleys. Accidents on roads possibly followed by rains could result in uncontrolled dispersal of pollutants in runoff. Also deaths from truck accidents could result aside from pollution. Exposure during use of heavy equipment and post disposal pollution at disposal sites may also occur. What will the net public health benefit be from conduct of the project, as opposed to the no project or lesser project alternatives? This question needs to be answered in the EIS. The EIS should not protect a politically motivated agreement. It should provide objective information necessary to make good decisions. If the project will save one life at the expense of the death three as well as destroy significant cultural and natural areas, it is not a good project. Perhaps designation of the area as passive recreation and natural preserve land with limited public access and maintenance of existing ground cover would result in less exposure of people to pollutants than the proposed project. An alternative project that would reduce the most dangerous concentrations of pollutants to acceptable public health standards, might be best.

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Subject:	Santa Susana Mountain Park Association Comments on DEIS, NASA Portion of the Santa Susana Field Laboratory, Ventura County, CA
Date:	Saturday, September 28, 2013 2:24:58 PM
Attachments:	NASA DEIS Commentary by SSMPA final.pdf NASA DEIS Letter Attachments.pdf NASA Inspector General Report IG-13-007 Feb 2013.pdf

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Please find our comments on the Draft Environmental Impact Statement recently issued by NASA for the Santa Susana Field Laboratory.

We have included a full copy of the NASA Inspector General's Report from February 2013, as this is an excellent and seemingly independent summary of the political issues affecting the cleanup and in many respects, says more in 46 pages than the entire Draft Environmental Impact Statement.

If you have any questions, please email us, or I can be reached by telephone at 818 326-1533.

Teena A Takata
President, SSMPA
818 326-1533

NASA's Environmental Remediation Efforts at the Santa Susana Field Laboratory Actions for Response to OIG Recommendation	
Action	**Estimated Completion Date**
Working with DTSC to establishing appropriate cleanup standards (called Look-up Tables in AOC).	Summer 2013
Follow outcome of SB-990 law suit appeal.	Ongoing; decision expected in 2013
Follow Tribal interest and demands.	Ongoing; TBD
Through the NEPA process, thoroughly evaluating the impacts from a "cleanup to background" and attempting to minimize those impacts.	Spring 2014
Assist DTSC to evaluate impacts to a "cleanup to background" through its CEQA process.	Winter 2015
Seek cost-effective cleanup methods. This will be an ongoing process to examine various technologies.	Winter 2015

Again, thank you for the opportunity to review and comment on the subject draft report. If you have further questions or require additional information on the Agency's response to the subject draft report, please contact Olga M. Dominguez at 202-358-2800 or e-mail olga.m.dominguez@nasa.gov.

Woodrow Whitlow, Jr.

Woodrow Whitlow, Jr.

cc:
Assistant Administrator for Strategic Infrastructure/Ms. Dominguez
Director, Environmental Management Division/Mr. Leatherwood

Uncontroverted Fact	Boeing Evidence, DTSC Response
	SSFL site should be cleaned up to a stricter standard than would be required under generally applicable State law? MR. ROBINSON: Objection; lack of foundation. THE WITNESS: No.
104. If SB 990 could not be applied to all of the contamination at SSFL, it would not be possible to "sum" the risks for the entire site and to develop "cumulative risk" assessment as required by SB 990.	• **Not Disputed**
105. There is no technical, scientific, or environmental basis to single out SSFL for more onerous cleanup procedures than apply to other contaminated sites in California.	***Boeing's Evidence*** • Malinowski Dep. [28:22] – [29:3] ("Q. Is there anything that you can identify about the SSFL site that poses a more significant threat to public health than other sites in the state? … [A.] I am not aware of any imminent threat that is posed by SSFL at this point based on the available information I've had."); • *Id.* at [95:21] – [96:1] ("Q. Does the chemical contamination that is present at SSFL pose a different risk to the public or the environment than the similar chemical contamination found on the other industrial sites in the state? … [A.]

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Uncontroverted Fact	Boeing Evidence, DTSC Response
	No."); • *Id.* at [96:2] – [96:11] ("Q. … Am I correct that there are also other sites in the state that contain radiological contamination? A. Yes. Q. Is there anything about the radiological contamination that is present at SSFL that poses a different risk to the public or the environment than radiological contamination present at other sites in the state of California? A. Not to the best of my knowledge, no."); • *Id.* at [136:2] – [136:17] ("Q. … [I]s there anything about either the chemical or radiological contamination at SSFL that, in your view, would justify applying a different approach to the cleanup at SSFL than at other sites in the state? … [A.] … No. Q. … Is there anything else about the site other than the chemical or radiological contamination, and putting aside SB 990 for the moment, that would, in your view, justify applying a different approach to the cleanup at SSFL than at other sites in the state? … [A.] No."); • Brausch Dep. [107:17] – [107:22] (Q. Can you identify any reason to conclude that the SSFL site should be cleaned up to a stricter standard than would be required under generally applicable State law? … A. … No.").

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Uncontroverted Fact	Boeing Evidence, DTSC Response
	DTSC Response **Disputed.** Objection: Defendant objects to Statement of Fact # 105 in that it mischaracterizes the witnesses' testimony cited [above] – the witnesses did not testify that there is no technical, scientific or environmental basis to single out SSFL for more onerous cleanup procedures that apply to other contaminated sites in California.
106. McClellan Air Force Base, roughly the same size as SSFL, is seven miles from Sacramento and is contaminated with all of the same contaminants listed in SB 990, many in higher concentrations, including TCE.	***Boeing's Evidence*** • Malinowski Dep. [26:3] – [26:23] (McClellan Air Force Base close to major population centers); • *Id.* at [28:7] – [28:9] ("[A.] McClellan Air Force Base was the most polluted Air Force Base out of all the Air Force. It ranked the highest."); • *Id.* at [34:9] – [36:16]; • *Id.* at [101:11] – [102:12]; • *Id.* at [128:11] – [134:24] (higher concentrations of volatile organic compounds than SSFL); • *Id.* at [141:11] – [141:16]; • *Id.* at [144:6] – [148:22] ("… Q. In your view, is the McClellan Air Force Base a fairly similar site to the SSFL site in terms of the contamination that is present? A. The types of contamination, yes. … Q. There was TCE as well; is that right? A. Yes.);

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Uncontroverted Fact	Boeing Evidence, DTSC Response
	• Greger Dep. [68:7] – [68:16]; • Bowers Decl. ¶¶35, 50, 53, 55, 58, 64; • Ex. 6 to Bowers Decl., *Public Health Assessment, McClellan Air Force Base, Sacramento, Sacramento, California* at 1-5 (Agency for Toxic Substances and Disease Registry 1994); • Ex. 7 to Bowers Decl., *McClellan Air Force Base Administrative Record 6504* at 2-1 (EPA 2008); • Ex. 8 to Bowers Decl., *McClellan Air Force Base (Groundwater Contamination)* at 2, 3, 7 (U.S. EPA Region 9); • Ex. 9 to Bowers Decl., *Five Year Review; Former McClellan Air Force Base, California,* July 2009, at 3-1 (MWH Americas, Inc.); • Ex. 10 to Bowers Decl., *Proposed Plan for Soil Cleanup, McClellan AFB Parcel C-6* at 3 (EPA October 2008). ***DTSC Response*** **Disputed.** Objection: Witnesses lack personal knowledge. Comparisons between the amount of contaminants at the SSFL and those detected at other sites in California lacks the necessary foundation (*i.e.*, a complete characterization of the SSFL site); see State's. SUF, ¶ 117.

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Uncontroverted Fact	Boeing Evidence, DTSC Response
107. Lawrence Livermore National Laboratory, more than twice the size of SSFL, is 48 miles from San Francisco and is a DOE laboratory used for nuclear weapons and other research. It is contaminated with all of the same contaminants listed in SB 990. Among other things, it has had higher historical concentrations of TCE and tritium than SSFL.	***Boeing's Evidence*** • Malinowski Dep. at [101:11] – [102:12]; • *Id.* at [163:13] – [163:24] (Lawrence Livermore close to major population centers); • *Id.* at [169:7] – [175:16] ("Q. Is the list of contaminants at the Lawrence Livermore National Laboratory similar to the list of contaminants of concern at SSFL?... A. Looking both together?... I would say they're similar, yes."); • *Id.* at [173:5] – [173:16] ("Q. [I]s there anything about [Lawrence Livermore National Laboratory] that would support taking a different approach to the cleanup than at SSFL? … [A.] No."); • *Id.* at [175:12] – [175:16] ("Q. Is it fair to say that the principal contaminants of concern at Lawrence Livermore National Laboratory are found in higher concentrations than the same contaminants found at SSFL? A. For those that I am aware of, yes."); • Bowers Decl. ¶¶32, 39, 48-49, 51-53, 58, 60, 62; • Ex. 4 to Bowers Decl., *Site-Wide Record of Decision Lawrence Livermore National Laboratory Site 300* at pages 1-1, 2-1, 2-2, 2-4, 2-5, 2-6, 2-8, and 2-9, and Tables 2.5-1, 2.5-2, 2.5-3, 2.5-4, and 2.4-1 (DOE July 2008).

Uncontroverted Fact	Boeing Evidence, DTSC Response
	DTSC Response **Disputed.** Objection: Witnesses lack personal knowledge. Comparisons between the amount of contaminants at the SSFL and those detected at other sites in California lacks the necessary foundation (*i.e.*, a complete characterization of the SSFL site); see State's. SUF, ¶ 117.
108. The Pratt & Whitney/UTC site is twice as large as SSFL and located 14 miles south of San Jose. It was formerly used for the manufacture and testing of rocket engines, including the development, manufacturing, and testing of solid propellant rocket motors and propellants. The site has many of the same contaminants as SSFL and has had higher historical concentrations of key contaminants, including TCE and perchlorate.	***Boeing's Evidence*** • Malinowski Dep. at [175:24] – [178:21] ("… Q. Are the principal contaminants of concern that are found at the United Technologies Corporation Pratt & Whitney site higher than the concentrations of the similar contaminants found at SSFL? A. For those that I'm aware of, yes…."); • *Id.* ("Q. Can you think of any reason to apply a different cleanup process or different cleanup rules at the Pratt & Whitney United Technologies site than at SSFL? A. No."); • Bowers Decl. ¶¶ 32, 34, 48, 53, 54, 58, 65; • Ex. 1 to Bowers Decl., *Revised Human Health and Ecological Risk Assessment Work Plan* at 2-1, 4-24 (ARCADIS Aug. 2009); • Ex. 3 to Bowers Decl., *Closure Plan – Former Open Burning Facility* at 1-15 through 1-17 (ARCADIS June 2010);

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Uncontroverted Fact	Boeing Evidence, DTSC Response
	• Ex. 5 to Bowers Decl., Order No. R2-2004-0032 Revision to Final Site Cleanup Requirements; United Technologies Corporation at 2, 9 (California Regional Water Quality Control Board 2004). ***DTSC Response*** **Disputed.** Objection: Witnesses lack personal knowledge foundation. Comparisons between the amount of contaminants at the SSFL and those detected at other sites in California lacks the necessary foundation (*i.e.*, a complete characterization of the SSFL site); see State's. SUF, ¶ 117.
109. SB 990 will result in a substantially more burdensome, time consuming, and expensive cleanup process than that required under generally applicable law, resulting in years of delay in the cleanup schedule, and the unnecessary expenditure of hundreds of millions of additional dollars, which will be allocated between Boeing and the federal	***Boeing's Evidence*** • Whipple Decl. ¶¶22–31; • Lenox Decl. ¶¶34–36; • Bowers Decl. ¶¶71–76; • Rutherford Decl. ¶¶48–51; • Brausch Dep. [201:19] – [205:17]; • Rainey Dep. [38:23] – [39:24]. ***DTSC Response*** **Disputed.** Objection: Defendant objects to Statement of Fact # 109 in that what is "required under generally applicable law" is a conclusion of law. Defendant further objects that the witnesses lack personal knowledge of how much the cleanup will cost, as

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Uncontroverted Fact	Boeing Evidence, DTSC Response
government.	the characterization of the site has not been completed. *See* State's. SUF, ¶ 117. Defendant further objects that the expert witnesses cited by Boeing lacked sufficient facts upon which to base their opinion about the cost of the cleanup because the characterization of the site is incomplete.
110. DTSC has made no attempt to determine whether any potential benefit SB 990's cleanup procedures might have on public health and safety would outweigh the significant potential adverse consequences.	• **Not Disputed**
111. SB 990 will require a substantial amount of additional soil to be removed from the site than under generally applicable law.	***Boeing's Evidence*** • Bowers Decl. ¶¶74–75; • Whipple Decl. ¶¶32–34; • Brausch Dep. [286:5] – [286:24]; • Rainey Dep. [91:2] – [91:17]; • *Id.* at [108:15] – [109:13]. ***DTSC Response*** **Disputed.** Objection: Defendant objects to Statement of Fact # 111 in that what is required under "generally applicable law" is a legal conclusion. Defendant further objects that the witnesses lack foundational

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Uncontroverted Fact	Boeing Evidence, DTSC Response
	personal knowledge of how much the cleanup will cost, as the characterization of the site has not been completed. *See* State's SUF, ¶ 117. Defendant further objects that the expert witnesses cited by Boeing lacked sufficient facts upon which to base their opinion about the amount of soil to be removed because the characterization of the site is incomplete.
112. Soil removal on a scale necessary to comply with SB 990 would require numerous additional dump-truck round trips through the community, greatly increasing the risk of traffic deaths and illness from pollution by diesel particulates.	***Boeing's Evidence*** • Whipple Decl. ¶¶32–34; • Bowers Decl. ¶¶77–80; • Brausch Dep. [293:15] – [294:17] ("Q. And am I correct that there is some risk to the public associated with additional trucking of soil from a site away from the site? A. Yes. … Q. … What is the nature of that risk? A. As I understand it, any time you have vehicular activity on a road, you have some measure of risk associated with accident rates and those sorts of risks that come to bear. Q. Also, diesel particulates? A. Sure. You have emissions from vehicles that travel on the roads."); • Rainey Dep. [91:2] – [92:23]; [107:10] – [109:10]. ***DTSC Response*** **Disputed.** Objection: Defendant objects that the witnesses

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Uncontroverted Fact	Boeing Evidence, DTSC Response
	lack foundational personal knowledge of how much the cleanup will cost, as the characterization of the site has not been completed. *See* State's SUF, ¶ 117. Defendant further objects that the expert witnesses cited by Boeing lacked sufficient facts upon which to base their opinion about the amount of soil to be removed because the characterization of the site is incomplete.
113. The excavation activities required to comply with SB 990 would destroy considerably more of the existing ecological habitat at SSFL than would otherwise occur.	***Boeing's Evidence*** • Bowers Decl. ¶74, 75. ***DTSC Response*** **Disputed.** Objection: Defendant objects that the witnesses lack foundational personal knowledge to testify about the quantification of ecological habitat that will be affected by SB 990's cleanup standard because it cannot be determined in the absence of a complete site characterization. *See* State's SUF, ¶ 117. Defendant further objects that the expert witnesses cited by Boeing lacked sufficient facts upon which to base their opinion about the amount of habitat that might be destroyed because the characterization of the site is incomplete.
114. The method by which contamination is released into the environment at a	• **Not Disputed**

Uncontroverted Fact	Boeing Evidence, DTSC Response
particular site has no relevance to the appropriate future land-use assumption or the amount of residual contamination that can safely remain at that site at the end of the cleanup.	

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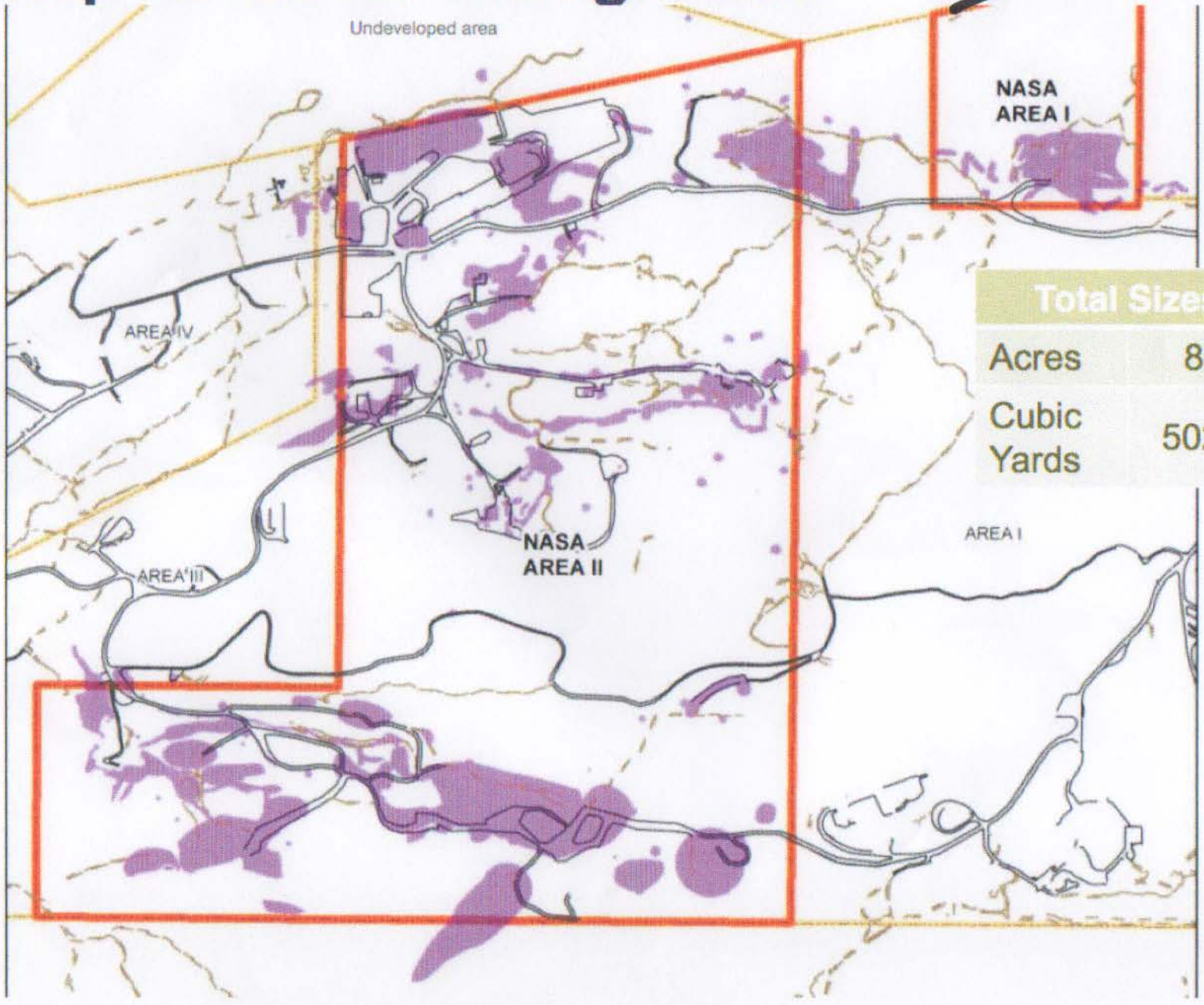
Los Angeles, California 90071

Cleanup Areas for Background

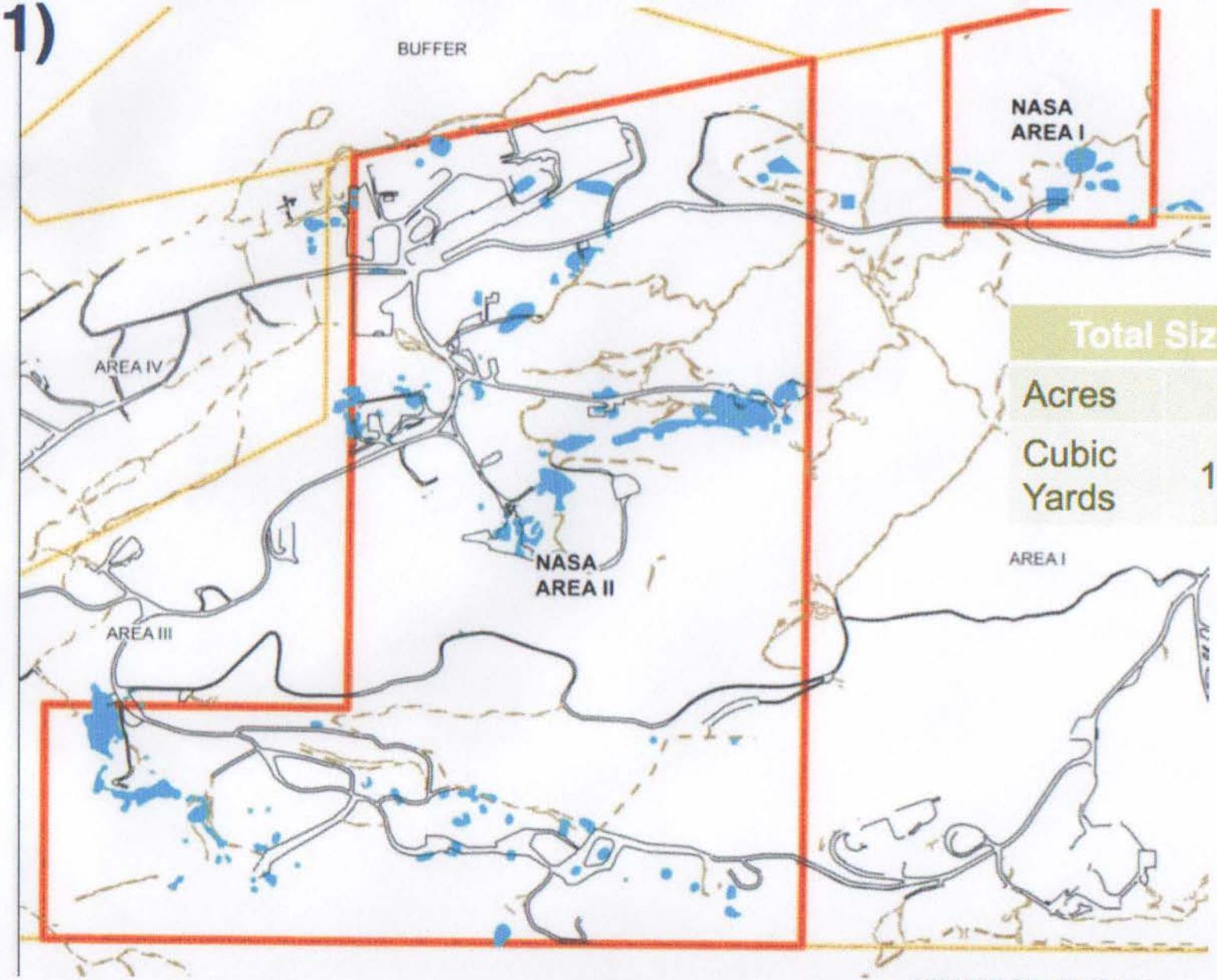
$200 M !



Total Sizes	
Acres	85
Cubic Yards	502K

$ 80 m

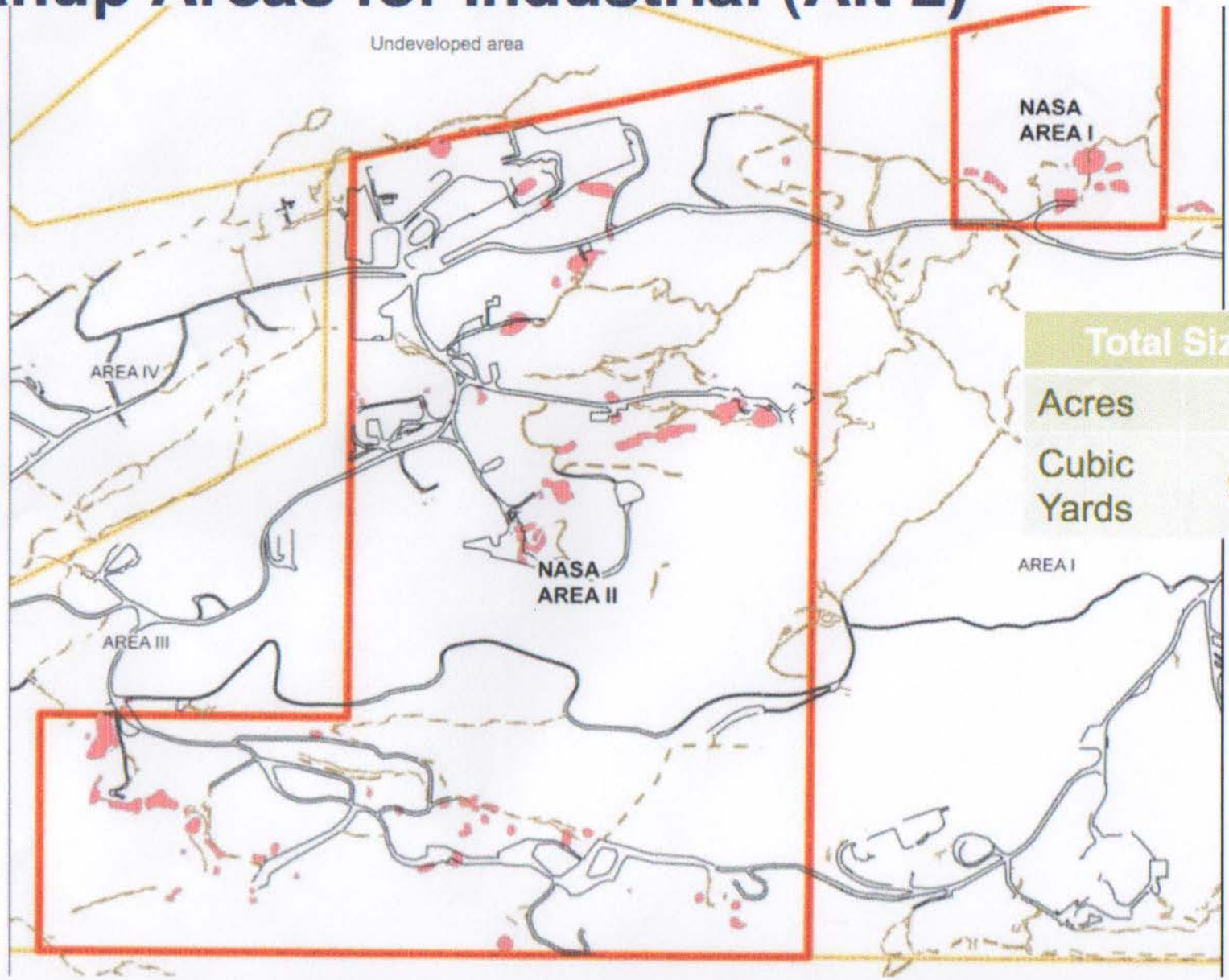
Cleanup Areas for Suburban Residential (Alt 1)



Total Sizes	
Acres	18
Cubic Yards	182K

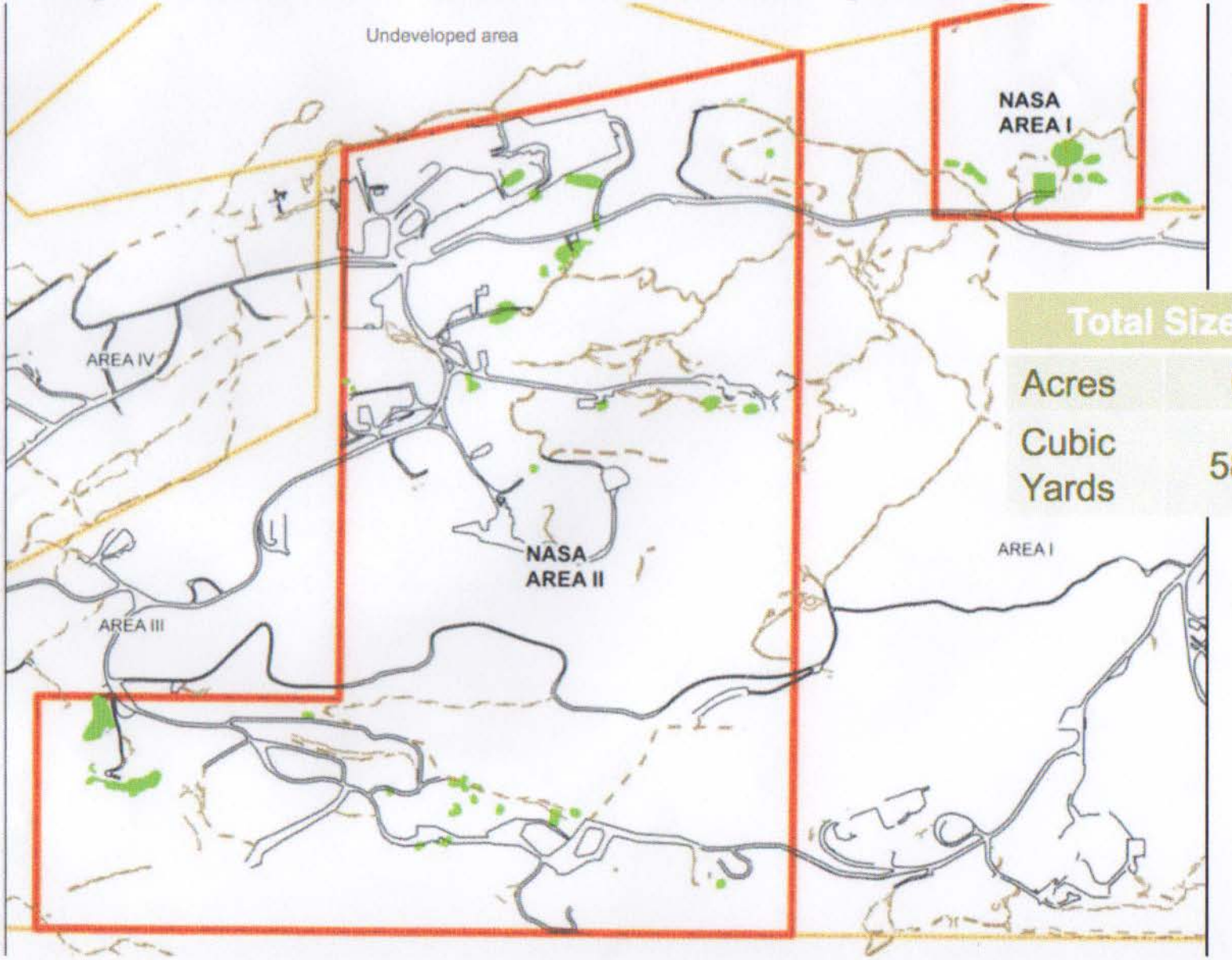
$ 410 m

Cleanup Areas for Industrial (Alt 2)



Total Sizes	
Acres	10
Cubic Yards	92K

Cleanup Area for Recreational (Alt 3) $25M



Total Sizes	
Acres	6
Cubic Yards	58K

cost. For example, the difference in making the site suitable for residential use versus achieving background levels is approximately $133 million. DTSC officials told us they believe NASA's cost estimate for achieving background levels is overstated, but NASA officials insist their estimates are based on the effort that would be required to meet the 2017 deadline and the exposure levels the DTSC previously required in the 2007 Consent Order.

Table 2: Cleanup Levels and Associated Soil Removal and Cost Estimates

Cleanup Level	Estimated Amount of Soil to be Removed (cubic yards)	NASA's Estimated Cost
Background (required under AOC)	502,000	$209 million
Residential	182,000	$76 million
Industrial	92,000	$37 million
Recreational (expected future land use for SSFL)	58,000	$25 million
No Action	Not Applicable	Not Applicable

Source: NASA presentation to the community surrounding the SSFL.

Interests of Outside Parties Played a Significant Role in NASA's Cleanup Decision. Although the NASA Administrator ultimately agreed to the AOC, other NASA officials involved in discussions about the Santa Susana cleanup expressed reservations about the terms of the agreement, with one senior official writing "...be advised that I believe [the AOC] to be inappropriately written and executed and sign it with reservations." According to NASA officials, input from members of Congress and local California leaders as well as advice from the CEQ played a significant role in the Agency's decision to agree to the terms of the AOC and in its subsequent decision to exclude clean-up alternatives other than background levels from further consideration in the NEPA process.

NASA, Boeing, and DOE officials told us that political interest in the SSFL cleanup is rooted in a long history of community distrust about the Federal Government's activities at the site, particularly the nuclear testing and research the Government conducted there in the 1950s. According to DOE officials, a partial meltdown of one of the nuclear reactors at DOE's portion of the site in 1959 has been a longstanding focus of public attention and suspicion from anti-nuclear groups.[26] DTSC officials also cited community distrust as one of the reasons California has taken a particularly aggressive approach to the SSFL cleanup.

As part of the NEPA scoping process, NASA identified five possible alternatives for remediation of the soil at the SSFL site, including cleaning to residential and recreational use standards. However, NASA's inclusion of the full range of possible clean-up alternatives caused concern among DTSC officials and California political leaders. The

[26] In fall 2012, the EPA released preliminary results showing lingering radiological contamination in the DOE-managed portion of the SSFL.

Table 1 shows the various cleanup or remediation levels possible for a site like the SSFL and the underlying assumptions associated with each level.

Table 1: Definition of Cleanup Level

Cleanup Level	Definition (Assumptions for Establishment of Exposure Limits)
Background	Returns the environment to its natural state prior to the introduction of contaminants.
Residential	Assumes that an adult or child could live on the remediated site 24 hours per day, 350 days per year, for 30+ years without adverse health impacts.
Industrial	Assumes workers could remain on the remediated site for 8 to 10 hours per day, 250 days per year over a 25-year period without adverse health impacts.
Recreational	Assumes that an adult or child could be exposed several hours per day for about 50 days per year over a 30-year period without adverse health impacts.

Source: NASA SSFL Fact Sheet

NASA Signed Consent Orders with State of California Governing Remediation at the SSFL. NASA has been involved in cleanup activities at the SSFL since at least the early 1980s. In August 2007, NASA, Boeing, and DOE signed a Consent Order for Corrective Action with the DTSC under which the Agency committed to clean up groundwater and soil in the portions of the SSFL it administers to "residential" exposure levels. According to the Federal district court that heard Boeing's legal challenge to SB 990, it is undisputed that cleanup to the residential level will fully protect human health and environment. Shortly after this Consent Order was signed, the California legislature enacted California Senate Bill (SB) 990, which imposes a stricter clean-up standard than the Consent Order.

In December 2010, NASA entered into another agreement with DTSC known as the Administrative Order of Consent for Remedial Action (AOC).[16] Under the terms of the AOC, NASA agreed that the 2007 Consent Order would continue to govern its cleanup obligations related to groundwater at Santa Susana (i.e., residential level), but the Agency would be required to clean the soil to the more stringent "background" level. NASA further agreed that soil cleanup at the site would be completed by 2017. According to a press release issued by the California EPA at the time, the AOC "meets the high bar set by Senate Bill 990 which requires the entire SSFL property to be cleaned up to stringent and protective standards, and places the cleanup of both chemical and radioactive contamination under the oversight of DTSC."

[16] Under California state law, an Administrative Order of Consent is an agreement signed by the DTSC and an individual, business, or other entity through which the violator agrees to take the required corrective actions or to refrain from an activity.

Wilmer Cutler Pickering Hale and Dorr LLP
350 South Grand Avenue
Los Angeles, California 90071

UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA

THE BOEING COMPANY,

Plaintiff,

v.

LEONARD ROBINSON, in his official capacity as the Acting Director of the California Department of Toxic Substances Control,

Defendant.

Case No. CV 10-04839-JFW (MANx)

JUDGMENT PURSUANT TO FED. R. CIV. P. 54(b)

The Court having granted Plaintiff The Boeing Company's Motion for Summary Judgment based on its determination that there were no genuine issues as to any material fact and that Plaintiff was entitled to judgment as a matter of law on Counts One, Two, and Three of the Amended Complaint, IT IS NOW, THEREFORE, HEREBY ORDERED, ADJUDGED, AND DECREED that judgment is entered in this action as follows:

1. Judgment is entered in favor of Plaintiff The Boeing Company as to Counts One, Two, and Three of the Amended Complaint.

2. California Senate Bill 990 ("SB 990"), codified at Cal. Health & Safety Code § 25359.20, is declared invalid and unconstitutional in its entirety under the Supremacy Clause of the United States Constitution.

3. Defendant in his official capacity as Acting Director of the California Department of Toxic Substances Control ("DTSC") and any successors, as well as any officers, agents, servants, employees, or attorneys acting for or on behalf of DTSC, or persons in active concert or participation with any such person or DTSC, are hereby enjoined from enforcing or implementing SB 990.

4. The Court finds that there is no just reason for delay of the entry of final judgment. In light of this finding, final judgment for Plaintiff is entered pursuant to Rule 54(b) as to Counts One, Two, and Three of the Amended Complaint. Counts Four through Nine of the Amended Complaint, which seek the same relief sought in Counts One, Two, and Three, are stayed pending further order of the Court.

The Clerk is ordered to enter this Judgment.

DATED: May 5, 2011

HON. JOHN F. WALTER
UNITED STATES DISTRICT JUDGE

Wilmer Cutler Pickering Hale and Dorr LLP
350 South Grand Avenue
Los Angeles, California 90071

FEBRUARY 14, 2013

AUDIT REPORT

OFFICE OF AUDITS

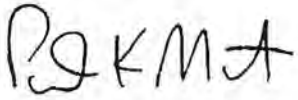
NASA'S ENVIRONMENTAL REMEDIATION EFFORTS AT THE SANTA SUSANA FIELD LABORATORY

OFFICE OF INSPECTOR GENERAL

National Aeronautics and Space Administration

REPORT NO. IG-13-007 (ASSIGNMENT NO. A-12-011-01)

Final report released by:



Paul K. Martin
Inspector General

Acronyms

AOC	Administrative Order of Consent
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	U.S. Department of Energy
DTSC	California Department of Toxic Substances Control
EIS	Environmental Impact Statement
EMD	Environmental Management Division
EPA	Environmental Protection Agency
FY	Fiscal Year
GSA	General Services Administration
NEPA	National Environmental Policy Act
OIG	Office of Inspector General
RCRA	Resource Conversation and Recovery Act
SB	Senate Bill
SSFL	Santa Susana Field Laboratory
TCE	Trichloroethylene

OVERVIEW

NASA'S ENVIRONMENTAL REMEDIATION EFFORTS AT THE SANTA SUSANA FIELD LABORATORY

The Issue

The Santa Susana Field Laboratory (Santa Susana or SSFL) is located on 2,850 acres in the Simi Hills of Ventura County, California, approximately 30 miles northwest of downtown Los Angeles. First opened in 1948 in what was then a remote area, the facility was for many years the site of research efforts on civilian use of nuclear energy by the Department of Energy (DOE) and rocket testing for defense and space exploration by the United States Air Force (Air Force) and NASA.[1] Over the years, these activities resulted in radiological and chemical contamination of the soil and groundwater at the site.

NASA is responsible for administering 451.2 acres in two areas of the SSFL site, which includes 41.7 acres of Area I and all 409.5 acres of Area II. The Boeing Company (Boeing) owns and operates the remainder of the SSFL, and the DOE leased property in Area IV from Boeing. The Santa Susana site is home to at least 10 species of sensitive plants and at least 5 species of sensitive wildlife, as well as the Burro Flats Painted Cave, which contains pictographs and petroglyphs created by early Native Americans.

For many years, the Santa Susana facility has been the subject of considerable attention from anti-nuclear activists, environmentalists, and the public. From the mid-1950s until the mid-1990s, DOE and its predecessor agencies conducted civilian nuclear research and energy development projects at the SSFL.[2] A partial meltdown at one of the nuclear facilities in 1959 led to a release of radioactive contaminants.

Although radioactive contamination remains a concern in the DOE portion of the SSFL, the primary contaminant in the NASA-administered areas of the site is trichloroethylene (TCE), a nonflammable, colorless liquid identified as a potential carcinogen. NASA and the Air Force used large quantities of TCE to clean rocket engines, and prior to the early 1960s when catch basins were installed, allowed the substance to run freely onto the ground. While the Air Force was a large contributor to the TCE contamination, NASA – as the current administrator of the property – has assumed responsibility for the cleanup.

[1] The area has become much less remote over time. More than 500,000 people currently live in southern Ventura County, California, where the SSFL is located.

[2] DOE's predecessor agency was the Atomic Energy Commission.

NASA, like all Federal agencies, is required to comply with laws and regulations that govern cleanup of contaminants left behind from Agency activities.[3] Generally, these laws require responsible parties to conduct risk assessments to identify and evaluate the threat that contaminants pose to human health and structure their remediation efforts based on the results of those assessments. One of the principal factors considered in this type of assessment is the reasonably foreseeable use of the affected property, such as agriculture, housing, industry, or recreation. Each scenario assumes future users will be exposed to some amount of residual contamination at the site, with greater assumed exposure requiring a more stringent cleanup standard. The various clean-up levels potentially applicable to a site like the SSFL include background, residential, and recreational.[4]

Boeing has publicly stated that it intends to preserve its portion of the SSFL site – by far the largest section – for use as open space parkland upon completion of cleanup activities. Similarly, NASA officials told us that the anticipated future use of the NASA portion of the SSFL site is for recreation.

NASA has been involved in cleanup activities at the SSFL since at least the early 1980s. In August 2007, NASA, Boeing, and DOE signed consent orders with California's Department of Toxic Substances Control (DTSC) agreeing to clean up groundwater and soil at the SSFL to residential exposure levels. Shortly thereafter, in October 2007, California Senate Bill No. 990 (SB 990) was enacted. SB 990 applies only to the SSFL and requires that the site be restored to either a "suburban residential" or a "rural residential (agricultural)" level, whichever will produce the lower permissible residual concentration for each contaminant. The legislation specifically prohibits the sale, lease, or other transfer of the property unless DTSC certifies that the land has undergone complete remediation.

In November 2009, Boeing filed a Federal lawsuit challenging SB 990 as violating the U.S. Constitution. In April 2011, a judge in the United States District Court for the Central District of California ruled in Boeing's favor and declared the law unconstitutional. The State of California appealed that decision and oral arguments are expected before the U.S. Court of Appeals for the Ninth Circuit in early 2013.

In December 2010, NASA entered into a second agreement with the DTSC known as the Administrative Order of Consent for Remedial Action (AOC). Under the terms of the AOC, NASA agreed that the 2007 consent order would continue to govern its cleanup obligations related to groundwater at Santa Susana, but the Agency would be required to

[3] The three primary environmental laws are the National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-4347; the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §9601 et seq.; and the Resource Conservation and Recovery Act of 1976, 42 U.S.C. §6901 et seq.

[4] Background level means returning the site to its natural state prior to the introduction of contaminants. Residential level assumes that an adult or child could live on the remediated site 24 hours per day, 350 days per year, for 30+ years. Recreational level assumes that an adult or child could be exposed several hours a day for about 50 days per year over a 30-year period without adverse health effects.

return the soil to its original state before any testing activities occurred – referred to in the AOC as "background" levels. NASA further agreed that it would complete soil cleanup to this standard by 2017.

To comply with the 2010 Order, NASA budget requests include proposed funding increases of approximately $30 million per year from fiscal years (FYs) 2014 through 2017 (an additional $120 million total for the 4 years). NASA estimates that cleanup costs for Santa Susana to the AOC standard could cost at least $200 million. In contrast, estimates to clean the site to a standard suitable for residential and recreational use are in the range of $76 million and $25 million, respectively. Santa Susana is not the only pending environmental remediation project at NASA. According to Agency environmental management officials, several other projects pose greater risks to human health and the environment than Santa Susana.

The AOC includes a provision for NASA to follow the National Environmental Policy Act (NEPA), which requires the Agency to complete an Environmental Impact Statement (EIS) for its cleanup activities at Santa Susana.[5] As part of this process, NASA initially identified five possible alternatives for remediation of the site, including cleaning to residential and recreational use standards. However, NASA's inclusion of alternatives other than cleanup to background levels caused concern among DTSC officials and California political leaders.

In May 2012, DTSC sent a letter to the NASA Administrator to request that "NASA modify its...process to align itself with...a cleanup of the site to background levels...in compliance with the AOC" rather than evaluate less stringent cleanup alternatives. In addition, Senator Barbara Boxer from California asked the Council on Environmental Quality (CEQ), a White House office that coordinates Federal environmental efforts and works closely with agencies in the development of environmental policies, whether NASA was legally required to consider cleanup options other than background level. After the CEQ advised the Senator that there was no such requirement, NASA limited its EIS process to consideration of only one cleanup standard – background levels.

Given the high cost of the SSFL cleanup and the unusual legal underpinnings of the AOC, we examined whether NASA's plans to clean up environmental contamination at Santa Susana conform with the laws and standards that generally govern such remediation efforts and provide the best value to the taxpayer. Details of the audit's scope and methodology are in Appendix A.

Results

NASA has agreed to clean its portion of the Santa Susana site to a level that exceeds the generally accepted standard necessary to protect human health in light of the expected

[5] An EIS is a detailed evaluation of the Agency's proposed action and possible alternatives. The public, other Federal agencies, and outside parties may provide input into development of an EIS and are afforded an opportunity to comment on the resulting draft EIS.

future use of the site. Moreover, the cleanup is likely to cost the taxpayers significantly more than the cleanup effort NASA agreed to in its 2007 Consent Order with the State of California – a remediation level itself that was more stringent than what would be required based on the expected use of the site. Although the precise outlines of the cleanup effort and therefore its ultimate cost have not been finalized, NASA estimates that cleaning the SSFL to background levels could cost more than $200 million, or more than twice the cost to clean it to residential levels and more than eight times the cost to clean it to a recreational use standard. In addition, because cleanup to background levels may require highly invasive soil removal, there is a risk that such a cleanup would result in significant damage to the surrounding environment and to archeological, historical, and natural resources at the site.

Management Action

We recommend that the Administrator, with the assistance of the Associate Administrator for Mission Support, reexamine the Agency's current plans for cleaning the NASA-administered portion of the Santa Susana site and ensure that its environmental remediation is conducted in the most cost-effective manner in keeping with the expected future use of the property.

In accordance with our usual practice, we provided NASA with a draft of this report and requested the Agency respond to our recommendation. Typically, the Agency indicates whether it concurs with our recommendation and describes any corrective actions it plans to undertake to meet the intent of the recommendation. However, in this case NASA declined to indicate whether it agreed or disagreed with our recommendation.

Rather, after noting that NASA "fully appreciates" our recommendation, the Associate Administrator stated that the Agency will continue to work with the DTSC and local community stakeholders "within the requirements" of the AOC and at the same time will "make every effort to implement a [cleanup] program that will achieve both cost avoidance and protection of cultural and natural resources." In addition, the Associate Administrator noted several recent developments that may affect how the AOC is interpreted and implemented. (See Appendix F for Management's Response).

Although we are encouraged by NASA's pledge to work toward a cleanup that achieves cost avoidance and preserves cultural and natural resources, it is not clear that the Agency can achieve the most appropriate and cost-effective remediation effort given the constraints of the current AOC. Accordingly, our recommendation remains unresolved and we will continue to monitor the Agency's efforts to clean the Santa Susana site.

NASA COMMITTED TO AN EXCESSIVE AND UNNECESSARILY COSTLY CLEANUP

NASA has agreed to clean its portion of the Santa Susana site to a level that exceeds the generally accepted standard necessary to protect human health in light of the expected future use of the site. Moreover, the cleanup is likely to cost taxpayers significantly more than the cleanup effort NASA agreed to in its 2007 Consent Order with the State of California – a remediation level that was more stringent than what would be required based on the expected use of the site. Although the precise outlines of the cleanup effort and therefore its ultimate cost have not been finalized, NASA estimates that the cost to clean the soil to background levels could exceed more than $200 million. This is more than twice the cost to clean the site to residential levels and more than eight times the approximately $25 million NASA estimates it would cost to clean the site to a recreational use standard.[25] In addition, because cleanup to background levels may require highly invasive soil removal, there is a greater risk that such a cleanup may result in significant damage to the surrounding environment as well as to archeological, historical, and natural resources at the site.

NASA's Remediation Plan Commits the Agency to a Cleanup Standard Not Based on Risk to Health. Environmental cleanup standards generally are set after measuring the risks to human health in light of the expected future use of the property. While Boeing is cleaning its portion of the SSFL site – by far the largest section – to residential cleanup standards, it has publicly stated that it intends to preserve the site for use as open space parkland upon completion of its cleanup activities. Although final disposition of the NASA-administered portions of the SSFL lies with the GSA, NASA officials said they also expect the Agency's portion will ultimately be used for recreation. According to NASA, DOE, and EPA officials and in light of this expected land use, a normal NEPA process – where the full range of alternatives would be identified and evaluated prior to deciding on the course of action – would likely have led to a decision to clean the area to a less stringent standard than background levels. Although California officials have not yet established the specific criteria necessary for NASA to achieve background levels for the various contaminants at the site, these levels are expected to approximate the natural concentrations that would have been found in the soil prior to any rocket testing activities.

Less Costly Cleanup Alternatives Exist. NASA estimates potential costs of more than $200 million to clean its portion of the SSFL site to background levels to meet the terms of the AOC. This compares to $76 million to make the site appropriate for residential use and $25 million for recreational use. As shown in Table 2, the possible scenarios for NASA's remediation efforts at the SSFL site vary considerably in effort required and in

[25] The estimates above are for the soil cleanup at SSFL based on the 2010 AOC. They do not include the cost of groundwater cleanup, which is still governed by the 2007 agreement.

Santa Susana Mountain Park Association

Dedicated to the Preservation of the Simi Hills and Santa Susana Mountains

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September 28, 2013

Mr. Allen Elliott
SSFL Project Director
NASA MSFC AS0, Building 4494
Huntsville, AL 35812

Comments of Santa Susana Mountain Park Association on Draft Environmental Impact Statement for Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California, dated July 2013

SUMMARY:

NASA's DEIS does not serve its purpose, which is to completely inform decision makers so they can decide how to best execute the cleanup. The DEIS is flawed because it lacks important information. DTSC must supply much of the missing information. The DEIS is so inadequate it should be re-issued after critical missing information is made available or determined.

1. The DEIS lacks guidance on situations and actions that depend on vague language in the 2010 Administrative Order on Consent (AOC) that governs the cleanup. DTSC must provide NASA with an authoritative and binding interpretation of the language of the AOC.

   The DEIS is incomplete because it lacks guidance that still-undelivered DTSC documents, such as the DTSC EIR should include. This future EIR document must include a CEQA analysis that balances cleanup goals under various scenarios, including costs (both financial and environmental). Additionally, the DTSC EIR must provide information on what soils are to be removed in culturally sensitive areas, and what cultural resources will remain after the cleanup, as DTSC has sole authority to make these decisions under the AOC.

2. The DEIS is incomplete because it does not specify expected outcomes for cultural resources, both archeological and architectural.

3. The DEIS is incomplete because it excludes analysis of all possible levels of cleanup except the "cleanup to background" alternative. Many commentators specifically requested inclusion of other reasonable alternatives during the scoping process.

4. The DEIS is incomplete because it does not address how to obtain replacement soil that will meet the requirements in the AOC.

5. The DEIS is incomplete in its specification of cumulative impacts with other concurrent projects; viz., the DOE and Boeing cleanups.

6. The DEIS is incomplete in its survey and mitigation methods for plants.

ESSENTIAL POINT OF SSMPA's COMMENTARY:

NASA must acquire from DTSC important missing information, and NASA must issue a corrected, comprehensive DEIS that provides decision makers adequate information to make an informed decision on how the cleanup should proceed.

COMMENTS:

1 DEIS Lacks Guidance on AOC Language and on Site-Specific Guidelines

1a. The AOC charged DTSC with oversight authority for the cleanup.[1a] DTSC must provide NASA with a binding, authoritative interpretation of the language of the AOC. NASA must learn what SSFL-situation-specific rules will govern decisions and actions for the cleanup.

1b. DTSC must provide NASA with much information that a DTSC EIR-type document would contain.

1c. DTSC must provide guidance to NASA on many subject areas before NASA can complete its DEIS. Of major consequence for every decision is the requirement under the AOC that at least 95% of any soil that has ANY amount of contamination over background level must be removed.[1c] This ambiguous requirement has pervasive impact on every item discussed below.

1d. DTSC does not expect to deliver its EIR until some unspecified time in the future.[1d] NASA needs information from such EIR to complete a valid EIS that can be used as a decision making guide. Does this lack of a realistic schedule not call into question the feasibility of the AOC-mandated completion date of 2017? Can the governing AOC therefore any longer be considered 'binding'?

1e. The NASA Associate Administrator for Mission Support Directorate notes that NASA will be assisting DTSC in a CEQA analysis estimated to be complete by the end of 2015, but also notes that analysis will be restricted to the AOC cleanup level.[1e.1] **(**See **Attachment 1.)** To the best of our knowledge, both NEPA and CEQA set standards for environmental considerations that must be addressed in environmental documents, and contracts that are inconsistent with that law do not trump NEPA and CEQA provisions. The NEPA and CEQA analysis must consider all options, not the single path set by the AOC[1e.2] When will DTSC's actual EIR, including CEQA considerations, be issued as a draft? When will it be issued in final form? It appears these documents are not scheduled before execution of the cleanup to the constraints of the AOC. That is not our understanding of CEQA or environmental policy.

1f. There are many environmental cleanup projects in the U.S. They "all" (as far as anyone knows) MUST operate according to federal and state EPA laws that were passed by legislators concerned with the environment. Operating under EPA processes means any toxic cleanup MUST evaluate multiple reasonable alternatives. The SSFL cleanup was forced to be uniquely different from other projects, because the AOC was signed before any EIS-type document. Why the difference? [1f] See **Attachment 2.** How is the different treatment of this project explained? We can fathom no reasonable explanation.

SSMPA advocates a cleanup based on scientific results, testing and standards, not political pressures.

1g. NASA should include the AOC document as an Appendix to the DEIS.

---

2 DEIS Does Not Specify Expected Outcomes for Cultural Resources

2a. DTSC must interpret the AOC on the handling of Native American cultural resources. The AOC language is vague in its definition of Archaeology, defining it as "Artifacts." They must be "formally recognized as Cultural Resources".[2a] What does a "formally recognized cultural resource" mean? Who needs to recognize what to meet that odd definition? Interpretive guidance is critically needed, because much of the Burro Flats Cave area, registered in the National Register of Historic Places, is on the NASA property. The future of Burro Flats and related nearby Native American areas is yet to be decided by DTSC. An artifact is generally understood to represent a movable, historically used, significant object. Given that definition, the Burro Flats Cave itself could be eliminated by the language in the AOC, as well as bedrock mortars that are very significant in the immediate area. An explanation of how the Burro Flats Cave, and nearby related sites, will be treated must be provided by NASA and DTSC in the DEIS.

2b. The DEIS states that cleanup of approximately 0.65 acres of the Burro Flats site (CA-VEN-1072) will be undertaken.[2b] At the August 28 public comment session on this DEIS, a NASA representative indicated they have been told the Cultural Resource definition in the AOC means the National Register of Historic Places (only). Under that definition, this site is exempt from cleanup. Why would this DEIS indicate any portion of this site is to be cleaned? This discrepancy highlights the problem of who controls the cleanup, an ongoing issue as we reviewed the DEIS. We do note, however, the definition of Artifact still was not clarified so the Burro Flats site may still be subject to cleanup under the AOC; since this site may still be subject to cleanup due to vague language, we object to cleanup of the Burro Flats site, as it is an identified and registered National Register of Historic Places area, and as it is an identified Indian Sacred Site.

What are the contamination levels at the archaeological sites, and in particular, the 0.65 acre Burro Flats parcel slated for cleanup?

2c. The DEIS does not provide any information on how the boundaries of the archaeological sites on the property were determined. What survey methods were used? When was that done? What was found on the site? How was it tested? At what depth? What will DTSC do with an artifact NASA found in that survey, or a midden area that would not qualify as an artifact (that surely would be "contaminated")?

2d. Only a pedestrian survey of the site boundaries was done. Are additional pedestrian studies, and more detailed studies needed in the area where soil is to be removed? The DEIR lacks sufficient specificity to understand what has been surveyed.[2d] A more comprehensive survey using soil sampling techniques must be undertaken to determine the true size of the District. The Burro Flats Archaeological District extends outside the borders of Area II into Area III and possibly into Area IV. This site should not be segmented between the 3 RPs, but should be looked at holistically as part of the entirety of the Cultural Resources of SSFL. New, detailed surveys of this site must be accomplished prior to making irrecoverable decisions to "clean up" this exceptional and irreplaceable Indian Sacred Site**.**

An additional boundary dilemma with the Burro Flats site and the National Register of Historic Places (NRHP) is that as of 1972, the NRHP site is 25 acres. Since the DEIS recognizes only 17 acres as the site, where are the boundary differences? Does the NRHP boundary exclude or include the 0.65 acres that is to be cleaned up? What is protected under the NRHP, and what should be protected as part of VEN-1072?

The steps in 2b, 2c, and 2d are all necessary to define the Burro Flats site. Again we see the same problem – DTSC must advise what can be excluded from the cleanup. NASA must provide information on what they will exclude, given an updated DTSC interpretation. And here, on the single site that is already NRHP certified, the boundaries must be established, and the site still needs a detailed evaluation by a qualified archaeologist, and careful and limited testing must be done to provide information on contamination of any part of the site. The approach that DTSC and NASA will take to an Indian Sacred Site must be incorporated in the decision. All this information needs to be provided and presented, with proposed resolutions, in a re-issued DEIS.

2e. What will be done with newly discovered archaeological Artifacts found in the process of the cleanup, that are not "culturally recognized"? How will these items be preserved or protected?

2f. The Appendix for Cultural Resources[2f] lists multiple sites within a mile of the NASA property that have Cultural Resources We have heard that multiple additional sites have been identified during recent surveys on nearby SSFL properties. It appears the list in the Appendix at Table 4 has not been updated to reflect current information. The segmented nature of the various studies is of concern. Please review and update as needed.

2g. DTSC must interpret the AOC on the handling of Architectural Structures that are eligible historic structures (rocket engine testing facilities). Three structures at each of the Alpha, Bravo and Coca test stand areas have been found eligible under NRHP and SHPO (nine total structures). [2g] What contamination has been found in the soils under the test stands? Have testing boreholes been drilled under these structures? What has been found? Appendix C, Figure 8 at page C-53, shows significant contamination in the Test Stand Areas, but does not disclose information specific to the key structures. The DEIR is deficient in not disclosing specific information on contamination issues in these areas, and particularly in the foundation areas of the NRHP and SHPO-eligible structures.

2h. Will DTSC allow some or all of these historic structures to remain?

2i. Since test stands are not "artifacts", but are recognized as significant historic structures under Section 106, NRHP and SHPO, what will happen to these structures?

2j. The standards established by Section 106 (reproduced below) provide a mandate to seek ways to avoid or mitigate adverse effects on historic properties. Both NASA and DTSC need to indicate their intention for these structures that could be irreparably destroyed and a key part of our country's rocket history forever thereby lost. Because the NASA property holds key remnants of our country's space and rocket development, consideration of the possible end use of the property as a park should be incorporated in the preservation decisions. If the NASA parcel ultimately is joined with the larger Boeing parcel that is expected to become a park, preservation of appropriate NRHP and SHPO-eligible structures to inspire future generations should be given a much higher priority. These decisions should be documented in Alternatives presented in the re-issued DEIS.

Appendix C, Section 5.1 is reproduced in part below (emphasis added):

"The enabling legislation for Section 106 is contained in 36 CFR 800, "Protection of Historic Properties." The Section 106 process entails three basic steps:

1. Identify historic properties potentially affected by the undertaking.
2. Assess adverse effects on historic properties.
3. Seek ways to avoid, minimize, or mitigate adverse effects on historic properties."

2k. Prepare and present a cost/benefit analysis for preserving and maintaining the historic structures and Districts. Include contamination analysis (soil and building), as well as costs and benefits identified in the study, to make informed decisions about which to preserve, and which can be preserved and be safe for visitors. We encourage special attention to Coca V and Alfa III and their associated blockhouses, as those were targeted early as preferred candidates for preservation, if preservation choices ultimately are necessary.

2l. With respect to all cultural resources, please provide information for the groundwater and surface water effects due to soil mitigation. Specifically include consideration of the effect of the 330,000 cubic yard reduction in site soils noted in the soil replacement plan, including collateral re-contamination and other effects from flooding and silt runoff due to soil changes.

The impacts anticipated to the archaeological cultural resources from removal of soil from parcels within the designated archaeological site have not been reviewed or disclosed in the DEIS.

The impacts anticipated to the archaeological cultural resources from removal of soil from parcels outside of the designated archaeological site, but within the NASA DEIS study area have not been reviewed or disclosed in the DEIS.

Nothing is disclosed relative to the Burro Flats cave except that soil is to be removed from 0.65 acres – from where?

The impacts anticipated to the historic test stands (Alpha, Bravo, Coca) from removal of soil from parcels within the designated historic area have not been reviewed or disclosed in the DEIS.

The impacts anticipated to the historic test stands (Alpha, Bravo, Coca) from removal of soil from parcels outside of the designated historic area, but within the NASA DEIS study area, have not been reviewed or disclosed in the DEIS.

---

3 DEIS Excludes Consideration of Alternative Cleanup Levels

3a. Exclusion of any possible cleanup alternatives, except one, is a momentous detriment to the usefulness of the DEIS. The DEIS excludes from consideration reasonable alternatives supported by authorized standards of the State of California including cleanup to Suburban Residential, Commercial/Industrial, and Recreational levels.

3b. The DEIS should be expanded to include those excluded alternatives, presenting comparison of costs and all related effects on transportation, biological resources, cultural resources, soil, water, and air.

3c. We include as **Attachment 3** charts NASA presented at past public meetings. The charts show estimates for cost and materials that could be expected for Background, Suburban Residential, Industrial, and Recreation level cleanup alternatives. Presented just behind these charts, is a summary of the anticipated costs for each type of cleanup and a chart summarizing the meaning of each cleanup standard.[3c] These charts and related commentary on cleanup standards and costs should be included in the re-issued DEIS.

3d. A discussion of alternatives should include what NASA will do if the Appeals Court supports the lower court decision, which will have the effect of stating that special, stricter cleanup standards are not required at SSFL under California law. An explanation should be provided to explain why the public should pay for a cleanup that is inconsistent with the law, and why local residents should be subjected to significant environmental contaminants from emissions, disturbed soil and related fugitive dust effects, and surface water runoffs that are greatly increased by unavoidable consequences of a background level cleanup of the site. See, in **Attachment 4**, the text of the District Court decision filed May 5, 2011, which prohibits DTSC from compelling compliance with SB990. The AOC appears to operate as a substitute for a questionable law, but the justification for its position requiring a "background level cleanup" on this important site is very unclear.

3e. The February 2013 Report of the Inspector General of NASA brought up many similar questions. [3e.1] The report requested that the level of cleanup be re-evaluated. The Inspector General also questioned whether NASA would receive funding allocations within its own budget to perform the cleanup to the draconian[3e.2] standards required by the AOC. How will this be resolved? Will NASA be provided sufficient funding for cleanup to this background standard, even if the cleanup to SB990-type levels is again held unlawful by the Appeals Court? See **Attachment 5**, "NASA Inspector General Overview February 14, 2013".

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4 DEIS Is Not Complete Regarding Basic Soil Considerations

4a. The DEIS does not fully address how appropriate backfill soil will be sourced. Some

possible suppliers are noted, but there is no guidance on how soils that must match the specific background levels for SSFL will be identified. Source sites from which sufficient quantities of such soils may be obtained are not identified.[4a]

4b. The DEIS does not explain why or how three times as much soil will be removed from the site as will be backfilled. Can permanent reduction (by non-backfilled removal) of up to 333,000 cubic yards of soil be deemed appropriate mitigation? [4b]

4c. The site, apparently to be reconstituted with up 333,000 cubic yards less soil, will have significant effects on surface water runoff. A major problem on the SSFL site has been surface water runoff and related contamination effects. Although the site has had a better record in the last two years, rainfall levels have been very low. Surface water runoff effects resulting from substantial reduction in surface soils must be reviewed, explained, and disclosed. It is well settled that a reduction in permeable surfaces (typically associated with development) causes significantly increased runoffs. What will be the runoff effects of the decreased soil in a year with average rainfall? What is expected when rainfall is significantly over average levels?

4d. The EIS states "onsite" (*ex situ* and *in situ* treatment) soil cleanup may be performed where appropriate.[4d.1] The AOC seems to prohibit this promising alternative and states the only allowable method for soil cleanup is removal.[4d.2] DTSC and NASA must both explain how this seeming contradiction is possible based on the AOC language. The "leave in place" remediation alternative should be considered in the NEPA and CEQA analysis, as well as in the DEIS, because such a remediation approach would entail significantly less environmental impact, by reducing soil excavation, hauling, and soil replacement.

4e. The DEIS includes a review of Environmental Justice which generally looks at the impacts to lower income and minority populations that will be affected by the hauling. Nothing is presented to address such demographics in the areas that are proposed to receive, and then permanently live with possible effects from the contaminated material, such as Buttonwillow, Kettleman, and Beatty. The Environmental Justice analysis should be extended in the re-issued DEIS to include these areas.

4f. At the August 28, 2013, public comment session on the DEIS, it was disclosed the haul trucks are merely covered with tarps when traveling with contaminated material. We request much more complete protection for our community from the contaminated material that the AOC's require to be removed. Better alternatives for reduced dust from the trucks need to be developed and implemented.

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5 DEIS Is Not Complete Regarding Cumulative and Combined Impacts

5a. The combined impacts of all concurrently operating SSFL projects regarding traffic and transportation-related pollution are non-specific: (e.g., "…likely would be noticeable …").[5a]

5b. What transportation routes will the other related projects (concurrent DOE, Boeing cleanups) use. Will they use the same or different haul routes?

5c. What will the transportation emissions be for all projects combined? What will be the total effect on surrounding communities?

5d. The number of trucks on all projects, travelling on Woolsey Canyon during daylight hours must be disclosed, as well as twilight and night truck traffic volumes for all projects combined. This disclosure should be presented in a table format, and specify the anticipated number of incoming and outgoing trucks in one hour increments during weekdays and weekends (if applicable), for all projects to present a realistic understanding of the traffic impact. Include a column for worker arrivals and departures from the site. Provide hour of the day in the rows, and in columns show incoming and outgoing traffic for each of NASA, DOE, Boeing. Combine all workers for all projects in the last set of columns for cumulative incoming and outgoing traffic.

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6 DEIS Is Not Complete Regarding Plants

6a. The DEIS survey and analysis of flora are insufficient. They lack quantification and specifics related to impacts.

6b. How many plants of each type are involved? How many coast live oak (*quercus agrifolia*) trees will be removed or otherwise endangered? How many western sycamores? Although counts for Santa Susana tarplants are shown, presentation of plant density and expected soil removals (similar to Appendix C, Figure 8 at page C-53) would greatly improve the understanding of the effect of the project on this State-listed Rare species.

6c. What steps will NASA take, over what period of time, to regenerate sensitive species? For example, we do not believe Santa Susana tarplant is part of the seed mix specified for replanting. How will plantings be monitored to encourage regrowth?

6d. What steps will NASA take to eliminate introduction of invasive species as off-site soil is brought in as part of the soil replacement? How will plants be affected by re-filling the site with only one-third as much soil as was removed? How will the segmented cleanup and backfills affect the overall health of this habitat, which in many areas is uniquely unaffected by the major metropolitan community next door?

CONCLUSION AND CLOSING COMMENTS:

We believe the preceding comments taken as a whole make it clear the DEIS as issued is incomplete, inadequate, and does not conform to key environmental laws such as NEPA and CEQA. Lack of input from DTSC, for virtually every decision affecting cultural resources and key soil removal approaches, thwarts the DEIS from fulfilling its purpose as a guide to responsible decision-making.

Additionally, it is dangerous to adhere to the 2017 completion date for cleanup that the AOC arbitrarily mandates. A hurried cleanup will likely become an irrevocable mistake, due to significant negative impacts to soil and cultural resources that may occur. The DEIS must be re-issued after DTSC and NASA determine and agree to robust decision-enabling guidelines, and the DEIS must evaluate multiple reasonable alternatives.

Finally, the target date for completion of the cleanup must be extended. The current target date of 2017 has become unrealistic. A revised target date of 2020 will permit meaningful evaluation, compliant with NEPA and CEQA processes, of multiple, reasonable cleanup alternatives and their impacts. An orderly and logical cleanup can then be executed responsibly, thereby avoiding unwarranted destruction of irreplaceable cultural and natural resources.

SSMPA looks forward to seeing responses to our comments in upcoming environmental documents and asks that you seriously consider them. We primarily represent Chatsworth and West Hills, two areas that will be most affected by the thousands of truckloads of materials that are required to be moved by the AOC. In a manner similar to that voiced so clearly by the NASA Inspector General[7], we too, have great difficulty seeing that cleanup to these special AOC standards is of any tangible benefit. (See **Attachment 6**.) But we certainly see the detriment to our community and the huge governmental costs we will pay as taxpayers.

Please be assured that we resolutely support cleanup of this site to "reasonable" levels. We believe the "Suburban Residential" cleanup standard, set by the 2007 Consent Orders, is a very reasonable cleanup level (exceeding requirements) if the land will become open space, as almost all who are familiar with the property request.

Sincerely,

Teena A. Takata
President, Santa Susana Mountain Park Association
P. O. Box 4831
Chatsworth, CA 91313-4831

About **Santa Susana Mountain Park Association**:

Santa Susana Mountain Park Association is a 41 year-old non-profit organization based in Chatsworth, Los Angeles, California.

We represent approximately 700 members and concerned citizens, and we partner with many organizations to promote ecological and recreational quality in Southern California.

SSMPA's mission is to preserve and protect the Simi Hills, Santa Susana Mountains, and surrounding open space.

SSMPA Board of Directors:
Teena Takata, John Luker, Vanessa Watters, Diana Dixon-Davis, Bob Dager, Carla Bollinger, Warren Stone, Donna Nachtrab, Tom Nachtrab

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Attachment 2, (1f)	U. S. District Court Central District of California, Case CV-10-04839-JFW (MANx), Plaintiff the Boeing Company's Statement of Uncontroverted Facts and Conclusions of Law, p. 46-56 http://www.dtsc-ssfl.com/files/lib_boeinglawsuit%5Clegaldocs/64849_Boeing_statement_uncontroverted_facts.pdf retrieved 8/20/2013
Attachment 3, (3c)	Three Documents: Cleanup NASA Alternatives (4 pages) NASA Cleanup and Related Costs (Table), p. 11 NASA Remediation Levels Defined (Table), p. 6
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Attachment 5, (3e)	Audit Report: NASA's Environmental Remediation Efforts at the Santa Susana Field Laboratory, Report No. IG-13-007, Feb. 14, 2013, overview, p. i– iv
Attachment 6, (7)	Audit Report: NASA's Environmental Remediation Efforts at the Santa Susana Field Laboratory, Report No. IG-13-007, Feb. 14, 2013, p. 10

References:

1a Docket No. HSA-CO 10/11 - 038 ADMINISTRATIVE ORDER ON CONSENT FOR REMEDIAL ACTION, section 5.19.1, http://ssfl.msfc.nasa.gov/documents/governance/NA_DTSC_Final_AOC_Dec_2010.pdf retrieved 8/20/2013

1c Agreement in Principle between The National Aeronautics and Space Administration and the State of California, p. 1 http://ssfl.msfc.nasa.gov/documents/governance/NASA_DTSC_Final_AOC_Dec_2010.pdf retrieved 8/20/2013

1d NASA DEIS, 1.3 Scope of the Analysis, p. 1-7

1e.1 Audit Report: NASA's Environmental Remediation Efforts at the Santa Susana Field Laboratory, Report No. IG-13-007, Feb. 14, 2013, p. 33 http://oig.nasa.gov/audits/reports/FY13/IG-13-007.pdf retrieved 8/20/2013

1e.2 U. S. District Court Central District of California, Case CV-10-04839-JFW (MANx), Plaintiff the Boeing Company's Statement of Uncontroverted Facts and Conclusions of Law, p. 36-37 http://www.dtsc-ssfl.com/files/lib_boeinglawsuit%5Clegaldocs/64849_Boeing_statement_uncontroverted_facts.pdf retrieved 8/20/2013

1f U. S. District Court Central District of California, Case CV-10-04839-JFW (MANx), Plaintiff the Boeing Company's Statement of Uncontroverted Facts and Conclusions of Law, p. 36-37

2a Agreement in Principle between The National Aeronautics and Space Administration and the State of California, p. 1

2b NASA DEIS, 4.3.1.2 Soil Cleanup to Background, p. 4-19

2d NASA DEIS, Appendix C, Draft Cultural Resources Study… 3.2 Field Inventory Methodologies, p. C-34; 6.1.1 Archaeological Resources, p. C-51; Figure 8 Proposed Soil Remediation Area…, p. C-53

2f NASA DEIS, Appendix C, Draft Cultural Resources Study…, 3.1 Archival Research, p. C-31-33

2g NASA DEIS, Appendix C, Draft Cultural Resources Study, 3.3.2 Historic Architectural Resources, p. C-38-39

3c Audit Report: NASA's Environmental Remediation Efforts at the Santa Susana Field Laboratory, Report No. IG-13-007, Feb. 14, 2013, p. 6

3e.1 Audit Report: NASA's Environmental Remediation Efforts at the Santa Susana Field Laboratory, Report No. IG-13-007, Feb. 14, 2013, Overview, p. iii-iv

3e.2 (of laws or their application) excessively harsh and severe http://oxforddictionaries.com/us/definition/american_english/draconian

4a NASA DEIS, 2.2.2.3 Soil Cleanup Technologies, p. 2-19

4b NASA DEIS, Table 2.2-5, Estimated Total Soil Volumes…., p. 2-19

4d.1 NASA DEIS, 4.2.1.2 Soil Cleanup to Background, p. 4-8

4d.2 Agreement in Principle between The National Aeronautics and Space Administration and the State of California, p. 2

5a NASA DEIS, 4.13.2.4 Traffic and Transportation, p. 4-161

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FEBRUARY 14, 2013 AUDIT REPORT

REPORT NO. IG-13-007 (ASSIGNMENT NO. A-12-011-01)

OFFICE OF AUDITS

NASA'S ENVIRONMENTAL REMEDIATION EFFORTS AT THE SANTA SUSANA FIELD LABORATORY

OFFICE OF INSPECTOR GENERAL

National Aeronautics and Space Administration REPORT NO. IG-13-007

Final report released by:
Paul K. Martin Inspector General

Acronyms

AOC Administrative Order of Consent
CEQ Council on Environmental Quality
CERCLA Comprehensive Environmental Response, Compensation, and Liability Act
DOE U.S. Department of Energy
DTSC California Department of Toxic Substances Control
EIS Environmental Impact Statement
EMD Environmental Management Division
EPA Environmental Protection Agency
FY Fiscal Year
GSA General Services Administration
NEPA National Environmental Policy Act
OIG Office of Inspector General
RCRA Resource Conversation and Recovery Act
SB Senate Bill
SSFL Santa Susana Field Laboratory
TCE Trichloroethylene

OVERVIEW

NASA'S ENVIRONMENTAL REMEDIATION EFFORTS AT THE SANTA SUSANA FIELD LABORATORY

The Issue

The Santa Susana Field Laboratory (Santa Susana or SSFL) is located on 2,850 acres in the Simi Hills of Ventura County, California, approximately 30 miles northwest of downtown Los Angeles. First opened in 1948 in what was then a remote area, the facility was for many years the site of research efforts on civilian use of nuclear energy by the Department of Energy (DOE) and rocket testing for defense and space exploration by the United States Air Force (Air Force) and NASA.[1] Over the years, these activities resulted in radiological and chemical contamination of the soil and groundwater at the site.

1 The area has become much less remote over time More than 500,000 people currently live in southern Ventura County, California, where the SSFL is located
2 DOE's predecessor agency was the Atomic Energy Commission

NASA is responsible for administering 451.2 acres in two areas of the SSFL site, which includes 41.7 acres of Area I and all 409.5 acres of Area II. The Boeing Company (Boeing) owns and operates the remainder of the SSFL, and the DOE leased property in Area IV from Boeing. The Santa Susana site is home to at least 10 species of sensitive plants and at least 5 species of sensitive wildlife, as well as the Burro Flats Painted Cave, which contains pictographs and petroglyphs created by early Native Americans.

For many years, the Santa Susana facility has been the subject of considerable attention from anti-nuclear activists, environmentalists, and the public. From the mid-1950s until the mid-1990s, DOE and its predecessor agencies conducted civilian nuclear research and energy development projects at the SSFL.[2] A partial meltdown at one of the nuclear facilities in 1959 led to a release of radioactive contaminants.

Although radioactive contamination remains a concern in the DOE portion of the SSFL, the primary contaminant in the NASA-administered areas of the site is trichloroethylene (TCE), a nonflammable, colorless liquid identified as a potential carcinogen. NASA and the Air Force used large quantities of TCE to clean rocket engines, and prior to the early 1960s when catch basins were installed, allowed the substance to run freely onto the ground. While the Air Force was a large contributor to the TCE contamination, NASA – as the current administrator of the property – has assumed responsibility for the cleanup. OVERVIEW

NASA, like all Federal agencies, is required to comply with laws and regulations that govern cleanup of contaminants left behind from Agency activities.[3] Generally, these laws require responsible parties to conduct risk assessments to identify and evaluate the threat that contaminants pose to human health and structure their remediation efforts based on the results of those assessments. One of the principal factors considered in this type of assessment is the reasonably foreseeable use of the affected property, such as agriculture, housing, industry, or recreation. Each scenario assumes future users will be exposed to some amount of residual contamination at the site, with greater assumed exposure requiring a more stringent cleanup standard. The various clean-up levels potentially applicable to a site like the SSFL include background, residential, and recreational.[4]

3 The three primary environmental laws are the National Environmental Policy Act of 1969, 42 U S C §§ 4321-4347; the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U S C §9601 et seq ; and the Resource Conservation and Recovery Act of 1976, 42 U S C §6901 et seq

4 Background level means returning the site to its natural state prior to the introduction of contaminants Residential level assumes that an adult or child could live on the remediated site 24 hours per day, 350 days per year, for 30+ years Recreational level assumes that an adult or child could be exposed several hours a day for about 50 days per year over a 30-year period without adverse health effects

Boeing has publicly stated that it intends to preserve its portion of the SSFL site − by far the largest section − for use as open space parkland upon completion of cleanup activities. Similarly, NASA officials told us that the anticipated future use of the NASA portion of the SSFL site is for recreation. NASA has been involved in cleanup activities at the SSFL since at least the early 1980s. In August 2007, NASA, Boeing, and DOE signed consent orders with California's Department of Toxic Substances Control (DTSC) agreeing to clean up groundwater and soil at the SSFL to residential exposure levels. Shortly thereafter, in October 2007, California Senate Bill No. 990 (SB 990) was enacted. SB 990 applies only to the SSFL and requires that the site be restored to either a "suburban residential" or a "rural residential (agricultural)" level, whichever will produce the lower permissible residual concentration for each contaminant. The legislation specifically prohibits the sale, lease, or other transfer of the property unless DTSC certifies that the land has undergone complete remediation.

In November 2009, Boeing filed a Federal lawsuit challenging SB 990 as violating the U.S. Constitution. In April 2011, a judge in the United States District Court for the Central District of California ruled in Boeing's favor and declared the law unconstitutional. The State of California appealed that decision and oral arguments are expected before the U.S. Court of Appeals for the Ninth Circuit in early 2013.

In December 2010, NASA entered into a second agreement with the DTSC known as the Administrative Order of Consent for Remedial Action (AOC). Under the terms of the AOC, NASA agreed that the 2007 consent order would continue to govern its cleanup obligations related to groundwater at Santa Susana, but the Agency would be required to

return the soil to its original state before any testing activities occurred – referred to in the AOC as "background" levels. NASA further agreed that it would complete soil cleanup to this standard by 2017.

To comply with the 2010 Order, NASA budget requests include proposed funding increases of approximately $30 million per year from fiscal years (FYs) 2014 through 2017 (an additional $120 million total for the 4 years). NASA estimates that cleanup costs for Santa Susana to the AOC standard could cost at least $200 million. In contrast, estimates to clean the site to a standard suitable for residential and recreational use are in the range of $76 million and $25 million, respectively. Santa Susana is not the only pending environmental remediation project at NASA. According to Agency environmental management officials, several other projects pose greater risks to human health and the environment than Santa Susana.

The AOC includes a provision for NASA to follow the National Environmental Policy Act (NEPA), which requires the Agency to complete an Environmental Impact Statement (EIS) for its cleanup activities at Santa Susana.[5] As part of this process, NASA initially identified five possible alternatives for remediation of the site, including cleaning to residential and recreational use standards. However, NASA's inclusion of alternatives other than cleanup to background levels caused concern among DTSC officials and California political leaders.

[5] An EIS is a detailed evaluation of the Agency's proposed action and possible alternatives. The public, other Federal agencies, and outside parties may provide input into development of an EIS and are afforded an opportunity to comment on the resulting draft EIS.

In May 2012, DTSC sent a letter to the NASA Administrator to request that "NASA modify its…process to align itself with…a cleanup of the site to background levels…in compliance with the AOC" rather than evaluate less stringent cleanup alternatives. In addition, Senator Barbara Boxer from California asked the Council on Environmental Quality (CEQ), a White House office that coordinates Federal environmental efforts and works closely with agencies in the development of environmental policies, whether NASA was legally required to consider cleanup options other than background level. After the CEQ advised the Senator that there was no such requirement, NASA limited its EIS process to consideration of only one cleanup standard – background levels.

Given the high cost of the SSFL cleanup and the unusual legal underpinnings of the AOC, we examined whether NASA's plans to clean up environmental contamination at Santa Susana conform with the laws and standards that generally govern such remediation efforts and provide the best value to the taxpayer. Details of the audit's scope and methodology are in Appendix A.

Results

NASA has agreed to clean its portion of the Santa Susana site to a level that exceeds the generally accepted standard necessary to protect human health in light of the expected

future use of the site. Moreover, the cleanup is likely to cost the taxpayers significantly more than the cleanup effort NASA agreed to in its 2007 Consent Order with the State of California – a remediation level itself that was more stringent than what would be required based on the expected use of the site. Although the precise outlines of the cleanup effort and therefore its ultimate cost have not been finalized, NASA estimates that cleaning the SSFL to background levels could cost more than $200 million, or more than twice the cost to clean it to residential levels and more than eight times the cost to clean it to a recreational use standard. In addition, because cleanup to background levels may require highly invasive soil removal, there is a risk that such a cleanup would result in significant damage to the surrounding environment and to archeological, historical, and natural resources at the site.

Management Action

We recommend that the Administrator, with the assistance of the Associate Administrator for Mission Support, reexamine the Agency's current plans for cleaning the NASA-administered portion of the Santa Susana site and ensure that its environmental remediation is conducted in the most cost-effective manner in keeping with the expected future use of the property.

In accordance with our usual practice, we provided NASA with a draft of this report and requested the Agency respond to our recommendation. Typically, the Agency indicates whether it concurs with our recommendation and describes any corrective actions it plans to undertake to meet the intent of the recommendation. However, in this case NASA declined to indicate whether it agreed or disagreed with our recommendation.

Rather, after noting that NASA "fully appreciates" our recommendation, the Associate Administrator stated that the Agency will continue to work with the DTSC and local community stakeholders "within the requirements" of the AOC and at the same time will "make every effort to implement a [cleanup] program that will achieve both cost avoidance and protection of cultural and natural resources." In addition, the Associate Administrator noted several recent developments that may affect how the AOC is interpreted and implemented. (See Appendix F for Management's Response).

Although we are encouraged by NASA's pledge to work toward a cleanup that achieves cost avoidance and preserves cultural and natural resources, it is not clear that the Agency can achieve the most appropriate and cost-effective remediation effort given the constraints of the current AOC. Accordingly, our recommendation remains unresolved and we will continue to monitor the Agency's efforts to clean the Santa Susana site.

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INTRODUCTION

Background

The Santa Susana Field Laboratory (Santa Susana or SSFL) is located on 2,850 acres in the Simi Hills of Ventura County, California, approximately 30 miles northwest of downtown Los Angeles. First opened in 1948 in what was then a remote area, the facility was for many years the site of research efforts on civilian use of nuclear energy directed by the Department of Energy (DOE) and rocket testing for defense and space exploration by the United States Air Force (Air Force) and NASA.[6] Over the years, these activities resulted in radiological and chemical contamination of the soil and groundwater at the site. NASA ended its testing activities at the Santa Susana site in 2006.

6 The area has become much less remote over the past several decades At the time of our review, more than 500,000 people live in southern Ventura County, California, where the SSFL is located

7 Pictographs are rock art paintings and petroglyphs are rock art that has been scored or cut into the rock surface

As illustrated in Figure 1, the SSFL is divided into four areas. NASA is responsible for administering 41.7 acres in Area I and all 409.5 acres of Area II. NASA acquired Area II in 1973 and the Area I acreage in 1976 from the Air Force. The Boeing Company (Boeing) – which operated as both a contractor for the Government and in its private capacity – owns and operates the remaining 2,398.8 acres in Areas I, III, and IV. DOE leases property in Area IV from Boeing. The site is home to at least 10 species of sensitive plants, at least 5 species of sensitive wildlife, and to the Burro Flats Painted Cave, which contains pictographs and petroglyphs created by early Native Americans.[7]

Figure 1 - Santa Susana Field Laboratory
Source: NASA Santa Susana Field Fact Sheet

For many years, the Santa Susana facility has been the subject of considerable attention from anti-nuclear activists, environmentalists, and other members of the public. From the mid-1950s until the mid-1990s, DOE and its predecessor agency conducted nuclear research and energy development projects at Area IV of the SSFL, including nuclear operations (development, fabrication, disassembly, and examination of nuclear reactors, reactor fuel, and other radioactive materials) and large-scale experiments for testing fast breeder reactor components.[8] A partial meltdown in 1959 at a nuclear facility operated by a DOE predecessor agency led to the release of radioactive contaminants. As a result of these and other activities, various locations on the site contain radioactive and chemical contamination. Although DOE's predecessor agency issued a press release a few weeks after the meltdown incident, individuals and groups in California have raised concerns over the years about the adequacy of the public disclosures and the potential health risks posed by the contamination.

[8] DOE's predecessor agency was the Atomic Energy Commission.

The primary contaminant in the NASA-administered areas of the site is trichloroethylene (TCE), a nonflammable, colorless liquid that has been identified as a potential

carcinogen. NASA and the Air Force used large quantities of TCE to clean rocket engines and prior to the early 1960s when catch basins were installed, allowed the substance to run freely onto the ground. NASA has determined that over the years more than 500,000 gallons of TCE were released to the ground at the Santa Susana site. While the Air Force was a large contributor to the TCE contamination at the SSFL, NASA – as the current administrator of the property – has assumed responsibility for the cleanup. See Figure 2 for NASA test stands and surrounding area at Santa Susana.

In October 2007, frustrated by the pace of clean-up efforts at Santa Susana, the California legislature enacted Senate Bill (SB) 990, which prescribes specific remediation requirements for the SSFL, including that the site be restored to accommodate either "suburban residential" or "rural residential" use, whichever will produce the lower permissible residual concentration for each contaminant.[9] The legislation specifically prohibits the sale, lease, sublease, or other transfer of the property unless the California Department of Toxic Substances Control (DTSC) certifies that the land has undergone complete remediation. In November 2009, Boeing challenged the constitutionality of SB 990 in Federal court. Although the company won its suit at the district court level, the State has appealed that ruling to the U.S. Court of Appeals for the Ninth Circuit.

[9] At the time SB 990 was enacted, "Suburban Residential" referred to safe exposure levels for a residential or community neighborhood area and "Rural Residential" referred to safe exposure levels for an agricultural or farmland area where food is grown or livestock is raised. "Background" and "Rural Residential" refer to similar levels of cleanup. At the time of preparation of NASA's Cost Estimates, NASA's EIS documents, and NASA's EIS presentation to the community in 2012, the terminology for the exposure levels under consideration was more generalized and the levels identified were (1) Background, (2) Residential, (3) Industrial, (4) Recreational, and (5) No Action.

Figure 2 - NASA Test Stands and Surrounding Area at SSFL
Source: OIG (May 2012)

In 2009, NASA reported the SSFL as excess property to the General Services Administration (GSA), one of the first steps in the formal process of divesting itself of the property. GSA will decide how the NASA portion of the SSFL will ultimately be disposed of. While Boeing is cleaning its portion of the SSFL site – by far the largest section – to residential cleanup standards, it has publicly stated that it intends to preserve the area for use as open space parkland upon completion of its cleanup activities. Although they have no formal role in the ultimate disposition of the NASA-administered property, Agency officials said they also expect this portion ultimately will be used as a recreational area.

Federal and State Laws Govern Environmental Remediation of Facilities. A complex collection of Federal and state laws govern remediation of environmental contamination at sites like the SSFL. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as the "Superfund," addresses remediation at inactive and abandoned hazardous waste sites.[10] The Federal Government controls cleanup of areas designated as Superfund sites. In addition, the Resource Conservation and Recovery Act (RCRA) sets up an environmental corrective action program administered by the U.S. Environmental Protection Agency (EPA) and 43 authorized states and territories to work with responsible facilities to investigate and clean up hazardous releases.[11] Under RCRA, regulatory authority over site cleanup may be delegated to a state. The National Environmental Policy Act (NEPA) requires Federal

10 The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), codified at 42 U S C §9601 et seq (1980)

11 The Resource Conservation and Recovery Act (RCRA) of 1976, codified at 42 U S C §6901 et seq (1976)

agencies to consider the environmental impacts of their actions and reasonable alternatives to those actions.[12] Under the statute, agencies must publicly disclose their proposed actions (including alternatives), consider and address any comments they receive from the public following that disclosure, and prepare Environmental Impact Statements (EIS) for activities that will have a significant effect on the environment.[13] NEPA also created the Council on Environmental Quality (CEQ), a White House office that coordinates Federal environmental efforts and works closely with agencies in the development of environmental policies.[14]

12 The National Environmental Policy Act of 1969 (NEPA), as amended, codified at 42 U S C §§ 4321-4347

13 An Environmental Impact Statement (EIS) is a detailed evaluation of the Agency's proposed action and possible alternatives. The public, other Federal agencies and outside parties may provide input into development of an EIS and then are afforded an opportunity to comment on the resulting draft EIS.

14 The Council on Environmental Quality oversees NEPA The duties of the Council include gathering information on the conditions and trends in environmental quality; evaluating federal programs in light of the goals established in NEPA; developing and promoting national policies on environmental quality; and conducting studies, surveys, research, and analyses relating to ecosystems and environmental quality

15 DTSC policy titled "Oversight and Supervision of Investigations and Removal and Remedial Actions at Hazardous Substance Sites," effective July 1, 1992.

Because Santa Susana is located in California, the state's environmental laws and regulatory apparatus also affect cleanup of the site. According to the DTSC policy, remediation efforts should "take into consideration the future land use of the site to ensure that remedial action protective of public health and the environment."[15] In addition, California enacted SB 990 in 2007 to address contamination at the SSFL.

Federal law requires responsible parties to conduct risk assessments to identify and evaluate the threat that contaminants pose to human health and structure their remediation efforts based on the results of such assessments. These assessments determine the risk posed to human health and the environment by any contamination that will remain at the site upon completion of a cleanup. One of the principal factors considered in such an assessment is the reasonably foreseeable use of the affected property, such as agriculture, housing, industry, or recreation. Each scenario assumes future users will be exposed to some amount of residual contamination at the site, with greater assumed exposure requiring a more stringent cleanup standard.

For example, a site likely to be used for growing food would require a more extensive remediation effort, while one expected for industrial use would require a less stringent cleanup and therefore permit higher concentrations of contaminants to remain on the site. Under the normal assessment process, the reasonably foreseeable future use of a site is determined by considering several factors, including the current use of the land, general land use plans, topography and natural resources, cultural resources, and the presence of endangered species.

Table 1 shows the various cleanup or remediation levels possible for a site like the SSFL and the underlying assumptions associated with each level.

Table 1: Definition of Cleanup Level

Cleanup Level	Definition (Assumptions for Establishment of Exposure Limits)
Background	Returns the environment to its natural state prior to the introduction of contaminants.
Residential	Assumes that an adult or child could live on the remediated site 24 hours per day, 350 days per year, for 30+ years without adverse health impacts.
Industrial	Assumes workers could remain on the remediated site for 8 to 10 hours per day, 250 days per year over a 25-year period without adverse health impacts.
Recreational	Assumes that an adult or child could be exposed several hours per day for about 50 days per year over a 30-year period without adverse health impacts.

From:	Mary Wiesbrock
To:	MSFC-SSFL-EIS
Subject:	SOS comments Darft NASA EIS
Date:	Monday, September 30, 2013 3:28:25 PM
Attachments:	SOS comments NASA Draft EIS page one0001.pdf SOS"s comments NASA"s Draft EIS page two0001.pdf SOS"s comments NASA Draft EIS page three0001.pdf SOS"s comments NASA Draft EIS page four0001.pdf

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Allen: Please let me know that you have received these comments and that they will be made part of the record.

Thanks!

Mary

§ 1506.2
Elimination of duplication with State and local procedures.
(a) Agencies authorized by law to cooperate with State agencies of statewide jurisdiction pursuant to section 102(2)(D) of the Act may do so.
(b) Agencies shall cooperate with State and local agencies to the fullest extent possible to reduce duplication between NEPA and State and local requirements, unless the agencies are specifically barred from doing so by some other law. Except for cases covered by paragraph (a) of this section, such cooperation shall to the fullest extent possible include:
(1) Joint planning processes.
(2) Joint environmental research and studies.
(3) Joint public hearings (except where otherwise provided by statute).
(4) Joint environmental assessments.
(c) Agencies shall cooperate with State and local agencies to the fullest extent possible to reduce duplication between NEPA and comparable State and local requirements, unless the agencies are specifically barred from doing so by some other law. Except for cases covered by paragraph (a) of this section, such cooperation shall to the fullest extent possible include joint environmental impact statements. In such cases one or more Federal agencies and one or more State or local agencies shall be joint lead agencies. Where State laws or local ordinances have environmental impact statement requirements in addition to but not in conflict with those in NEPA, Federal agencies shall cooperate in fulfilling these requirements as well as those of Federal laws so that one document will comply with all applicable laws.
(d) To better integrate environmental impact statements into State or local planning processes, statements shall discuss any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law.

Comments on Specific Environmental Areas:

Water Resources

(ES-5.2.1, ES-3.1.3) There has been already (GETS Pump and Treat) been a significant impact on water resources without any federal and/or state environmental review in violation of environmental law. We requested Boeing that they stop this destructive process which removed contaminated water from one area above Bell Canyon, cleaned it and then returned it to an entirely different area. Our request was ignored. The results have been significant destruction of that wetland ecosystem which includes significant impacts on flora and fauna there from the water loss and the Bell Canyon waterfall drying up.

The hydrology will be and has been (GETS impacting Bell Canyons) significantly (not moderately) impacted if the Pump and Treat draws water from one area and dumps it in another area.

The source ground water wells used for drinking water in areas of Simi Valley need independent analysis for all the NASA chemicals of concern listed in this document. These groundwater wells, Sycamore and Niles, are below and within 4 miles of the SSFL Mountain. After some five decades of industrial activities, NASA needs to independently demonstrate that their COC's have not finally reached and impacted these wells used for drinking water for thousands of Simi

Valley residents. Source water testing for the Sycamore well showed Perchlorate = 5.2 micrograms per Liter in 1/05/10. The source water from Niles well had 1,600 MG/L Total Dissolved Solids with the MCL for TDS being 1,500 MG/L. (10/16/12). Independent 2013-14 testing should include testing of all of NASA's metal COC's without using a filtering methodology. I have been told that the water from these wells is not filtered at all just blended. Independent testing of these two drinking water wells for all NASA COC's should be done this upcoming rainy season 2013-14 to insure that NASA's COCs have not impacted these drinking water wells after NASA's five decades of activities up on the SSFL mountain above these wells located in Simi's valley floor.

Earth

There needs to be a separate analysis on the impacts to the earth. If the backfill material comes from an offsite area, it will not be of the same geological composition as the existing NASA property's Chatsworth Formation's alluvial sediments and the Cretaceous Chatsworth Formation of imbedded sandstone and shale. The cleanup alternative limited only to background will change a significant amount of native soil: 105 acres of earth from 2 to 20 feet down. This significant environmental impact needs its own separate analysis. The amount of imported soil of a different composition will significantly alter the existing flora of the area and this in turn impacts the fauna. The non-native backfill soil needs properly analyzed as to amount, locations, and the impacts on biota adequately determined.

Biological

A spring survey is needed. The biological analysis is grossly inadequate. The surveys were done in the fall. "Many of the plants, especially flowering plants and grasses were senescent, and migratory breeding birds were not present in the study area." Bird species raising their young, including the raptors, will be best observed in the spring time when the surveys should have been done. A spring study is even recommended to "provide a more comprehensive inventory of wildlife within the study area". (D-23) A Least Bell's vireo, a federal and state endangered species, was found in the fall survey, but a nesting pair could have been missed because no spring survey was done.

4.4.1.1 This EIS should not limit its discussion to just the sensitive species. All wildlife species should be listed not just the sensitive federal species. One should not have to look at Appendix E for the animal species which were found and include: 11 butterfly species, 12 reptile and amphibian species, 60 bird species, and at least 15 mammal species including the top predator, the mountain lion. Even this list is not complete because doing only fall surveys were done.

The wildlife corridor map (Figure 3.4-2) is incorrect as it has the vast majority of the wildlife corridor outside of the NASA property. This grossly inaccurate map should be eliminated from the document. Ever since the NASA activities have been halted, the entire 400 plus NASA acreage has become part of the major wildlife habitat and corridor which serves our national park, the Santa Monica Mountains National Recreation Area (SMMNRA). "Wildlife moves between the SSFL and SMMNRA without regard for jurisdictional boundaries." (SMMNRA letter, April 19, 2013 to Mr. Armenta of the Santa Ynez Band of Chumash Indians)

The document is inadequate in that it does not analyze the cleanup alternative impacts to the various habitats. Sensitive and protective habitat was wrongly eliminated from further consideration (Table 2.5-1). Federal agencies are required to avoid destruction or adverse modification of designated critical habitat under Endangered Species Act. By the fact that only fall surveys were done, this document can't make the statement that there is no designated critical habitat within this NASA property. (Page 2-42) This inadequate analysis of sensitive habitats proves that a joint EIS/EIR is needed at this time. Then state agencies can weigh in on this project to properly protect the habitats, flora and fauna considered sensitive by the state. There needs to be an overlay map of the PRAs (map figure 2.2-3) with the vegetation cover type map. (Figure 3.4-1.) Are there impacts to the coast live oak riparian forest (NASA total 9.16 acres) and coast live oak woodland (NASA 13.22 acres)? How are chaparral and coastal sage scrub habitats impacted? How are the grasslands and other sensitive habitats within the NASA study area which provide "important foraging and nesting sites" (D-23) impacted? Another alternative, cleanup to suburban residential, should be analyzed since it will reduce these significant (not moderate) impacts to all sensitive habitats and the biota.

Mary Wiesbrock

Mary Wiesbrock, retired State of California Clinical Scientist, Chair Save Open Space/Santa Monica Mountains

Save Open Space ❧ P.O. Box 1284 ❧ Agoura Hills, CA 91376

Re: Comments Draft EIS NASA

September 30, 2013

Allen Elliott, SSFL Program Director
MSFC AS01, Building 4494
Huntsville, AL 35812

Comments Draft EIS NASA.

ES-2.2 Selection of Alternatives to Evaluate

We request that the **AOC be modified to include a risk based PRG table of suburban residential risk levels.** It is not necessary to remove to background soil which does not present a risk to human health. This EIS is grossly inadequate and legally deficient in that it only evaluates two extreme alternatives: the clean-up to background and/or no-action alternative.

Only considering a cleanup alternative to background, results in unacceptable sigificant environmental impacts which include: demolishing 100% of the structures (historical test stands etc.) and significantly adversely impacting 105 NASA acres from 2 feet to 20 feet down. Significant environmental impacts (ES-11.0) can be avoided when the suburban residential risk based level is added to the alternative's analysis.

JOINT EIS/EIR NEEDED

1.3 Scope of the Analysis

In order to be acceptable and comprehensive, there should be a **joint EIS/EIR document** as required per CFR 1506.2. DTSC's EIR document should not follow the completion of this NASA EIS. DTSC's EIR should jointly be a part of this document.

The NEPA regulations similarly encourage federal agencies to cooperate with local agencies "to the fullest extent possible to reduce duplication between NEPA and comparable State and local requirements, including the preparation of a joint document". (40 CFR 1506.2) See below:

From:	King, Jamie@Parks
To:	MSFC-SSFL-EIS
Cc:	Goode, Suzanne@Parks; Sap, Craig@Parks
Subject:	SSFL: Ca State Parks Comments
Date:	Tuesday, October 01, 2013 5:12:40 PM
Attachments:	20131001091430796.pdf

Please see the attached comment letter from California State Parks.

Jamie King, Environmental Scientist
California State Parks, Angeles District

1925 Las Virgenes Rd.
Calabasas CA 91302
P: 818.880.0373
C: 310.699.3951

NOTE: My email address has changed to Jamie.King@parks.ca.gov

State of California • Natural Resources Agency
Edmund G. Brown Jr., *Governor*
DEPARTMENT OF PARKS AND RECREATION
Major General Anthony L. Jackson, USMC (Ret), *Director*
Angeles District
1925 Las Virgenes Road
Calabasas, CA 91302

September 27, 2013

Allen Elliott
SSFL Project Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

RE: Draft Environmental Impact Statement (DEIS) for Proposed Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California

Dear Mr. Elliott:

California Department of Parks and Recreation (CDPR) Angeles District has reviewed the above-referenced project. CDPR interest in the project is twofold: first, the SSFL site is located near Santa Susana Pass State Historic Park (SSPSHP) and therefore would influence resource connectivity concerns affecting the park; and second, although currently in litigation, supporting documentation for Senate Bill 990 (Kuehl) included an intent to transfer the SSFL property to the State after cleanup for operation as parkland or open space, potentially involving CDPR in future management of the property. CDPR offers the following comments on the DEIS.

Purpose and Need

In the DEIS Executive Summary, the stated purpose of the action is "to remediate the environment to a level that meets NASA's cleanup responsibilities and to perform demolition actions necessary to support both remediation and property disposition." CDPR understands the need to remediate the property in order to remove contaminants and structures that could be hazardous to human health and safety. Further, we acknowledge that the Department of Toxic Substances Control (DTSC) will certify that the cleanup action of the SSFL site is complete prior to any transfer of the property.

However, CDPR is concerned that the negotiated 2010 Administrative Order on Consent (AOC) failed to account for standard risk-based assessments, uses terminology for cultural resources that are not defined under federal and state statutes, and most importantly, constituted an action subject to review under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), a review which was not performed prior to NASA's commitment. The AOCs have significantly constrained the environmental review of the project by imposing a potentially unnecessary clean-up to background standards reflected in the State Department of Toxic Substance's (DTSC) Lookup Table. For example, the

"Background" level of cleanup will require the removal and treatment of ten times the soil volume as the "Recreational" cleanup standard.

Additionally, although the DEIS states that demolition to support property disposition is a part of the proposed action, the document does not evaluate the cleanup in regards to potential future land use. The proposed clean-up alternatives would grossly modify the existing habitats, historic structures and aesthetic of the site, and would increase the potential for further degradation via invasive plant and animal incursions. The project site is also located within or directly adjacent to a key wildlife corridor, the Santa Monica Mountains-Sierra Madre Linkage. Because cleanup and demolition activities (105 acres) will have a direct impact on the resource values which make the SSFL site valuable as open space or parkland, the significantly degraded value of the site for open space uses is not fully considered.

Further, NASA and the General Services Administration (GSA) have stated that a separate NEPA review will be conducted for the disposition of the property following cleanup activities. CDPR is concerned that separating these related actions constitutes piecemealing and runs counter to the requirement of full public disclosure of potential impacts under NEPA and CEQA guidelines.

CDPR is especially concerned about the time lag between NASA's issuance of the DEIS under NEPA and the DTSC future preparation of an Environmental Impact Report (EIR) under CEQA. Typically, joint environmental documents are prepared concurrently so as to ensure a consistent review between the two processes, to economize, and to simplify public notice and consultation by the issuance of one document. CDPR is concerned that separating the federal and state environmental reviews by several months or more will create opportunities for inconsistencies and confusion. How will NASA and DTSC rectify differences in analysis between the two documents, for example?

Description of Proposed Action and Alternatives

The commitments NASA has made in the 2010 AOC has limited a fully developed range of alternatives in the DEIS that would meet a properly scoped purpose and need. By evaluating only the "Clean Up to Background" and "No Project" alternatives, NASA has given no consideration to ultimate land use decisions or to resource connectivity concerns which may affect adjacent or nearby parklands. A land use analysis must be included in this document and it must be connected to future land use options.

For example, Figure 2.1-1 fails to adequately represent all the open space and parklands in the vicinity of the SSFL site. In particular, the boundaries of Santa Susana Pass State Historic Park are not shown, nor is the park even mentioned in the DEIS, despite the fact that the park lies on the previously mentioned wildlife corridor through the Simi Hills.

On page 2-19, the DEIS identifies the Rindge Dam in Malibu Creek State Park as a possible offsite backfill source for the SSFL cleanup activities. CDPR is currently preparing a joint EIS/EIR with the U.S. Army Corps of Engineers to evaluate the removal of Rindge Dam and other upstream barriers in order to restore Malibu Creek habitat values. We are willing to discuss with NASA the disposal of excess sediments, however, our understanding is that preliminary testing of the impounded sediments behind Rindge Dam showed that soils would not meet the AOC Look-up Table values for Background at SSFL. Have any of the identified potential offsite sources met this threshold, and if not, how will this issue be rectified?

Affected Environment, Environmental Consequences and Proposed Mitigation

Cultural Resources – The NASA-administered Area II contains important prehistoric and historic-period resources, including the National Register of Historic Places (NRHP) listed Burro Flats Painted Cave archaeological complex (CA-VEN-1072) and three NRHP eligible historic districts (Alpha, Bravo and Coca test areas). All of these resources would have tremendous historic and interpretive value within a parkland context.

However, CDPR finds that NASA's cultural resource identification efforts within the Area of Potential Effect (APE) are incomplete. A Traditional Cultural Property (TCP) study is currently underway, but this study should have been completed prior to the issuance of the DEIS because it is part of the cultural resources inventory process, which cannot be deferred. Further, given the size and importance of archaeological site CA-VEN-1072, and the general density of prehistoric archaeological sites documented in surrounding areas of the western San Fernando Valley and Simi Hills, it is unlikely that only two additional archaeological sites would have been identified in a 100%-coverage survey of the subject 490 acres. CDPR also finds that NASA's site boundary identification level of effort for CA-VEN-1072 through is inadequate per standard archaeological subsurface testing practices.

Because NASA's identification and evaluation efforts of historic properties within the APE are incomplete, a thorough assessment of effects from project implementation cannot be made. As such, CDPR finds that measures to avoid or minimize impacts to historic properties have not been considered thoroughly in the alternatives analysis and that the proposed mitigation measures are insufficient to resolve the adverse effects assumed for the identified historic properties.

Specifically, NASA is proposing to retain one test stand as mitigation for the removal of all buildings within the APE and to perform HABS/HAER documentation on all the other eligible structures prior to demolition. However, subsequent statements made by DTSC suggest that complete demolition is not required under the 2010 AOC. Since the three historic districts, including the test stands **and** other contributing structures, have high interpretative value for future parkland use, CDPR recommends that the 100% demolition requirement be revisited and that consideration for retention of one or more complete historic districts be evaluated in the alternatives analysis.

Additionally, NASA is proposing the completion of the TCP/ethnographic study as mitigation, presumably for impacts to the identified Indian Sacred Site. As mentioned previously, this study should be part of the identification and evaluation process, and proposing it as mitigation for adverse effects to an important site of tribal heritage is inappropriate and does not provided the needed information to inform how best to implement the project, and avoid, minimize and mitigate potential impacts.

Similarly, NASA is proposing to better delineate the boundaries of archaeological site CA-VEN-1072 as mitigation for adverse effects to the site. Again, this is part of the identification effort that should be used to evaluate ways to avoid or minimize impacts to the historic property. Finally, installation of protective measures for the Burro Flats site during project implementation should be considered best practices, not mitigation, and the DEIS mitigation proposals do not even require that archaeological and Native American monitoring be employed to ensure that these protective measures are enforced.

Please refer to additional comments on the identification and evaluation of historic properties, and the resolution of adverse effects by the Office of Historic Preservation (SHPO's September 24, 2013 letter to you).

Biological Resources – The extent of impacts on the Santa Susana tarplant are significant, not moderate. It is also unclear if the species could reestablish itself within cleaned up areas given the extent of soil removal and disturbance, and the apparent lack of suitable top-soil. More detailed mitigation is needed for this species, when it cannot be avoided.

We expect the impacts on coast horned-lizard to be moderate, not minor, due to the extent of ground disturbance, and demolition activities. Care needs to be taken to avoid or relocate sensitive species such as this, and not just listed species, out of harm's way.

The site is directly adjacent, if not within, a key wildlife corridor, and the open space resources on the project site are significant for animal movement on a regional level. Project demolition activities are likely to increase the number and extent of invasive weeds and increase truck trips which will likely result in increased animal morality onsite and along area truck routes. Therefore we disagree with the statement that there is no potential impact on migration corridors (pg. 4-32). Measures should be provided to protect wildlife movement through the area and out of construction zones (e.g. silt fence to deter wildlife moving into work areas, etc.).

All locally sensitive plants, as well as state listed plants, should be avoided to the maximum extent feasible. Seed collection should occur from onsite or adjacent areas for reseeding or propagation prior to construction to protect the genetic integrity of species onsite and within the watershed. This is strongly preferable to purchasing commercially available mixes which are not likely to represent the same species mix or genetic lines.

*****

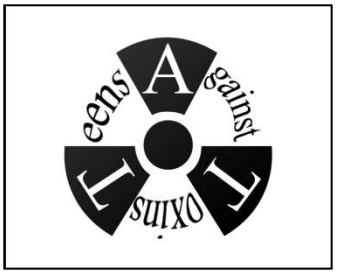
We thank you for the opportunity to comment on this project. Please contact Jamie King, Environmental Scientist at Jamie.King@parks.ca.gov or 818.880.0373, if clarifications are required.

Sincerely,

Craig Sap
District Superintendent

From:	Davis Gortner
To:	MSFC-SSFL-EIS
Cc:	dianne_feinstein@feinstein.senate.gov; cheri.orgel@mail.house.gov; Molly_O"Brien@feinstein.senate.gov; nicole.bernson@lacity.org; William.Craven@SEN.CA.GOV; Kelly.ThomasP@epa.gov; linda.parks@ventura.org; damon.wing@ventura.org; jdegonia@lacbos.org; louise.rishoff@sen.ca.gov; bsaltsman@lacbos.org; zev@bos.lacounty.org; Elizabeth.Fenton@SEN.CA.GOV; DRaphael@dtsc.ca.gov
Subject:	Teens Against Toxins comments on the NASA DEIS - we want an AOC compliant cleanup
Date:	Tuesday, October 01, 2013 7:14:39 PM
Attachments:	tat letter to NASA on the EIS.docx

September 22, 2013



To: NASA
Re: Comments on the DEIS

We are a group of teenagers who live in and/or attend school within a few miles of the Santa Susana Field Laboratory. Some of us are in Oak Park and Agoura, both cities that are within five miles of SSFL, and we are now expanding into the West San Fernando Valley. We want to provide our comments on the DEIS for SSFL cleanup and simultaneously make it very clear that we want NASA to keep its commitment to the state of California and to the people of our community by complying completely with the cleanup agreement, the AOC, and cleaning up to a background level.

Here are our comments:

- First, we find it mind boggling that our federal government would spend all this money to create a 368 page document intended to provide the community information about the harmful effects of cleaning up a very polluted place without serious mention of the helpful effects of cleaning up the pollution. How can a quality conversation occur about the problems incurred by cleaning it up without discussing the benefits to the community of cleaning it up?
- For example, on the Table ES-5, under "Health and Safety" the cumulative impact is stated as "moderate, negative" and states "Combined Boeing, DOE and NASA activities can result in more exposure to hazardous materials, safety hazards, structural hazards, and natural hazards." Is there a chart in the DEIS that states all the health and safety hazards associated with the "no action" alternative? We didn't see one. Table 2.2-3 provides a list of the cleanup values for VOCs, PAHs, PCBs, arsenic, lead, cadmium, mercury, dioxins, and TPHs but NO explanation of the health and safety effects of those contaminants in water, soil and air. NASA should explain for each whether they cause cancer, neurological disorders, birth defects, or other health impacts
- Second, NASA signed an agreement with the state of California, and therefore with the people who live near the site, on December 10, 2010 that they would clean up to background. It is confusing and upsetting that there would be discussion at all about not complying with the cleanup agreements. NASA states that the Council on Environmental Quality advised it should not do include the alternatives that would violate the AOC and says it has agreed, but then goes ahead and breaks its commitment. This raises serious questions about whether NASA can keep its word.
- With respect to the truck transportation, frankly we don't have any concerns about this. It was made clear to us at the NASA community meeting that the trucks will be safe with no reason to be afraid that the contamination will end up spewing out as the trucks drive by. Additionally, we have friends who say there are many trucks going in and out of the site at the moment and the full cleanup hasn't yet started. NASA should disclose how much truck and car traffic has occurred at the site over the decades of operation compared to what is predicted for the cleanup. This whole thing seems insignificant

and a scare tactic, which should be beneath NASA. The math seems to work out to about a few trucks per hour per route. It is absolutely laughable that an issue of trucks should be used an excuse to impede the removal of environmental and health hazards for generations to come.

- On Table 2.4-1, the proposed action of cleaning up to background with the daily material to be hauled at 1,698 tons per day or the total cubic yards of soil to be remediated at 500,000, to our group shows exactly how much of a problem there is at SSFL. We don't believe that less trucks per day or less material moved is in any way a good thing. Less contaminated soil removed means more it remains to be potentially washed down the hill in the rain and harm people living nearby. Furthermore, the report itself admits that these are "worst case" numbers and the true figures would be far less.
- Also, if NASA is truly committed to the AOCs then why does Table 2.4-1 include "Alternative 1", "Alternative 2" and "Alternative 3" with lesser cleanups to different standards? **The great majority of the community wants the soil cleaned up thoroughly – cleaned up to background as agreed**. You should disclose precisely how many comments you have received on the DEIS, and how many of those support living up to the AOC. Our guess is that the vast majority of comments received support NASA living up to those AOC commitments. Indeed, when the draft AOCs were out for public comment—twice in fact—something like 99% of the 3700 comments received supported the AOCs. We are concerned NASA is trying to break its commitments and won't honestly even disclose the public comments received opposing such a violation of promises.
- With respect to the test stands, Teens Against Toxins, feels strongly that the test stands must be taken down. This is common sense. The test stands are where the testing occurred obviously. Thus, that is where the chemicals were used and where the contamination is largely centered. The AOC requires the cleanup of all the soil and you can't do that without being able to get to it. The test stands are in the way. It is absurd to not clean up the soil that was most obviously contaminated for ANY reason. Again, it looks like NASA is searching for ways to break its obligations under the AOC.
- Just as with the thought of "preserving test stands", biological resources which include frogs, birds and vegetation are not as critical as protecting children and adults from the toxic contamination that migrates off the site. Studies already indicate increased cancers in the neighboring areas—something the DEIS doesn't disclose. But even so, the huge pollution NASA has created isn't good for vegetation and animals either, and cleanup is essential to restore the natural environment NASA has destroyed. Yet the DEIS does not address in any serious way the need to undo the pollution damage, the benefits of doing so, and the significant negative effects if you refuse to do so. Again, this seems like a political hit rather than a scientific document. Huge contamination of the environment has occurred; it needs to be fixed; and all NASA does is bemoan the number of trucks and other fake issues. There is no analysis of the environmental damage done by the pollution or the damage that would continue if no action were taken to clean it up.
- With respect to water resources, the DEIS does not inform the public of the current contamination that is occurring from SSFL. This is critical to anyone reading the DEIS in order to evaluate and comment on the problems from a cleanup. Table ES-5 lists the harmful effects to the water resulting from cleanup, "result in decreased surface water quality and ground water quality, and change the groundwater hydrology at SSFL' and

then at the bottom states "Remediation could improve water quality." This is incredibly confusing to readers as the DEIS states the cleanup would both decrease and increase water quality. How many times has Boeing been found guilty with water violations of contaminants in the surface water leaving the site? 180 in just the last few years? The analysis in the DEIS is completely skewed, talking of negative impacts on water from cleaning it up, and downplaying or ignoring the contamination and the necessity of getting rid of the pollution.

- Stating that the amount of traffic to which children are exposed would increase is ridiculous. You say nothing about the retinoblastomas—cancers of eyes—that occurred in young children downwind of your pollution, or the other cancer risks or health risks to people living near your toxic site and the continuing risks to them if you evade your cleanup obligations.
- We have noticed that in every case where there is a mention of benefit to remediation on Table ES-5, the mention is listed last. We find a great deal of bias in this EIS which is disturbing to us.

Fix the DEIS so that, rather than propaganda as to why NASA should be allowed to break your promises to this community and walk away from the pollution NBASA created, it instead provides an honest review of how much horrible environmental damage NASA did and why no action would perpetuate that environmental mess .

In summary, Teens Against Toxins and the families in our community are strongly opposed to any action other than a full cleanup to background. Live up to your commitments under the AOC.

Sincerely,

Davis Gortner
President, Teens Against Toxins

CC: Senators Barbara Boxer and Dianne Feinstein, Congresswoman Julia Brownley, Senator Fran Pavley, Supervisor Linda Parks, Los Angeles City Councilmember Mitch Englander, DTSC Director Debbie Raphael, USEPA Region IX

From:	EXT-Casas, Jonathan R
To:	MSFC-SSFL-EIS; Dassler, David W
Subject:	The Boeing Company"s comments on the Draft EIS for Proposed Demolition and Environmental Cleanup Activities at the SSFL
Date:	Tuesday, October 01, 2013 5:16:54 PM
Attachments:	114031.pdf

Please find attached the Comments of The Boeing Company on the Draft Environmental Impact Statement for Proposed Demolition and Environmental Cleanup Activities at the Santa Susana Field Laboratory.

-Jonathan Casas

The Boeing Company
Santa Susana Field Laboratory
5800 Woolsey Canyon Road
Canoga Park, CA 91304-1148

Via E-mail to msfc-ssfl-eis@mail.nasa.gov
Via Certified Mail

October 1, 2013
In reply, refer to SHEA-114031

Allen Elliott
Santa Susana Field Laboratory
Program Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

Dear Mr. Elliott:

Subject: Comments of The Boeing Company on the Draft Environmental Impact Statement for Proposed Demolition and Environmental Cleanup Activities at the Santa Susana Field Laboratory

The Boeing Company (Boeing) appreciates the opportunity to submit these comments on the Draft Environmental Impact Statement (DEIS) prepared by the National Aeronautics and Space Administration (NASA) pursuant to the National Environmental Policy Act (NEPA) for demolition and cleanup activities at the Santa Susana Field Laboratory (SSFL), located in Ventura County, California. Boeing owns portions of SSFL, and NASA, Boeing and the U.S. Department of Energy (DOE), are parties to a 2007 Consent Order with the California Department of Toxic Substances Control (DTSC) regarding the remediation of soil and groundwater contamination at SSFL. In 2010, NASA also entered into an Administrative Order on Consent (AOC) with DTSC for soil cleanup activities at SSFL, as did DOE.

Boeing supports NASA's efforts to proceed with cleanup activities at SSFL. NASA, Boeing and DOE have coordinated their efforts in investigating environmental conditions at SSFL over the past years, and Boeing looks forward to continuing to work cooperatively with NASA and DOE as cleanup activities at SSFL are implemented. SSFL cleanup activities will be considered in environmental documents prepared under NEPA, including this DEIS, as well as environmental documents prepared pursuant to the California Environmental Quality Act (CEQA). Specifically, the AOCs and 2007 Consent Order contemplate the preparation of a facility-wide Environmental Impact Report (EIR) by DTSC, and DTSC has recently commenced that CEQA process.

Boeing is the owner of property at SSFL and will be affected by NASA's proposed activities. Boeing's SSFL cleanup activities will be evaluated by DTSC under CEQA, and the environmental analyses performed by NASA to comply with NEPA will likely be considered by, but will not be controlling of, DTSC's CEQA analysis. Accordingly, Boeing respectfully submits these comments on the DEIS for NASA's consideration. Section I of this letter describes substantive issues on environmental analyses in the DEIS, while Section II identifies clarifications to specific statements in the text in the DEIS.

I. The DEIS Should Consider the Following Additional Information in Compliance with NEPA

A. The DEIS Should Address How NASA's Proposed Project Will Address Compliance with NPDES Effluent Limits

Although the DEIS acknowledges Boeing's National Pollutant Discharge Elimination System (NPDES) permit in Section 3, Affected Environment (DEIS, p. 3-42), the analysis of water resources in Section 4 does not fully consider the requirements of the NPDES permit or include compliance with the NPDES permit in its discussion of identified Best Management Practices (BMPs). Although the permit is in Boeing's name only, it regulates discharges from both NASA's property and Boeing's property. The DEIS includes Water BMP-1, which requires the preparation of a Construction Storm Water Pollution Prevention Plan (SWPPP) and Erosion Control Plan (ECP), and on that basis, concludes that the impact to water quality is negligible. (DEIS, pp. 4-80 – 4-81.) The DEIS should evaluate the water quality impacts of the proposed project on NPDES permit compliance, and the BMPs should include specific measures that address compliance with the NPDES permit.

Boeing has performed substantial restoration work in the Northern Drainage, including work performed under the guidance of the SSFL Surface Water Expert Panel[1], to improve water quality and compliance with the NPDES permit. The restoration work follows cleanup activities performed with the oversight of DTSC and the Regional Water Quality Control Board, Los Angeles Region (RWQCB) and in accordance with direction provided by the U.S. Army Corp of Engineers (USCOE) and the California Department of Fish and Wildlife (CDFW). To date the restoration work includes extensive re-vegetation of the areas where soil has been removed with approximately 2,400 plants, the installation of irrigation systems and numerous riprap check structures, reinforcement of the drainage banks, and hydromulching at the end of every construction year. All of this work has been performed with the goal of improving sediment stabilization and permit compliance at Outfall 009.

The excavation identified in the DEIS for NASA's proposed project would remove or destroy many of the improvements in the Northern Drainage. The DEIS should consider the water quality impacts of eliminating the Northern Drainage improvements as well as compliance with the NPDES permit, both during the implementation of the proposed project and permanently.

B. As Allowed For In the AOC, NASA Should Consider Alternatives with Different Cleanup Standards Based on Potential Impacts to Cultural Resources or Biological Resources

The DEIS states that the decision to not consider alternative cleanup standards is based on the NASA AOC and direction from the White House's Council on Environmental Quality (CEQ). (DEIS, pp. ES-1 – ES-3.) However, the AOC expressly identifies exceptions to the cleanup to background standard based on potential impacts to cultural resources and biological resources. (AOC, Attachment B, Final Agreement in Principle, p. 1.) Given the potentially significant impacts to both cultural resources and biological resources described in the DEIS, and pending consultations regarding both, NASA should consider

[1] The SSFL Surface Water Expert Panel members are: Michael K. Stenstrom, PhD, PE, BCEE; Robert Gearheart, PhD, PE; Jonathan Jones, PE, DWRE; Michael Josselyn, PhD, PWS; and Robert Pitt, PhD, PE, BCEE, DWRE. The Panel was formed in late 2007 and since then has been sharing their extensive expertise in stormwater management and ways to improve stormwater quality in the NPDES Outfall 008 and **009** watersheds.

whether alternatives with different cleanup standards may provide the same level of protection to human health and the environment while resulting in fewer impacts to these resources. With respect to cultural resources, the identification of SSFL as a Sacred Site by the Santa Ynez Band of Chumash Indians and the ongoing evaluation of SSFL as a Traditional Cultural Property (TCP) and Cultural Landscape warrant careful consideration of the extent to which excavation activities may be performed. In any case, to the extent that any Project activities and consultations for cultural resources (Sacred Site, TCP, Cultural Landscape or Site No. CA-VEN-1803) or biological resources affect Boeing property, Boeing looks forward to participating in those consultation proceedings.

Furthermore, in light of the fact that the DEIS identifies potentially significant environmental effects (both on a project and cumulative basis) that could not have been known when the AOC was executed (or when the CEQ issued its guidance letter in June 2012), and given NEPA's requirements regarding alternatives, it seems appropriate for NASA to now reconsider whether any other alternatives with different cleanup standards should be evaluated. Using a risk-based analysis, a similar level of protection to human health and environmental receptors may be achieved performing substantially less work, resulting in fewer impacts. For example, a soil remediation project (with equivalent protections) limited to areas of higher contaminant concentrations would in general be located on previously disturbed areas of the site. Project-related impacts to biological resources and the cultural landscape, and therefore the Sacred Site, would likely be substantially reduced as compared to the proposed action and determined to be potentially less than significant.

C. The DEIS Should Consider Potential Impacts Associated with Longer Durations and Impacts Resulting from the Concurrent Implementation of Soil and Groundwater Treatments

The DEIS appears to assume that the soil and groundwater remediation activities would be performed within the time frames discussed in the AOC and 2007 Consent Order, e.g., 2017, with demolition to occur prior to the commencement of the soil and groundwater activities. (See, e.g., DEIS, Table 2.2-5, Footnote a: "Assumes completion of cleanup and soil hauling by the end of 2017.") The DEIS also indicates that several of the soil treatment technologies could require more than 2 years to complete. (DEIS, Table 2.2-7.) Two of the groundwater treatment technologies – In situ Chemical Oxidation and In situ Enhanced Bioremediation – are listed in duration as "Months to Years." (DEIS, Table 2.2-8.) The SSFL Groundwater Expert Advisory Panel's[2] assessment is that these techniques could not be completed in months, but perhaps decades (SSFL Groundwater Advisory Panel, 2009). The DEIS should address the potential impacts resulting from the concurrent and perhaps extended implementation of soil and groundwater treatments, as well as the additional impacts of implementing these treatments, including the drilling of wells, the delivery of materials, energy requirements, and possibly, an assessment of water supply, as water is identified as needed for some of these treatments.

D. The DEIS Should Consider Transportation and Related Noise Impacts Utilizing Historic Site Data and Other Constraints

[2] The SSFL Groundwater Expert Advisory Panel consists of Drs. John Cherry, David McWhorter and Beth Parker. Since 1996, the Groundwater Expert Advisory Panel has been assisting in the characterization and remedial assessment of the fractured sandstone aquifer that underlies SSFL.

With the implementation of interim measures and other work at SSFL, including significant soil excavation, Boeing has gained substantial experience with respect to the transportation effects and community concerns related to such work. For example, waste disposal facilities may limit the number of trucks that are allowed at the facility in any single day and may have limitations imposed in their regulatory permits on the annual volume of soil that they may accept. Any such restriction should be considered in evaluating both project-related and cumulative impacts. Boeing's experience with respect to the truck trips is that the maximum safe load weight is 45,000 pounds per truck, and given the weight of soil, 16-18 cubic yards is a more accurate estimate of soil that may be transported by a single truck. Also, the DEIS concludes that the transportation impacts may be reduced by updating Boeing's existing Construction Transportation Control Plan (CTCP) and coordinating with Boeing and DOE. (DEIS, p. 4-73, Mitigation Measure-1.) Although construction transportation control plans have been prepared for prior work at SSFL, Boeing is not aware of any approved update to those plans, and in any case, those plans applied to narrowly defined interim activities and would likely require substantial modifications to address the anticipated construction traffic for the proposed project as well as Boeing's and DOE's projects.

The DEIS should address potential transportation impacts (project and cumulative) based on current policies from the relevant jurisdictions, including the City of Los Angeles, Department of Transportation, Traffic Study Policies and Procedures (May 2012). (Ventura County's policies may be found in its Initial Study Guidelines, Section 27a(1), Transportation & Circulation – Roads and Highways – Level of Service (LOS), and Los Angeles County's policies may be found in its Traffic Impact Analysis Report Guidelines.) These jurisdictions also identify roadway capacities that are likely more representative of local conditions than capacities identified by Florida's Department of Transportation. Moreover, most if not all of these transportation policies require some analysis of peak hour trips on the arterial roadways, in addition to an analysis of Average Daily Trips (ADT). Perhaps NASA has conducted this transportation analysis, but the DEIS does not include a traffic study or report that describes these issues in greater detail.

Similarly, NASA should consider using the noise thresholds of the applicable jurisdictions to evaluate the noise from proposed project, including trucks on arterials roadways, e.g., Ventura County Construction Noise Threshold Criteria (2010) (not the 1974 Los Angeles Ordinance). (DEIS, p. 4-141.) The DEIS states: "The added heavy truck traffic from demolition and environmental cleanup activities would result in a 3-dBA change in noise levels along the designated haul routes at a distance of 100 ft. For perspective, changes in noise levels of 3 dBA are barely perceptible to the human ear." (DEIS, p. 4-140.) The DEIS does not provide a noise study or report to substantiate this conclusion, and from Boeing's experience, this conclusion may present concerns within neighboring communities. The DEIS concludes that the noise impact is negligible, negative, local and short-term. Given the truck operations which will continue on a daily basis for at least four years and probably longer, as explained above, the potential noise impact may not be "negligible" or "short-term."

E. The DEIS May Understate Potential Environmental Impacts From Excavation of 500,000 CY on 105 Acres

The DEIS acknowledges that impacts to native vegetation communities are "significant, negative, local [and] long-term." (DEIS, Table 4.4-1, p. 4-47.) The DEIS states: "Once the soil was removed, the existing micro-system might never be restored. It can take years for native species to reestablish in disturbed

areas, and the species composition would be different from what was originally there, despite reseeding with approved native plant seeds." (DEIS, p. 4-35.) Biology BMP-1 and -2 indicate that the significant impact to native vegetation communities can be reduced to a short-term impact (it should be noted that this conclusion is not consistent with the conclusion in Table 4.4-1), but the BMPs are not sufficiently described to demonstrate that the restoration would be successful, and appear to be inconsistent with the DEIS statements above on p. 4-35. The DEIS also indicates that the "Overall Impacts" with respect to biological resources will depend on consultation with the US Fish and Wildlife Service (USFWS), USACE and RWQCB (Table 4.4-1, p. 4-52), but this significant impact to vegetation communities is not dependent on those consultations. (See Biology-2d and 2g, Table 4.4-1.)

The DEIS fails to adequately address either the intrinsic impact of destroying 105 acres of property, or the collective or holistic impact of the excavation (at times down to bedrock), including impacts to the ecosystem as a whole, erosion, impacts to native vegetation and wildlife (including sensitive and listed species), impacts on hydrology and water quality, dramatic modifications to the terrain, and unknown impacts to cultural resources. Based on the soil excavation performed by Boeing at SSFL to date, Boeing understands the very substantial challenges involved in successfully reestablishing native vegetation communities, stabilizing the soil and managing the hydrology of the disturbed area. The DEIS should evaluate the significant and long-term impacts resulting from the excavation of 500,000 cubic yards of soil (or even 320,000 cubic yards) that cannot be fully mitigated.

F. To the Extent NASA's Proposed Project Extends Into SSFL Areas Beyond the Boundaries of the Federal Property Administered by NASA, the DEIS Should Consider Alternative Cleanup Processes and Standards

The proposed project includes treatment or remediation areas that are outside of NASA's Area I and Area II. (DEIS, Figures 2.2-2, 2.2-3 and 2.2-4.) The DEIS utilizes the AOC's cleanup to background standard to evaluate cleanup activities for the entirety of the project, including areas beyond NASA boundaries that are governed by the 2007 Consent Order. The 2007 Consent Order applies a risk-based methodology consistent with California law applied to other remediation sites. While Boeing appreciates NASA's obligations under the AOC both with respect to the cleanup standard and the requirement to remediate contiguous contamination if it has migrated beyond NASA's property, the DEIS should also evaluate the risk-based process to be applied under the 2007 Consent Order in evaluating remediation activities beyond NASA boundaries. Boeing looks forward to coordinating with NASA regarding cleanup activities at SSFL in a manner that allows NASA and Boeing to meet their respective commitments

G. Cumulative Impacts

The DEIS acknowledges that the cumulative impacts of the NASA, DOE and Boeing projects with respect to many resources areas are more severe than those identified solely for NASA's project. (DEIS, Table 4.13-2, pp. 4-166 – 4-167.) More specifically, with respect to the potential negative impacts, the changes are as follows:

a. Soils: Minor to Moderate
b. Cultural Resources: Pending Consultation to Significant
c. Biological Resources: Pending Consultation to Significant
d. Transportation: Minor to Significant

e. Water Resources: Negligible to Moderate
f. Health and Safety: Negligible to Moderate
g. Noise: Negligible to Minor
h. Hazardous Waste: Minor to Moderate

NEPA requires the consideration of mitigation measures for potentially adverse impacts, including the proposed project's contribution to cumulative impacts. The DEIS should provide more information regarding the analysis of cumulative impacts and potential mitigation measures.

A thorough analysis of cumulative impacts is particularly important because all of these projects relate to the cleanup activities at SSFL. Although Boeing appreciates NASA's focus on the SSFL areas which it administers in defining the proposed project, and much of Boeing's work may not require federal action, the DTSC is preparing in compliance with CEQA a Facility-wide EIR for the entire SSFL, which will encompass the activities of all three entities. NASA should ensure that the environmental effects of the demolition and cleanup activities at SSFL are evaluated comprehensively either as the proposed project or as cumulative impacts.

II. Specific Clarifications to Text of DEIS

The following Table notes those locations in the DEIS where Boeing suggests that the current text, tables and figures be updated. In some instances, Boeing has identified factual errors and in others, the need for additional explanation.

Page No.	Section	Comments
ES-6	ES-5.0 Summary of Environmental Consequences	Table ES-2 Summary of Impacts for the Proposed Demolition and Environmental Cleanup at NASA's Santa Susana Field Laboratory Table ES-2 includes a category of "beneficial impacts." It is not clear why biology is listed in this category given the significant impact to biological resources noted in the same table.
ES-7,8	ES-5.1.4 Traffic and Transportation	The DEIS states: "The potential for even one accident involving a child is significant and unacceptable." Yet, the impacts to the safety of children that would be expected because of an increased exposure to truck traffic are deemed to be "moderate, negative, local and short-term." The potential for one accident is not an adopted threshold typically used in health and safety analysis in environmental documents. This section should be clarified.
ES-16	ES-9.0 Required Permits, Licenses, and	The list of permits, licenses, and approvals that are likely to be required for the Proposed Action does not include DTSC's approval of the Record of Decision (ROD), the California Environmental Quality Act (CEQA) process, or the Streambed Alteration Agreement, issued by the California

Page No.	Section	Comments
	Approvals	Department of Fish and Wildlife (CDFW).
1-7	1.1.4 Property Administration and Commitments	For completeness, the DEIS should include a description of the 2010 Administrative Order on Consent (AOC) between the Department of Energy (DOE) and the California Department of Toxic Substances (DTSC). The DEIS states: "Stormwater from NASA-administered property exits SSFL through one of these outfalls." It should be noted that there are three other outfalls on the NASA-administered property.
2-12	2.2.1.4 Waste Disposal and Recycling	Table 2.2-2 Proposed Demolition Hauling The information regarding "Equipment for Resale" in Table 2.2-2 appears to either misstates the amount at 8,134 tons or misstates the truck trips at 20.
2-15	2.2.2.2 Preliminary Remediation Areas	Figure 2.2-2 Proposed Soil Remediation Area Under the Proposed Action This Figure does not include the drainage leading to Silvernale Pond and/or Silvernale Pond (outside of Area II) that may be subject to cleanup by NASA.
2-18	2.2.2.3 Soil Cleanup Technologies	Kettleman Hills Landfill, located in Kettleman City, California is identified as a landfill for possible offsite disposal of excavated soil. This landfill currently does not accept waste from the Santa Susana Field Laboratory.
2-27, 29	2.2.3 Proposed Groundwater Remedial Activities	Figure 2.2-4 Areas of Impacted Groundwater—NASA—Santa Susana Field Laboratory The description of area of impacted groundwater (AIG)-9 in the text of the DEIS is not consistent with what is depicted on Figure 2.2-4.
2-31, 32	2.2.3.2 Groundwater Cleanup Technologies	Table 2.2-8 Comparison of Groundwater Remediation Technologies The text of the DEIS and Table 2.2-8 provide that utilization of in situ chemical oxidation or in situ enhanced bioremediation to remediate the groundwater will take "months to years." The SSFL Groundwater Expert Advisory Panel's assessment is that these techniques would likely take decades to complete the remediation.
2-36	2.4.1.4 Comparison of	Table 2.4-2 Alternative Comparison of Offsite Waste Type

Page No.	Section	Comments
	Alternatives	Kettleman Hills Landfill located in Kettleman City, California is included in Table 2.4-2 as a location for disposal of hazardous waste from the soil cleanup. This landfill currently does not accept waste from the Santa Susana Field Laboratory.
2-42	2.5 Resources Eliminated from Further Consideration	Table 2.5-1: Resources Eliminated from Further Consideration Reclaimed Water System Infrastructure: Although eliminated as a resource for further consideration because it is currently inactive, NASA may want to consider keeping it place to support treatment technologies that may utilize reclaimed water.
3-1 to 3-11	3.2 Site Infrastructure and Utilities	There does not appear to be a discussion in the DEIS of impacts to the utilities and infrastructure identified in this Section.
3-4	3.2.2.3 Sewer System	The description of the use of the Area III Sewage Treatment Plant (STP) (STP-3) is in error. STP-3 has been demolished.
3-16	3.3.3.3 Archaeological Resources	Boeing appreciates the information included in the DEIS regarding Site No. CA-VEN-1803 (Lithic Scatter), located north of Area II on Boeing property.
3-23	3.4.3.1 Sensitive Plant Species	Although no Brauton's milkvetch (a federal endangered species) was found on NASA-administered property, it was found on the adjacent Boeing property. Whether the NASA-administered property presents a suitable habitat for the species is not addressed.
3-35, 37	3.4.5.1 Wetland Delineation	The DEIS identifies the Propellant Loading Facility (PLF) Drainage and Drainage A-1 as riverine wetlands and SW-2 Pond as a palustrine wetland. In its February 12, 2013 letter to NASA, USACOE provided its determination that the PLF and A-1 drainages were not riverine wetlands and that the SW-2 Pond was an intrastate isolated water not regulated by USACOE.
3-47	3.8.2.1 Radioactive Waste	The following statement should be deleted: "Boeing and the California Department of Public Health currently are responsible for verifying radiological cleanup procedures and activities." It is unclear what portion(s) of the SSFL this sentence is intended to address, and USEPA and DOE have responsibility for verifying radiological cleanup procedures and activities.

Page No.	Section	Comments
3-48	3.8.2.3 Sampling of Contaminated Areas	The DEIS states: "For investigation and reporting purposes, the contaminated sites at SSFL are considered by geographic locale and similar historical use (referred to as RI groups) rather than by ownership. An RI group could have contaminated sites that are owned and operated by NASA or Boeing." For accuracy, the second sentence above should be revised to read: "An RI group could have contaminated sites that may have been owned and/or operated by NASA, Boeing or DOE."
4-81	4.6.2 Best Management Practices	The DEIS states:"The combined effect of demolition and remediation activities on the potential to increase surface water and groundwater pollution would be minor, given the regulatory controls in place to protect water quality and the assumption that NASA would adhere to these requirements." It is unclear why the DEIS describes NASA's adherence to water quality regulatory controls as an assumption.
4-156	4.13 Cumulative Impacts	The DEIS states that 140,000 cubic yards of soil will be excavated by Boeing as part of the remediation of the Boeing property. Boeing is continuing to refine its soil volume excavation estimates.
4-157	4.13.1 Cumulative Activities	The DEIS states: "No new residential developments have been proposed immediately surrounding or within a 1-mile radius of SSFL." It further states: "Consequently, new residential development is not discussed further in this cumulative analysis." There are two proposed residential developments in close proximity to SSFL: the Runkle Canyon residential development and the Dayton Canyon residential development.
4-161	4.13.2.4	Table 4.13-1 Cumulative Truck Hauling Estimates of NASA, DOE, and Boeing Activities Although this Table appears to include the volume of soil generated by NASA on a yearly basis over a 2 year period (247,585 cubic yards), the volume shown for Boeing (140,000 cubic yards) is the total amount estimated in the DEIS to be removed by Boeing during its soil remediation activities. (See DEIS, p. 4-156.)
4-169	4.14.3	The DEIS acknowledges that soil characterization is ongoing and that

Page No.	Section	Comments
	Incomplete and Unavailable Information	estimated volumes may increase. Although the DEIS considers that as much as 500,000 cubic yards of soil may be excavated, there is no discussion of an "upper limit" in acknowledgment of the ongoing characterization work, which may be appropriate.
4-169	4.15 Required Permits, Licenses, and Approvals	The list of permits, licenses, and approvals that are likely to be required for the Proposed Action does not include DTSC's approval of the Record of Decision (ROD), the California Environmental Quality Act (CEQA) process, and the Streambed Alteration Agreement, issued by the California Department of Fish and Wildlife (CDFW).
5-4	5.4.3 Other Agency Coordination	The final sentence in the paragraph describing an August 25, 2011 meeting states: "The site visit concluded with Director Raphael describing her understanding of the SSFL cleanup, the two Administrative Orders on Consent (AOCs) with both NASA and Boeing: and her planned approach, foreseen challenges, and ultimate goals." The two AOCS are with NASA and DOE.

Again, Boeing appreciates the opportunity to submit these comments to NASA. Given that Boeing is in the process of defining the scope of its SSFL activities and any associated environmental effects in support of the CEQA process, Boeing may have additional concerns regarding NASA's evaluation of environmental effects under NEPA as described in this DEIS. We look forward to continuing to work cooperatively to ensure consistency in the environmental analyses for the cleanup activities at SSFL.

Should you have any questions regarding our comments or wish to discuss them, please contact David Dassler of my staff at (818) 466-8733.

Sincerely,

Dassler for

Steven L. Shestag
Director, Enterprise Remediation
Environment, Health & Safety

From:	Tom Nachtrab
To:	MSFC-SSFL-EIS
Subject:	Tom Nachtrab"s Individual Commentary On SSFL DEIS
Date:	Monday, September 30, 2013 4:16:39 PM
Attachments:	NASA DEIS Commentary by Nachtrab Final.pdf

Allen Elliott, SSFL Project Director at NASA:

Please find my commentary attached in the form of a .pdf file.

Thank you for the opportunity to offer comments.

Tom Nachtrab
Chatsworth, CA

Thomas A. Nachtrab
10530 Larwin Ave. unit 7
Chatsworth, CA 91311

September 30, 2013

Mr. Allen Elliott
SSFL Project Director
NASA MSFC AS0, Building 4494
Huntsville, AL 35812

Comments on Draft Environmental Impact Statement for Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California, dated July 2013

1. NASA's DEIS does not serve its intended purpose. It does NOT fully inform decision makers so they can decide how to best execute the cleanup. The DEIS should be re-issued after critical missing information is determined.

2. The DEIS is flawed because it lacks important information. DTSC must supply much of the missing information.

    a. The DEIS is incomplete because it excludes analysis of all possible levels of cleanup except the "cleanup to background" alternative. Other reasonable cleanup alternatives must be evaluated. To accept that the 2010 Administrative Order on Consent (AOC) prohibits consideration of all alternatives defies both the letter and the spirit of the past half-century's environmental legislation, state and federal.

    b. The DEIS lacks guidance on situations and actions that depend on vague language in the AOC that governs the cleanup. DTSC must provide NASA with an authoritative and binding interpretation of the language of the AOC.

    c. The DEIS is incomplete because it lacks guidance that still-undelivered DTSC documents, such as the DTSC EIR should include. This future EIR document must include a comprehensive, CEQA-compliant analysis that balances cleanup goals under various scenarios, including costs (both financial and environmental).

    d. The DEIS is incomplete because it does not specify expected outcomes for cultural resources, both archeological and architectural.

3. Some of the inadequacies of NASA's plan are consequences of the unreality of goals imposed on NASA by the AOC.

    a. The incompleteness of the DEIS reveals that so much is yet to be decided, planned, and executed that the AOC-mandated completion date of 2017 has become unrealistic. The rules of the game must change to target completion for a realistic date such as 2020 or beyond.

b. Some see the AOC as a guarantee that NASA will "take us and the Hill home again." For better or worse, no one has ever been able to go "home again."

   Some interpret the AOC to mean that a cleanup to no less than background level is both possible and desirable. The AOC is sometimes interpreted to mean that we can "return the site to its natural state." The unspoken assumption is that Background = Natural.

   Yet, how can the result of any technological cleanup yield a natural result?

   Unfortunately we may have to accept some reality. Man (our grandparents, parents, and we ourselves) made a mess in fifty years of the Hills that Nature crafted over millennia. Can Man now be expected to (play God) and re-Create in a handful of years, what Nature made? Presumptuous, no? Maybe we need to accept that Man screwed up here, and the best we can do is atone for our sins by cleaning up to a reasonable, very low level of risk; humbly learning from our arrogance; and preserving the scene of the offence against Nature as a reminder not to screw up so bad the next time.

4. Finally, I also fully endorse the comprehensive "Comments on Draft Environmental Impact Statement" separately submitted to you by the Santa Susana Mountain Park Association (SSMPA).

Sincerely,

Thomas A. (Tom) Nachtrab

10530 Larwin Avenue unit 7
Chatsworth, CA 9131-3052

tnachtrab@gmail.com
phone : 630-235-7348

From:	Chuck Thomas
To:	MSFC-SSFL-EIS
Cc:	Mike Villegas; Kerby Zozula
Subject:	Ventura County APCD Comments on the SSFL DEIS
Date:	Thursday, September 26, 2013 11:09:27 AM
Attachments:	VCAPCD 2 A Elliot SSFL DEIS.pdf

Please find attached Ventura County Air Pollution Control District comments on the SSFL DEIS.

Chuck Thomas
Manager
Planning/Rules/Incentives
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Ventura County
Air Pollution
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669 County Square Drive
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Michael Villegas
Air Pollution Control Officer

September 26, 2013

Allen Elliott, SSFL Project Director
National Aeronautics and Space Administration
MSFC AS01, Building 4494
Huntsville, AL 35812

Subject: National Aeronautics and Space Administration's (NASA) Draft Environmental Impact Statement (DEIS) for the Demolition and Cleanup at the Santa Susana Field Laboratory (SSFL)

Dear Mr. Elliott,

The Ventura County Air Pollution Control District (District) appreciates the opportunity to comment on the subject DEIS for demolition and environmental cleanup activities at the NASA-administered properties at the SSFL. The DEIS evaluates the potential environmental consequences associated with NASA's proposal to demolish existing structures and to remediate groundwater and soil on the federally-owned property that NASA administers at the SSFL in Ventura County, California.

The District is the local agency responsible for attaining and maintaining state and federal air quality standards and protecting the citizens of Ventura County from the harmful effects of air pollutants. The District's responsibilities in improving air quality in the region include: preparing plans for attaining and maintaining air quality standards; adopting and enforcing air quality rules and regulations; issuing permits for stationary sources of air pollutants; inspecting stationary sources and responding to citizen complaints; monitoring local air quality and meteorological conditions; and implementing public outreach campaigns.

As a complement to its official responsibilities under state and federal clean air laws, the District regularly participates in environmental assessments of public and private proposals that may impact Ventura County's air. The District supports public agencies with their environmental assessments and documents by providing needed information, guidance, and assistance that helps those agencies address and mitigate air quality issues of projects they are proposing or considering in Ventura County.

With this background and introduction, District staff offers the following comments and suggestions regarding the air quality section of the subject DEIS.

1) All demolition, construction, and excavation equipment such as compressor engines, generator engines, screens, crushers, conveyors, lighting, drilling rigs, etc. shall be

printed on recycled paper

registered with the California Air Resources Board Portable Equipment Registration Program (PERP). In some cases, the equipment may not meet the applicability requirements of the PERP (function, time at facility, etc.) and will be required to obtain a District air permit. Equipment such as backhoes, bulldozers, front-end loaders, and dump trucks do not require a PERP or District permits, but must comply with the California Air Resources Board Diesel Off-Road Online Reporting System (DOORS) Program and Regulation For In-Use Off-Road Diesel Fueled Fleets. If a District air permit is required, the permit application shall comply with the best available control technology (BACT) and emission offset requirements of APCD Rule 26, "New Source Review." The air permit application shall also demonstrate compliance with District Rule 33, "Part 70 Permits", Rule 35, "Elective Emission Limits," or Rule 76, "Federally Enforceable Limits on Potential to Emit," as applicable.

2) The DEIS provides only preliminary details regarding the various soil cleanup technologies that are being considered as alternatives to excavation and offsite disposal. As stated, some of the soil cleanup technologies will require Ventura County APCD permits. To fully determine these permit requirements, a detailed description of each soil cleanup technology will be required. The power source for these soil cleanup technologies must also comply with District air permit requirements. Fuel-fired power sources such as an electricity generating engine may not comply with all air quality rules and grid electricity may be required to power the soil cleanup technologies. If a Ventura County APCD permit is required, the permit application shall comply with BACT and emission offset requirements of APCD Rule 26, "New Source Review." Note that the current Ventura County APCD Permit to Operate for the SSFL has permitted emissions of 2.37 tons per year of reactive organic compounds (ROC) and 5.86 tons per year of nitrogen oxides (NOx). These permitted emissions are considered to be the "baselines" when evaluating the APCD Rule 26 emission offset thresholds of 5 tons per year of ROC and 5 tons per year of NOx.

3) The ex situ treatment of contaminated soils using land farming may not comply with District rules and may not be permitted as proposed. Alternative ex situ soil remediation techniques, such as a covered aerated static pile, should be considered. In this technique, the contaminated soil is covered with a tarp or other impermeable cover and the required air is provided via blowers and piping with air emissions vented to an emission control device.

4) The DEIS also provides only preliminary details for the various groundwater cleanup technologies being studied. As stated, some of the groundwater cleanup technologies will require District air permits where volatile organic compounds (VOCs) or semi-volatile compounds are potentially emitted to the atmosphere. To fully determine these permit requirements, a detailed description of each groundwater cleanup technology will be required. The power source for these groundwater cleanup technologies must also comply with District air permit requirements. Fuel-fired power sources such as an electricity generating engine may not comply with all air quality rules and grid electricity

may be required to power the groundwater cleanup technologies. If a Ventura County APCD Permit to Operate is required, the permit application shall comply with BACT and emission offset requirements of APCD Rule 26, New Source Review.

5) Air Quality Mitigation Measure-3 (MM-3) proposes a "Dust Control Plan" for the project. The Ventura County APCD recommends that MM-3 be expanded to an "Emissions Control and Air Monitoring Plan." During the excavation and temporary storage of contaminated soil, VOCs and various toxic air contaminants may be released into the atmosphere. The plan should include best management practices to prevent the emissions of VOCs and air toxics in addition to preventing the emissions of fugitive dust. An air monitoring program should also be developed to make sure that the project does not cause a violation of the National and California Ambient Air Quality Standards or Ventura County APCD Rule 51, Nuisance, Rule 62.1, Hazardous Materials, and Rule 74.29, Soil Decontamination Operations. The air monitoring program should include real-time, continuous, and/or periodic monitoring for PM_{10}, VOCs, and air toxics such as polycyclic aromatic hydrocarbons and lead.

   The "Emissions Control and Air Monitoring Plan" should incorporate the following requirements of District Rule 74.29, Soil Decontamination Operations: a) a certified organic vapor analyzer should be used to make sure that the aeration of contaminated soil is minimized or prevented, b) contaminated soil piles or soil surfaces should be treated with a vapor suppressant or covered with continuous heavy-duty plastic sheeting or other covering to minimize the emissions of VOCs and air toxics to the atmosphere; and, c) trucks used to transport contaminated soil shall also be enclosed, tarped or otherwise covered to minimize the emissions of dust, VOCs, and air toxics.

6) The proposed demolition and remediation activities at the SSFL will involve removal of structural materials and excavation and transport of up to 500,000 cubic yards of contaminated soils over a period of two years. These activities will require significant numbers of diesel equipment and vehicles to remove and deliver the structural debris and contaminated soils to storage and treatment areas within the SSLF boundaries and to off-site disposal facilities. Moreover, up to 167,000 cubic yards of backfill material will be brought in to restore excavated areas. This material will also be delivered and placed with diesel equipment. Diesel particulate matter has been designated a cancer-causing chemical in the State of California. Therefore, a screening health risk assessment (HRA) should be conducted to assess potential health risks of diesel exhaust emissions associated with project activities to nearby populations, especially sensitive receptors, such as residences, schools, daycare centers, and hospitals. This determination can be made by an appropriate health risk assessment. The California Air Pollution Control Officers' Association (CAPCOA) has an HRA guideline document, titled *Health Risk Assessments for Proposed Land Use Projects* (June 2009), for assessing the health risk

impacts of airborne toxic and carcinogenic substances. The guidelines and associated documents are available from CAPCOA's website at http://www.capcoa.org/documents.

7) Vapor emissions and dust emissions from the excavation, handling, and on-site storage of contaminated soils may result in the emissions of toxic air contaminants such as chlorinated hydrocarbons and metals. Air toxics screening calculations or a HRA should be conducted to assess potential health risks of nearby populated areas as discussed above.

8) The DEIS should assess through dispersion modeling whether project-generated particulate pollutants (PM_{10} and $PM_{2.5}$) will exceed either state or federal air quality particulate standards in nearby populated areas.

9) Project conformity is addressed in Section 4 of the DEIS and Appendix I, *AQ General Conformity Analysis*. These discussions indicate that the emissions of material from the excavation and offsite disposal for both high and low soil remedial technologies are below the South Central Coast Air Basin's (SCCAB) general conformity thresholds of 50 tons/year for VOC and NOx. Soil remedial emission estimates for 2016 and 2017 are provided in Section 4 of the DEIS and Appendix I, *AQ General Conformity Analysis*. However, the emission estimates for demolition activities for 2014, although also below the SCCAB thresholds of 50 tons/year for VOC and NOx, are only presented in Section 4 and not found in Appendix I, *AQ General Conformity Analysis*. This information should be included in Appendix I as well.

Thank you again for the opportunity to provide comments and suggestions on the DEIS for this very important project. We hope you find them helpful. If you have any questions, please call me at 805-645-1440 or email me at mike@vcapcd.org.

Sincerely,

Mike Villegas
Air Pollution Control Officer

c: Peter Foy, County of Ventura
Linda Parks, County of Ventura
Chris Stephens, County of Ventura
Kerby Zozula, VCAPCD
Chuck Thomas, VCAPCD

From:	jweiner.venturacoastkeeper@gmail.com on behalf of Jason Weiner
To:	MSFC-SSFL-EIS
Cc:	Mati Waiya; Luhuiisha
Subject:	Wishtoyo DEIS Comments: Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California
Date:	Monday, September 30, 2013 11:56:10 AM
Attachments:	9.30.13_Wishtoyo_SSL DEIS Comments.pdf Canine Forensics Attachment.pdf

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To whom it may concern,

Please accept Wishtoyo's attached Draft Environmental Impact Statement ("DEIS") for the Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California ("Project").

Please also confirm receipt of the attached Wishtoyo letter and canine forensic attachment to the letter.

Sincerely,

Jason

--
Jason A. Weiner, M.E.M.
Associate Director & Staff Attorney
Wishtoyo Foundation's Ventura Coastkeeper Program

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Articles Discussing How Forensic Dogs can be and have been successfully used to identify and locate Native American human remains (last visited October 21, 2011)

1.) http://www.ohlonenation.org/?p=264

By charlene on September 20th, 2011

Forensic Dogs Successful in Identifying Ancient Human Remains for Ohlone

Category: Uncategorized, Tags: burial site, forensic dog, kb homes, ohlone, santa cruz

Native Americans are always concerned when their exists the potential of unearthing human remains during construction projects. During a time when regular protocol would dictate the use of drills and tedious ground penetrating strategies that might harm or destroy findings, two alternatives have been incorporated during a recent project.

This fall the remains of an Ohlone boy were discovered during a KB home building project in Santa Cruz, CA. During negotiation meetings between the home builder, the City of Santa Cruz, CA and the Ohlone all parties agreed to respect and accept the results from two alternative proven methods of ground investigation. The two methods include ground penetrating radar or (GPR) and specially trained forensic dogs.

In this case, Ohlone descendant Chuck Strickland recommended the GPR method. A trained GPR technician came to the building site and scanned surface of the earth to see if additional buried remains could be detected. Unfortunately, due to layers of sediment and rock would not allow proper functioning of this method. While this did meet the Ohlone requirement of a non-invasive method for predicting the likelihood of findings, it would not be a good match for this project.

Next, Gregg Castro, also an Ohlone descendant recommended the use of specially trained dogs from the Institute for Canine Forensics.

The institute has it's headquarters in California, but has provided services nationally and internationally. The institute trains for nine distinct types of area scannings. The match for the Ohlone project would be a team of dogs who could detect historical human remains. Dogs are taught not to disturb a scene by digging or retrieving evidence. Further, the dog can discriminate between human remains and all other non-human items. In this case, the dogs were able to detect the spot of the original finding as well as additional findings that would require great care if the construction project were to continue.

In this project, the Ohlone, the city and the home builder came together to agree upon these alternative scientific methods for land surveying. It is the hope of the Ohlone Elders Circle that these non-invasive methods become part of the regular process to be implemented in order to preserve former village sites.

2.) http://www.santacruzsentinel.com/localnews/ci_18929918

Santa Cruz, developer reach agreement not to build on Ohlone site

By J.M. BROWN
Posted: 09/19/2011 03:37:31 PM PDT

Archeologist and helpers sift through burial site on land where KB Homes is... (DAN COYRO/SENTINEL)

SANTA CRUZ - After weeks of negotiations with the city and Native American elders, the developers of a 32-unit housing complex on the Eastside agreed Monday not to build over an Ohlone burial site.

KB Home will set aside a premier, 13,000-square-foot parcel at the top of a knoll, where several remains were discovered this summer, to preserve in perpetuity for Ohlone elders to access for ceremonies. Elders, who believe the spirits of buried people wander if their resting place is disturbed, will be able to use the site for ceremonies in coordination with the site's homeowners association.

"I am ecstatic," said Ann-Marie Sayers, a state-designated Ohlone descendant who negotiated with the city and company to preserve the knoll. "Just the fact that KB Home honored the request of the original people whose land they are building on, it is so long overdue for developers to honor sacred sites. I truly believe they did the right thing."

Sayers, who lives in a Native American community outside Hollister, will join Ohlone elders from other parts of the state in walking the site with company representatives later this week. The elders, who had recommended KB Home fully set aside the parcel containing the knoll, will finalize details of the accord reached after numerous meetings since early August, when the remains of an Ohlone child were discovered.

During an archeological evaluation triggered by the discovery, researchers later recovered remains believed to be teeth and a skull fragment unrelated to the child or each other, officials said. Forensic dogs identified another area on the knoll believed to contain remains, but all sides agreed not to disturb it.

KB Home will establish a permanent cultural easement on land that would have contained a 2,200-square-foot house and driveway, a unit that would have been among the largest and most expensive planned for the community at Market Street and Isbel Drive. The preserved area, where all remains will be buried again, is attached to three acres already set aside to preserve the endangered spineflower.

"We essentially decided to do this out of respect for the elders and folks from the Native American community," said Ray Panek, senior vice president for forward planning at KB Home, who took part in the talks. "It will be just allowed to go to a more natural state. It seems like a good solution."

Panek said he did not have immediate estimates on lost revenue for setting aside the land or the total cost to the company for archeological research. The company agreed to bring in subsurface sonar equipment and forensic dogs at the request of Native American representatives, and two sets of archeologists worked on the site.

The city ordered the company to stop construction work around the knoll after the remains were recovered. Panek said he expected work would resume soon after the elders walk the preservation area.

"KB was generous in what they were willing to do and elders were flexible in understanding what was possible and meaningful," said Vice Mayor Don Lane, who participated in the talks.

Lane said the outcome was "a really nice conclusion," especially amid all of the demonstrations at the site and at City Hall since the first remains were found. "Everyone was a little pessimistic that goodwill wouldn't manifest."

For the past month, demonstrators have been calling for an end to building plans around the knoll. Protesters resumed their demonstrating Monday until they heard from officials outside City Hall that an agreement had been reached.

3.) http://www.k9forensic.org/historical.html (the site has links to many articles about canine forensics detecting Native American Burials)

Historical Grave Detection Group

Group has been formed by several Forensic Evidence
and Historical Human Remains Detection (HHRD) dog teams
under the umbrella of Institute for Canine Forensics

In archaeology, an HHRD trained canine with impeccable manners, slow and methodical search style, properly trained and certified, may be the Remote Sensing Tool of the future. ICF canine trainers are "writing the book" in this field. Certification standards are high insuring that the ICF certified canines are reliable, non-invasive tools to be used in modern archaeology.
tools to be used in modern archaeology.

4.) http://www.pressdemocrat.com/article/20091121/ARTICLES/911219966?p=1&tc=pg

Reclaiming Santa Rosa's century-old graves

By MARY CALLAHAN
THE PRESS DEMOCRAT

Published: Saturday, November 21, 2009 at 5:33 p.m.

Last Modified: Saturday, November 21, 2009 at 5:33 p.m.

The graves are thought to be well over 100 years old, forgotten over time, unclaimed and uncelebrated.

Photo Galleries

- Dogs Search Cemetery

Tiny yellow and red flags newly planted Saturday in several overgrown areas of the Santa Rosa Rural Cemetery began to acknowledge the loved ones who rest there and the history they represent.

But Rhea, Eros, Alice and Osara, four dogs trained to sniff out old bones, were focused firmly on the present as they criss-crossed designated areas of the 17-acre cemetery in search of human remains.

The canine foursome - as well as several others still in training - were brought to Santa Rosa by the Woodside-based Institute for Canine Forensics, which trains and deploys Human Remain Detection Dog teams.

Though some also work in search-and-rescue contexts and seek out human remains from recent tragedies, the Institute is the only such agency in the world focused on detection of historic remains, whether in law enforcement or archaeological contexts, representatives said.

Dogs associated with the Institute have been used, for example, to search for human remains at the home of a Hayward couple charged with kidnapping of Jaycee Dugard, who was snatched off a Lake Tahoe road at age 11 and kept for 18 years.

They've also identified Native American burial sites around the western United States, and served at New York City's Ground Zero and along the trail of the Space Shuttle Columbia, which exploded over Texas.

They came to Santa Rosa at the invitation of the Rural Cemetery's volunteer Preservation Committee. The organization hoped to determine whether human remains were buried in more than 100 plots recently discovered on maps long tucked away from human eyes and

never marked by gravestones at the cemetery, said Sandy Frary, who, with her husband Jim, is a key organizer for the committe.

Committee members thought it possible the plots had been mapped and never used, and wanted to find out, part of their effort to restore the cemetery fully and document its history in as precise a manner as possible.

The scent of cadavers lingers in the soil and can be sifted and distinguished with a dog's sensitive nose, though it's sometimes hard to pinpoint precisely from where the odor comes, handlers said.

Dogs can even detect remains in ancient sites after centuries f burial.

The gravesites sought Saturday were probably closer to 130 or 140 years old, though there was plenty of doubt they were there in the first place - especially on a rough, sloping area along Franklin Road where 12 flags were left Saturday, indicating multiple bural plots.

Nobody had thought there were burials in those sections of the cemetery, Sandy Frary said, adding, "I'm totally amazed."

Another 10 or so flags were scattered about a meadow and adjacent hillside at the north side of the cemetery, while half a dozen others remained planted along a back road near the top of the acreage.

Volunteers still hope to rake the areas, pull up weed cover and probe around to see what more can be determined, Frary said.

Wishtoyo

September 30, 2013

Allen Elliott
SSFL Project Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

VIA EMAIL: msfc-ssfl-eis@mail.nasa.gov

RE: Draft Environmental Impact Statement ("DEIS") for Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California ("Project")

Dear Mr. Elliott:

Wishtoyo thanks you and NASA for the opportunity to comment on the DEIS and the Project.

WISHTOYO FOUNDATION is a California nonprofit public interest organization, founded in 1997, in Ventura County, with over 700 members composed of Chumash Native Americans and Santa Barbara, Ventura, and Los Angeles County residents. Wishtoyo Foundation's mission is to preserve, protect, and restore Chumash culture, the culture of all of three counties' diverse communities, and the environment. The Wishtoyo Foundation shares traditional Chumash beliefs, cultural practices, songs, dances, stories, and values with the public to instill environmental awareness and responsibility for sustaining the health of our land, air, and water for the benefit of future generations.

The Chumash People, including members of Wishtoyo, have a long history of interaction with the SSFL area. The SSFL site is interacted with by the Chumash for a variety of purposes, including religious and ceremonial rites. The Chumash Peoples continue share a sacred and cultural relationship with the many places and the landscape within the SSL site, as the Project site contains the ancestral remains of the Chumash Native Americans with innumerable cultural and natural resources, including burial and sacred sites. This Project has the potential to change the entire cultural landscape this historical, cultural, and religious treasure to the Chumash Peoples.

We are especially concerned about the Project's and the DEIR's identification, mitigation for, and treatment of Chumash cultural resources.

When Chumash cultural resources, including burials are identified, Phase III data recovery, or salvage operation, even if the salvage operation includes re-burial, does not

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www.wishtoyo.org

achieve preservation in place of the Chumash Peoples' cultural resources, including burial sites, sacred sites, village sites, and cultural artifacts and remains. Even capping and filling of the Chumash Peoples' significant cultural, historic site, and burials, often does not adequately achieve preservation in place of our historic and cultural resources, as it can destroy the necessary relationship between the cultural, historic, and often religious resource with its surroundings and cultural landscape that are a component of the site's significance. Therefore, for identified impacts to Chumash cultural, historic, and religious sites, mitigation measures to achieve preservation in place must be thoroughly analyzed in consultation with the Chumash. The Environmental Impact Statement ("EIS") must not only identify adequate mitigation measures that preserve Chumash cultural resources in place, but it must commit to preservation in place mitigation measures (and not defer the mitigation measures to others' discretion at a later time so that Phase III data recovery can be implemented), unless these measure are proven to be infeasible by defined criteria.

The Project site is rich with the Chumash tribes' historic and cultural resources. To the Chumash, any area with historic value, such as their burial sites, village sites, or sacred sites have deep religious, spiritual, and cultural significance today. The Chumash thus retain strong spiritual, cultural and religious attachment to the lands, their buried ancestors, and resources within the Project site. The Chumash, including members of Wishtoyo, still conduct sacred ceremonies on the Project site today. Chumash remains, burials, sacred sites, and ancestral villages lie in the Project site, and these cultural resources will be directly affected by excavation, earthmoving, and disturbance authorized by this Project.

Based on our knowledge passed down only orally and not recorded in westernized records about the locations and extent of the Chumash remains in the Project site, the initial study and DEIS fail to adequately identify significant impacts to significant Chumash cultural historic resources, villages, burial site, sacred cites, and remains. Further, the on the ground surveys were not sufficiently extensive, as a sufficient frequency of test pits were not dug; when they were dug, they were not dug deep enough; and the entirety of the Project area was not covered by on the ground surveying and sufficiently spaced test pits. Furthermore, best available science was not used, such as forensic canines, to best ensure all Chumash burials and remains were identified in the Project Area. Because Phase III Data recovery is in most cases not sufficient mitigation, a dig first and excavate later approach is not sufficient for mitigation impacts to our cultural resources. It is thus critical to setting forth adequate mitigation measures that the presence of our cultural, historic, and religious resources are adequately analyzed and identified using best available practices.

Wishtoyo requests that specially trained forensic canines alone or in combination with ground penetrating radar are utilized (just like they were in Santa Cruz to identify Ohlone Native American burials for the KB Home development [1]), to

[1] Please see Canine Forensics Attachment to this letter for more details about the use of forensic canines and ground penetrating radar to reliably identify the location of Native American Burials for the KB Homes Development in Santa Cruz and for other development projects.

identify the location of all Native American burials within the project envelope. The use of specially trained canine forensics alone, or in combination with ground penetrating radar, represents the best available technology and most reliable means for the identification of Chumash burials, and thus should be used to identify potential impacts to Chumash cultural / historic resources and to mitigate those impacts to a less than significant effect. By utilizing highly trained forensic canines alone or in combination with ground penetrating radar to identify with more reasonable certainty all or almost all of the Native American burials within the Project envelope, mitigation measures can be developed in coordination with the local Native Americans to achieve preservation in place for those impacted burials and cultural historic resources.

Wishtoyo also requests that the DEIS adequately indentify the impacts to Chumash cultural, historic, and religious resources through additional study in consultation with the Chumash and using best available science.

The Project's development envelope also contains Chumash natural cultural and historical resources. These include, but are not limited to hawk and eagle feathers, deer bones used for hair pins, bird bones for flutes, animal skeletal remains used for beads, medicinal plants, oak trees, black walnut trees, soap stone, cheart stone, medicinal plants, rabbit pelts and oarcker; gathering sites for natural cultural resources; and cultural landscapes which include undeveloped mountain tops, hillsides, tributaries and canyons that bring sacredness to sacred sites. These natural cultural resources within the Project site may be contaminated, as may be the areas around the cultural sites within the Project envelope. Thus, not only must these cultural resources be protected and preserved, but the contamination of these cultural resources and sites must be assessed and remediated so that residual toxins do not pose health threats to Chumash Peoples utilizing the area for cultural purposes.

For all the reasons above, meaningful consultation during the NEPA process with Chumash tribal representatives from the Federally recognized Santa Ynez Band of Chumash Indians, and from unrecognized bands of Chumash including Mati Waiya from the Turtle Clan in Saticoy and Luhui Isha Waiya from Barbareño Chumash, is crucial to understanding, identifying, and mitigating irreversible impacts to this national Native American treasure, Chumash cultural landscape, Chumash heritage and culture, and to the scared and religious, cultural resources of the Chumash People within the Project site.

Despite the need, there has been no meaningful consultation with the Chumash. Even the consultation with the Federally recognized band of Santa Ynez Chumash Indians is not in compliance with Section 106 of the National Historic Preservation Act ("NHPA"), which according to the Advisory Council on Historic Preservation states,

> "in carrying out its responsibilities under Section 106, *a Federal agency shall consult with any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to properties described in subparagraph (A). [16 U.S.C. 470a (a)(6)(A) and (B)]."*

We believe this Project would significantly alter future use, and impact the Cultural sites, resources and heritage these lands represent. The outreach that has been done is insufficient. Extensive outreach to Chumash, Tatavium, Tongva and other Native American tribal families/groups that have a longtime and historical connection to the sacred and cultural sites at SSFL/Burro Flats should occur with notice of the issues in this letter, and these Native American stakeholders should be given an opportunity to submit comment and participate in meaningful consultation. Even the February 2013 SSFL Community Advisory Group ("CAG") formed to make recommendations to Department of Toxic Substances Control ("DTSC") found shortfalls in outreach to certain stakeholder groups, including and especially to the Native American Tribal Community, which was identified in the highest category (Category 1) of stakeholders that have not received outreach and that are in need of outreach.

In addition to the comments above, we incorporate the comments from the Santa Ynez Band of Chumash Indians (below) and have the following comments on the DEIR and the Project:

1. The project will impart significant negative unmitigated impacts to sacred sites and cultural resources. Areas that contain artifacts contaminated with toxins may need to be cleaned up as part of the project. How are these artifacts, that are contaminated with toxins to be preserved in place, and if storage or removal occurs - which we are opposed to, how are they to be stored. How are uncovered villages or sacred sites to be preserved in place. How would the legal transfer of land on the Project site affect the protection of historic properties? We request that parcels with Chumash sacred and cultural resources are not transferred without adequate guarantees of protection.

2. The Chumash have held ceremonies on the Project site for the past 30 yrs. or more, and want to continue to do so.

3. Please conduct independent studies to review cultural sites and cultural resources that are present. Ensure that Chumash are considered for retention under contract to conduct cultural resources surveys with archeologists, trusted by the Chumash community, who have worked with Chumash resources.

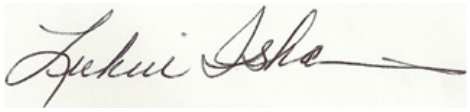
4. Agencies and entities that own the different properties within the Project site, like DOA, Boeing and NASA need to look at, analyze, and mitigate cultural sites as a whole district or historic district, which are not separated by legal property boundaries with the site. The project must avoid all impacts to Chumash cultural resources within the Project site.

5. Traditional cultural landscapes to include natural resources, plants, stones, creeks and habitat that helped us, and continue to help us, sustain our lifeway and traditions. These resources need to be protected.

6. Cultural sites not identified are likely scattered throughout the entire Project site/property. This area hosted different tribal groups that where passing through or were neighboring tribes.

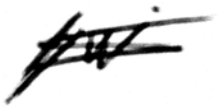
7. Please add a mitigation measure that provides that the Interpretation of Chumash History in relation to the Project site, uncovered cultural resources, preserved in place cultural resources, protected Chumash cultural resources, and recovered cultural resources is to be done by Chumash representatives.

Sincerely Yours,



Luhui Isha
Barbareño Chumash
Cultural Resources & Education Director
Wishtoyo Foundation

Mati Waiya, Chumash Ceremonial Elder
Santa Clara River Turtle Clan
Executive Director
Wishtoyo Foundation



Jason Weiner
Staff Attorney
Wishtoyo Foundation

Attachment to Wishtoyo 9/30/2012 DEIS Letter - Letter from the Santa Ynez Band of Chumash Indians

September 30, 2013

Allen Elliott
SSFL Project Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

RE: Draft Environmental Impact Statement (DEIS) for Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California

Dear Mr. Elliott:

The Santa Ynez Band of Chumash Indians ("Chumash" or "Tribe") thanks you and NASA for the opportunity to comment on the DEIS. NASA procedure requirements state that NASA is "committed to environmental stewardship, sustainable design, and green engineering." In addition, NASA is covered by Executive Order 13175 as reaffirmed by that Presidential Memorandum on Tribal Coordination dated November 5, 2009 that reaffirmed Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments," and emphasized the importance of strengthening government-to-government relationships with Native American tribes. See also, http://nodis3.gsfc.nasa.gov/npg_img/N_PR_8580_001A_/N_PR_8580_001A_.pdf**.**

The Tribe, therefore, makes the following comments as to the DEIS:

(1) <u>The EIS Must Address Cultural Resources</u> (copied from http://www.npi.org/NEPA/impact)

Cultural resources are referred to in different ways at different points in the CEQ regulations. The regulatory definition of the term "human environment" at 40 CFR 1508.14 –impacts on the quality of the human environment being the subjects of any EIS – includes "the natural and physical environment and the relationship of people with that environment." The definition of "effects" at 40 CFR 1508.8 – as in "effects on the quality of the human environment" – includes changes in the human environment that are "aesthetic, historic, cultural, economic, (or) social."

The regulatory definition of the word "significantly" at 40 CFR 1508.27 – as in "major federal action significantly affecting the quality of the human environment" – includes as measures of impact intensity:

- Impacts on an area's unique characteristics, such as "historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, and ecologically critical areas" (40 CFR 1508.27(b)(3)).

- Impacts on "districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places" and on "significant scientific, cultural, or historical resources" (40 CFR 1508.27(b)(8)).

Clearly, impacts on cultural resources are to be addressed in an EIS. Note that it is not just impacts on historic properties that should be addressed. The regulations use "historic" and "cultural" in parallel, not as synonyms.

(2) Record of Decision Must Mitigate any Impacts to Cultural Resources (copied from **http://www.npi.org/NEPA/impact**)

Once the EIS analysis has resulted in a draft environmental impact statement (DEIS), it is subjected to public and agency review, and comments are addressed – this may require further analysis. Then, assuming the project has not been abandoned, or so changed that a supplemental DEIS is needed, a final EIS (FEIS) is prepared and published. The FEIS is considered in making the agency's decision about whether and how to proceed with the action that was the subject of the EIS. This decision is recorded in a Record of Decision (ROD). According to 40 CFR 1505.2, the ROD must:

- State what the decision was.

- Identify all alternatives considered.

- Specify the alternative or alternatives considered to be "environmentally preferable." (Note that the agency does not have to select the environmentally preferable alternative, but it does have to discuss what it is.)

- Identify and discuss the factors balanced in making the decision (whether for or against the environmentally preferable alternative).

- State whether "all practicable means to avoid or minimize environmental harm . . . have been adopted, and if not, why they were not."

Having notified the world of its decision, the agency implements it. In doing so, it must carry out any mitigation, i.e., "means to avoid or minimize environmental harm," it has said in the ROD or EIS that it will carry out (40 CFR 1505.3).

(3) Deferral of Mitigation does not Comply with NEPA (copied from **http://www.npi.org/NEPA/impact**)

Deferral. With respect to historic properties, a very common problem is "deferral," in which the agency:

- Acknowledges that it does not know much about what effects there may be on historic properties (often because such properties have not yet been identified); but
- Says that whatever effects there may be, NHPA Section 106 review (of the National Historic Preservation Act), to be performed later, will take care of them; and
- Concludes that therefore, whatever alternative is decided on, impacts on historic properties will not be a problem.

Considering environmental impacts *after* a decision has been made defeats NEPA's purpose of considering impacts in *preparing* to make decisions. It also almost guarantees last-minute conflicts between project implementation and historic preservation.

Failure to consider things that are not historic properties. With respect to other kinds of cultural resources, a common problem is that they are not considered at all. Historic properties, or even more narrowly, archeological sites, are sometimes the only things discussed in the "cultural resource" part of an EIS. If social impacts are considered, they are often considered only terms of easily quantifiable socioeconomic variables like population, employment, and use of public services. The result is that impacts on many classes of cultural resource simply are not identified or considered in deciding whether significant impacts may occur.

(4) Significant Negative Unmitigated Impacts to Sacred Sites and Cultural Resources

4.3.1.2 Soil Cleanup to Background--the total area of the remediation footprint is approximately 105 acres and includes approximately 500,000 yd3 of contaminated soil

Indian Sacred Site and Traditional Cultural Property: The tribe has already designated all of the NASA administered property as a sacred site under E.O. 13007. The impact would be **significant**, **negative**, regional, and **long term** and would constitute an **adverse effect** under Section 106. (DEIS, 4-18)

Archeological Resources: The proposed cleanup of the Burro Flats site (CA-VEN-1072); could result in ***significant, negative, local,*** and ***long-term*** impacts to the site and would constitute an ***adverse effect*** under Section 106. The proposed cleanup of CA-VEN-1803 could result in ***moderate, negative, local,*** and ***long-term impacts*** under NEPA. Excavation on previously undiscovered archeological sites found to be NRHP-eligible could be a ***significant, negative, local,*** and ***long-term*** impact on archeological resources, thus resulting in a finding of ***adverse effect*** under Section 106. (DEIS, 4-19)

Deferral of eligibility determination: A determination of eligibility of CA-VEN-1803, in consultation with the SHPO and the federally recognized tribes, needs to be completed before cleanup began if this site were to be affected by soil cleanup activities. CA-VEN-

1800 would not be affected by excavation and removal of soil because it is not located within the identified cleanup areas.

Deferral of boundary research as to VEN-1072 and VEN-1803: Additional boundary research is required to conclude that any avoidance of excavation within the boundaries of Burro Flats (CA-VEN-1072) and CA-VEN-1803 would diminish or eliminate adverse impacts to known archeological sites and reduce the impacts to ***negligible, negative, local,*** and ***long term*** and could result in a finding of ***no adverse effect*** under Section 106.

Deferral of additional testing as to unknown archaeological deposits: Additional subsurface testing is required to conclude that reducing the amount of excavation on newly discovered archeological deposits (commonly referred to as "inadvertent or accidental discoveries") could minimize the impact if the newly identified sites were avoided, thus reducing the impacts to ***minor, negative, local,*** and ***long-term*** impacts from excavation.

(5) **Failure to Address Executive Order 13007**

On December 10, 2012, the Santa Ynez Band of Chumash Indians, a federally recognized tribe ("Tribe"), designated the NASA portion of the SSFL as an Indian sacred site pursuant to Executive Order 13007. This Indian sacred site also includes the former Rocketdyne and now Boeing portion of SSFL and the Tribe is open to discussing the exact boundaries at a later date.

E.O. 13007 requires Federal land managing agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. It also requires agencies to develop procedures for reasonable notification of proposed actions or land management policies that may restrict access to or ceremonial use of, or adversely affect, sacred sites.

Sacred sites are defined in the executive order as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." There is no review of such determinations by a Federal agency.

It is important to note that a sacred site may not meet the National Register criteria for a historic property and that, conversely, a historic property may not meet the criteria for a sacred site. However, in those instances where an undertaking may affect a historic property that is also considered by an Indian tribe to be a sacred site, the Federal agency should, in the course of the Section 106 review process, consider accommodation of access to and ceremonial use of the property and avoidance of adverse physical effects in accordance with E.O. 13007.

The Advisory Council on Historic Preservation (ACHP) has explained **"The Relationship Between Executive Order 13007 Regarding Indian Sacred Sites and Section 106," http://www.achp.gov/eo13007-106.html**

> To the extent that the requirements of the executive order and ACHP's regulations are similar, Federal agencies can use the Section 106 review process to ensure that the requirements of E.O. 13007 are fulfilled. For example, E.O. 13007 requires that agencies contact Indian tribes regarding effects and the Section 106 regulations require consultation with Indian tribes to identify and resolve adverse effects to historic properties.
>
> Consultation regarding the identification and evaluation of historic properties of religious and cultural significance to an Indian tribe could include identification of those properties that are also sacred sites. Similarly, consultation to address adverse effects to such historic properties/sacred sites could include discussions regarding access and ceremonial use.

(6) **Failure to address the NASA Site is a Traditional Cultural Property (TCP) eligible for protection on the National Register:**

National Register Bulletin No. 38 (hereinafter referred to as "NPS Bull. No. 38"), Guidelines for evaluating and Documenting Traditional Cultural Properties (1990; revised 1992; 1998) under NHPA
http://www.nps.gov/nr/publications/bulletins/pdfs/nrb38.pdf

A. Locations for traditional ceremonies are defined as a TCP: NPS Bull No. 38, p. 1, provides:

The traditional cultural significance of a historic property, then, is significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices. Examples of properties possessing such significance include: ***

• a location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice;

B. Mountain tops and rock outcroppings like at SSFL are TCP's: NPS Bull. No. 38, p. 2, provides:

> Traditional cultural properties are often hard to recognize. A traditional ceremonial location may look like merely a mountaintop, a lake, or a stretch of river; a culturally important neighborhood may look like any other aggregation of houses, and an area where culturally important economic or artistic activities have been carried out may look like any other building, field of grass, or piece of forest in the area. As a result, such places may not necessarily come to light through the conduct of archeological, historical, or architectural surveys. The existence and significance of such locations often can be ascertained only through interviews with knowledgeable users of the area, or through other forms of ethnographic research.

C. NASA must engage specialists as part of its TCP study: NPS Bull. No. 38, p. 10, provides:

> In general, the only reasonably reliable way to resolve conflict among sources is to review a wide enough range of documentary data, and to interview a wide enough range of authorities to minimize the likelihood either of inadvertent bias or of being deliberately misled.
> Authorities consulted in most cases should include both knowledgeable parties within the group that may attribute cultural value to a property and appropriate specialists in ethnography, sociology, history, and other relevant disciplines.7

D. Specific events like the Solstice ceremony at SSFL qualify as TCP: NPS Bull. No. 38, p. 11, provides:

For example, the National Register
defines a "site" as "the location
of a significant event, a prehistoric or
historic occupation or activity, or a
building or structure, whether standing,
ruined, or vanished, where the location
itself possesses historic, cultural,
or archeological value regardless
of the value of any existing structure."
9 Thus a property may be defined
as a "site" as long as it was the
location of a significant event or activity,
regardless of whether the event or
activity left any evidence of its occurrence.
A culturally significant natural
landscape may be classified as a site,
as may the specific location where significant
traditional events, activities,
or cultural observances have taken
place. A natural object such as a tree
or a rock outcrop may be an eligible
object if it is associated with a significant
tradition or use. A concentration,
linkage, or continuity of such sites or
objects, or of structures comprising a
culturally significant entity, may be
classified as a district.

E. Native American ceremonies qualify as TCP: NPS Bull. No. 38, p.15, provides:

National Register guidelines
stress the fact that properties can
be listed in or determined eligible for
the Register for their association with
religious history, or with persons significant
in religion, if such significance
has "scholarly, secular recognition."
13 The integral relationship
among traditional Native American
culture, history, and religion is widely
recognized in secular scholarship.14
Studies leading to the nomination of
traditional cultural properties to the
Register should have among their
purposes the application of secular
scholarship to the association of particular

properties with broad patterns
of traditional history and culture. The
fact that traditional history and culture
may be discussed in religious
terms does not make it less historical
or less significant to culture, nor does
it make properties associated with traditional
history and culture ineligible
for inclusion in the National Register.

F. Lack of use does not make a property TCP ineligible: NPS Bull. No. 38, p. 18, provides:

The fact that a property may have
gone unused for a lengthy period of
time, with use beginning again only
recently, does not make the property
ineligible for the Register. For example,
assume that the Indian tribe
referred to above used the mountain
peak in prehistory for communication
with the supernatural, but was forced
to abandon such use when it was confined
to a distant reservation, or when
its members were converted to Christianity.
Assume further that a revitalization
of traditional religion has begun
in the last decade, and as a result
the peak is again being used for vision
quests similar to those carried out
there in prehistory. The fact that the
contemporary use of the peak has
little continuous time depth does not
make the peak ineligible; the peak's
association with the traditional activity
reflected in its contemporary use is
what must be considered in determining
eligibility.

(7) **Traditional Cultural Landscapes must also be included in Section 106 consultations and the EIS**

Traditional cultural landscapes, because they are often a property type such as a district or site, are identified in the same manner in the Section 106 process as other types of historic properties of religious and cultural significance to Indian tribes or Native Hawaiian organizations. The regulations at 36 CFR Section 800.4 outline several steps a federal agency must take to identify historic properties. In summary,

to determine the scope of identification efforts, a federal agency, in consultation with the State Historic Preservation Officers (SHPO)/Tribal Historic Preservation Officer (THPO), must:

1. Determine and document the area of potential effect for its undertaking;
2. Review existing information; and,
3. Seek information from consulting parties including Indian tribes or Native Hawaiian organizations.

Based on the information gathered through these efforts, the federal agency, in consultation with the SHPO and any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to historic properties that may be affected by the undertaking, develops and implements a strategy to identify historic properties within the area of potential effects. Identification efforts may include background research, oral history interviews, scientific analysis, and field investigations. **http://www.achp.gov/natl-qa.pdf**

There is no single defining feature or set of features that comprise a traditional cultural landscape. Such places could be comprised of natural features such as mountains, caves, plateaus, and outcroppings; water courses and bodies such as rivers, streams, lakes, bays, and inlets; views and view sheds from them, including the overlook or similar locations ; vegetation that contributes to its significance; and, manmade features including archaeological sites; buildings and structures; circulation features such as trails; land use patterns; evidence of cultural traditions, such as petroglyphs and evidence of burial practices; and markers or monuments, such as cairns, sleeping circles, and geoglyphs. **http://www.achp.gov/natl-qa.pdf**

Based on such research, the ACHP TRADITIONAL CULTURAL LANDSCAPES ACTION PLAN advises as follows:

The ACHP, as the agency with responsibility for overseeing the Section 106 review process, and DOI, through the National Park Service (NPS), as the agency with responsibility for overseeing the National Register of Historic places, should provide leadership in addressing Native American cultural landscapes in the national historic preservation program. Together, the ACHP and NPS should:
--Promote the recognition and protection of Native American traditional cultural landscapes both within the federal government and the historic preservation community as well as at the state and local levels, and,

--Address the challenges of the consideration of these historic properties in the Section 106 review process as well as in NEPA reviews. **http://www.achp.gov/pdfs/native-american-traditional-cultural-landscapes-action-plan-11-23-2011.pdf**

(8) **U.N. Declaration on the Rights of Indigenous Peoples must now be followed after December 2010**

In December 2010, the United States announced support for the **United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)**. In announcing this support, President Obama stated: “The aspirations it affirms—including the respect for the institutions and rich cultures of Native peoples—are one we must always seek to fulfill…[W]hat matters far more than any resolution or declaration – are actions to match those words.” The UNDRIP addresses indigenous peoples’ rights to maintain culture and traditions (Article 11); and religious traditions, customs, and ceremonies (Article 12); to

participate in decision making in matters which would affect their rights (Article 18); and to maintain spiritual connections to traditionally owned lands (Article 25).

The ACHP will now incorporate UNDRIP in the Section 106 review process:

While the Advisory Council on Historic Preservation's (ACHP) work already largely supports the United Nations Declaration on the Rights of Indigenous Peoples, additional and deliberate actions will be taken to more overtly support the Declaration. The Section 106 review process provides Indian tribes and Native Hawaiian organizations (NHOs) with a very important opportunity to influence federal decision making when properties of religious and cultural significance may be threatened by proposed federal actions. While federal agencies are required to consult with Indian tribes and NHOs and to take their comments into account in making decisions in the Section 106 review process, adding the principles of the Declaration to that consideration may assist federal agencies in making decisions that result in the protection of historic properties of religious and cultural significance to Indian tribes and NHOs. **http://www.achp.gov/docs/UN%20Declaration%20Plan%203-21-13.pdf**

9. <u>Official recognition in the DEIS need to be made of the areas surrounding Burro Flats</u>

A. The entire Southern half of Area II District needs to be protected. Sec. 3.3.3.4, p. 3-17

Sec. 3.3.3.3 Archeological Resources, p. 3-16
The earliest documented archeological work at Burro Flats Painted Cave began in 1953 with excavations carried out by the Archaeological Survey Association of Southern California, which made five trips to the site during 1953 and 1954. The site has been recorded several times since then and under numerous separate listings; misidentifications of elements and inconsistencies in function, assemblage, and design interpretations warranted a revisit and a complete recordation of the site's elements**. <u>In June 2007, NASA re-recorded the site and updated the site record; this effort resulted in combining 16 separately recorded sites into one site, CA-VEN-1072, with associated loci and features</u>**.

We therefore request that the entire Southern half of Area II District needs to be protected. Sec. 3.3.3.4, p. 3-17.

B. All structures should be removed in the Coca Historic District. These structures impinge on the ceremonial areas. If a decision is reached to save a test stand, Alfa or Bravo should be retained instead of Coca.

10. <u>Additional Investigation of the Northern Half of the SSFL site</u>

While the Southern half of Area II contains the pictographs and additional 16 sites, the Northern half of SSFL needs additional investigation, including, without limitation:

a. Geography—this areas contains numerous flat areas that would be suitable camp sites;
b. Areas of food—this areas contains forests and riparian areas that could be utilized in the gathering of food;
c. Support for ceremonial area in the Southern half of Area II—It is not inconceivable that the Northern half of the SSFL site provided support for the ceremonies in the Southern half of SSFL;

d. Separate areas for different tribes—if SSFL was an inter-tribal gathering place, then each tribe would have congregated separately in different parts of the site.

11. <u>Subsurface testing is required.</u>

Pedestrian surveys are of limited utility and never alone are sufficient when there are known areas of habitation or ceremony. We are informed that NASA has recently completed a Phase I Pedestrian Survey of the site. While such Phase I is an excellent first step, we request additional subsurface archaeological testing for all areas scheduled for any excavation.

If the project is in a region where there are many sites, there may be reason to suspect that buried sites may be present that went undetected during the survey. If the soils profile of the project location shows that heavy erosion has washed away soils then it may explain the absence of cultural resources. However, if the soils profile is depositional then there may be a need to conduct additional subsurface testing, particularly in areas where ground disturbance is planned. In archaeological terminology, this is referred to as "Extended Phase I" testing because it is an intermediate step between Phase 1 (survey), and Phase 2 (controlled excavation to assess the significance of a site). Extended Phase I testing often done by excavating a small pit with a shovel and screening the excavated soil through steel mesh ("shovel test pit" or "STP"). If it is considered to be necessary that a large amount of soil should be examined at deeper levels, then backhoes are sometimes used and informal sampling procedures are often employed while screening the backdirt.

Sometimes the lead agency will argue that archaeological survey is not warranted for a particular project or there may be factors that justify additional investigation even though a Phase I study has been completed with negative results. Following is a list of environmental and cultural factors that should be considered when assessing the overall cultural sensitivity of the SSFL. (Please note that this list is not exhaustive and each factor must be weighted both individually and collectively on a case-by-case basis.)

a. Areas with high viewshed or visibility such as or ridgelines, peaks, ledges, outcrops, benches, or prominent hills; and

b. Areas with a relatively high density of sites in the vicinity; and

c. Areas where past ethnographic studies have revealed associated placenames. Keep in mind that placenames do not always refer to places where evidence of past cultural activity exists; and

d. Areas near known sites. Mapped boundaries of sites most frequently reflect only cultural residue that was visible on the surface when the site was recorded and do not necessarily reflect the actual extent of the site. In addition, loci such as cemeteries or other areas may be adjacent to or nearby but separate from the main habitation; and

e. Areas near known rock art sites or rocky outcroppings of the type where rock shelters and art have traditionally been located; and

f. Areas in or near known gathering areas; and

g. Though all sites are potentially worthy of protection, named, ethnohistorically documented village sites are of the highest priority and therefore warrant the greatest amount of protection possible.

12. **Exhaustion of Non-Excavation Methods of remediation**.

Figure 2.2-3, p. 2-21, illustrates the Preliminary Remediation Area Types Under the Proposed Action. To the extent feasible, NASA should exhaust all non-excavation methods of remediation before performing any excavation that could potentially impact cultural and historic sites.

13. **Soil Prior disturbance is NOT Dispositive**:

The mantra that cultural sites have been disturbed and therefore automatically are not significant is oftentimes incorrect:

a. Disturbed sites still may contain valuable information. The newer approach is to treat disturbed sites as having the potential to provide information even if they have been disturbed;
b. Disturbed sites still have spiritual significance;
c. Disturbance may only be on the surface, while much excavation may continue to depths of up to 20 feet.

14. **Need to Analyze Cumulative Impacts to Cultural Resources**:

The DEIS fails to account for other remediation projects in other areas of SSFL:

a. Need to add Department of Energy (DOE) cultural sites;
b. Need to add Boeing cultural sites;
c. Other areas within SSFL.

15. **NEW MITIGATION: Cultural Interpretive Center**:

a. Can use existing building;
b. Preferably near saved historic structure and/or test stand;
c. Preferably away from CA-VEN-1072;
d. Need to Reserve maintenance funds.

16. **NEW MITIGATION: Native American monitoring during any ground disturbing activities**.

17. Need to protect CA-VEN-1072 from trespassers and vandals.

18. Deferral of Mitigation until Record of Decision (ROD):

a. It is problematic to defer any mitigation until ROD as it prevents meaningful comment;
b. Commenter reserve the right to ask for recirculation of the DEIS and EIS for any such deferred mitigation.

19. **Use of NEPA EIS instead of NHPA 106**—Recent ACHP guidance:

http://www.achp.gov/docs/NEPA_NHPA_Section_106_Handbook_Mar2013.pdf

Substitution under 36 C.F.R. § 800.8(c) permits agencies to use the NEPA review to comply with Section 106 as an alternative to the process set out in 36 C.F.R. §§ 800.3-800.6. The use of a substitution approach allows agencies to use the procedures and documentation required for the preparation of an EA/FONSI or EIS/ROD to comply with the Section 106 procedures. To do so, the agency must notify the ACHP and SHPO/THPO in advance that it intends to do so and meet certain specified standards and documentation requirements as set forth in 36 C.F.R. § 800.8(c)(1).

If, as the result of an objection under 36 C.F.R. § 800.8(c) (2)(ii) or during consultation to resolve adverse effects, disagreement reaches a point where the substitution process is no longer prudent, then agencies may return to the appropriate step in the standard Section 106 process with notification to consulting parties.

20. Need NEPA Mitigation Plan

http://www.whitehouse.gov/sites/default/files/microsites/ceq/20100218-nepa-mitigation-monitoring-draft-guidance.pdf

February 18, 2010

MEMORANDUM FOR HEADS OF FEDERAL DEPARTMENTS AND AGENCIES
FROM: NANCY H. SUTLEY, Chair, Council on Environmental Quality
SUBJECT: DRAFT GUIDANCE FOR NEPA MITIGATION AND MONITORING
I. INTRODUCTION

To provide for the performance of mitigation, agencies should create internal processes to ensure that mitigation actions adopted in any NEPA process are documented and that monitoring and appropriate implementation plans are created to ensure that mitigation is carried out. See *Aligning NEPA Processes with Environmental Management Systems* (CEQ 2007) at 4 (discussing the use of environmental management systems to track implementation and monitoring of mitigation). http://ceq hss.doe.gov/nepa/nepapubs/Aligning_NEPA_Processes_with_Environmental_Management_Systems_2007.pdf (**http://www.slideshare.net/whitehouse/aligning-nepa-processes**). Agency NEPA

implementing procedures should require clearly documenting the commitment to mitigate the measures necessary in the environmental documents prepared during the NEPA process (40 C.F.R. § 1508.10) and in the decision documents such as the Record of Decision. When an agency identifies mitigation in an EIS and commits to implement that mitigation to achieve an environmentally preferable outcome, or commits in an EA to mitigation to support a FONSI and proceeds without preparing an EIS, then the agency should ensure that the mitigation is adopted and implemented.

Methods to ensure implementation should include, as appropriate to the agency's underlying authority for decision-making, appropriate conditions in financial agreements, grants, permits or other approvals, and conditioning funding on implementing the mitigation. To inform performance expectations, mitigation goals should be stated clearly. These should be carefully specified in terms of measurable performance standards to the greatest extent possible. The agency should also identify the duration of the agency action and the mitigation measures in its decision document to ensure that the terms of the mitigation and how it will be implemented are clear.

If funding for implementation of mitigation is not available at the time the decision on the proposed action and mitigation measures is made, then the impact of a lack of funding and resultant environmental effects if the mitigation is not implemented warrant disclosure in the EA or EIS. In cases where, after analyzing the proposed actions with or without the mitigation, the agency determines that mitigation is necessary to support the FONSI or committed to in the ROD, and the necessary funding is not available, the agency may still be able to move forward with the proposed action once the funding does become available. The agencies should ensure that the expertise and professional judgment applied in determining the appropriate mitigation measure is reflected in the administrative record, and when and how those measures will be implemented are analyzed in the EA or EIS.

Under NEPA, a federal agency has a continuing duty to gather and evaluate new information relevant to the environmental impact of its actions. See 42 U.S.C. § 4332(2)(A). For agency decisions based on an EIS, the regulations require that, "a monitoring and enforcement program shall be adopted…where applicable for mitigation." 40 C.F.R. §1505.2(c). In addition, the regulations state that agencies may "provide for monitoring to assure that their decisions are carried out and should do so in important cases." 40 C.F.R. §1505.3. Monitoring plans and programs should be described or incorporated by reference in the agency decision documents.

21. Incorporation by reference of Memo dated Nov. 29, 2012, "NEPA alternatives analysis for selection of cleanup standards for the Santa Susana Field Laboratory Site."

Sincerely,

Sam Cohen
Government and Legal Specialist
Santa Ynez Band of Chumash Indians

From:	Gary M Brown
To:	MSFC-SSFL-EIS
Subject:	Comments on SSFL DEIS
Date:	Monday, September 30, 2013 11:39:22 PM
Attachments:	Gary Brown comments on SSFL DEIS.doc

Please see attached. Thank you for the opportunity to comment.

September 30, 2013

Gary M. Brown
162 San Clemente St
Ventura, CA 93001

Mr. Allen Elliot
NASA MSFC AS01
Building 4494
Huntsville, Alabama

Re: Draft Environmental Impact Statement, Santa Susana Field Lab, NASA Demolition and Environmental Cleanup.

Dear Mr. Elliot:

After a thorough review of NASA's Draft EIS, I would like to offer some comments. I have provided input already as a National Park Service representative and a participant in the Section 106 Consulting Party, but these are my personal comments as a professional archaeologist and long-time cultural resource expert:

- The EIS is inconsistent about stating whether its purpose and goal are to address disposal of NASA property in addition to structure demolition and environmental cleanup. This is a serious matter since potentially the federal government would relinquish its control over Section 106 compliance if property is transferred to other ownership. The title of the document, for instance, says nothing about property transfer. Discussions with stakeholders have indicated that the latter is GSA responsibility, but this is unclear in the analysis.
- Whatever the case, the result is a huge impact to historic and prehistoric cultural resources. The adverse effects on both historic and prehistoric cultural resources are justified on the basis that prior agreements to cleanup the property to incredibly high standards which were made without NEPA or NHPA consultations. Despite these agreements, failure to consider alternatives is not justifiable because the document itself ("Suggested Mitigations") implies considerable flexibility in whether or not some cultural resources could be spared to "mitigate" the destruction of others.
- The documentation of prehistoric archaeological resources provided in the contractor's report (Appendix C) is far from commensurate with the significance of the National Register site (CA-VEN-1072) and likely NRHP district that is the centerpiece of the prehistoric cultural landscape. There is no evidence that the contractor even consulted the existing NRHP document, outdated as it is. The 1970s nomination form indicates acreage larger than even the 1990s documentation conducted as pure research by Albert Knight on just the NASA portion of the site complex.
- At this stage in the analysis of impacts, determination of archaeological site boundaries (horizontal) and site depth (vertical) should minimally have been performed so that effects would be possible. Yet, no information is provided on these critical parameters or

such basic characteristics as artifact assemblage and integrity. Even significance at CA-VEN-1072 is questionable without current information on such key factors.

- Limited archaeological testing at CA-VEN-1072 has been advised repeatedly during Section 106 Consulting Party discussions, and would have resolved these uncertainties, but not subsurface identification or assessment procedures have been implemented and even current surface documentation is scant.
- The assertions that any areas which might be disturbed by the proposed undertaking at CA-VEN-1072 (and even sites that have yet to be discovered) lack integrity is unfounded. Existing data are limited, but they indicate that the Burro Flats site complex contains deep, stratified, and substantial archaeological deposits including middens that are most likely intact. How existing infrastructure could be removed and environmental cleanups accomplished without directly impacting such deposits is not addressed. Instead, it is assumed that they are already disturbed and don't matter.
- The suggestion that appropriate mitigation measures could be devised through consultation with SHPO and other consulting parties after the Draft EIS is finalized is optimistic, at best. This is true of both Burro Flats and the historic structures which have been better documented through compliance work to date, although impacts and mitigation have also yet to be identified. Instead, the existing analysis assumes the worst (total destruction would be an adverse effect) and that some mitigation is possible.
- The issue of disposition is not adequately addressed. The assumption is made that likely future owners would not find cultural resources to be beneficial, thus removal is desirable. However, past discussions have emphasized the likely transfer to parklands where historic structures and archaeological resources are potential assets. The interconnected nature of these undertakings needs to be considered before either of them can move forward.

My comments are focused specifically on cultural resources. I recognize the need for environmental cleanup at SSFL and the delicate nature of disposition of lands which contain such unique features as those in this project area. The Draft EIS has not succeeded at balancing these needs and considering alternatives to wholesale destruction of world-class cultural resources. I'm quite sure the undertaking can be implemented without such devastating impacts to the national and regional cultural heritage.

I appreciate the opportunity to review and comment on the Draft EIS. I hope that NASA is able to devise better solutions to this situation.

Respectfully,

Gary M. Brown, MA, RPA
Ventura, CA

From:	Marie Mason
To:	MSFC-SSFL-EIS
Subject:	Comments on the NASA EiS
Date:	Wednesday, October 02, 2013 12:09:58 AM
Attachments:	NASA EIS comments.docx

Attached are my comments on the NASA EIS document

Marie Mason

Marie Mason
6437 Clear Springs Road
Susana Knolls CA 93063

October 1, 2013

Mr. Allen Elliott
SSFL Program Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

by email to: msfc-ssfl-eis@mail.nasa.gov

RE: Comments on Draft EIS for Demolition and Cleanup Activities at the SSFL

Dear Allen,

I have been involved with the effort to get this site cleaned up since 1989. I have spent time going to endless meetings, time that I should have spent with my family. Now after all these years when I finally thought we had achieved our goal with the signing of the AOC's by NASA we are again faced with your agency just walking away and leaving all the contamination behind.

Now with the release of your Draft Environmental Impact Statement it is clear that your agency has no plans for follow the signed agreement. Our community viewed this signed agreement as a commitment between your agency and the families of our community. This seems to be a commitment that your agency signed but had no intention of keeping.

NASA dumped huge amounts of contaminates, just one of the most toxic TCE was poured onto the ground in so many gallons that can't even be counted or accounted for. We have always been told it will take to the end of time to clean up this ground water contamination.

This EIS just wants to leave all the rocket test stands because they are historical but everyone knows and it is well documented that is exactly where most of the TCE was dumped on the ground. If you leave these stands than you are planning on walking away from your responsibility and commitment to this community to follow the AOC agreement you signed.

There is much talk about how awful the truck traffic will be so we should just leave it all there. The trucks have been going up and down to this facility for over 50 years and no one seemed to be worried about what was in the trucks or how it would affect the surrounding communities. NASA could have cared less about this issue until you faced cleaning up the mess you want to leave behind.

This EIS has almost no discussion about all the contamination you have placed there or any discussion on how you plan to clean it up. There is only discussion on how you can walk away and leave it behind hiding behind the words Historical, Truck Traffic, Native American Artifacts. These are all issues your agency could have cared less about when you were trying to get to the moon. Well you got there and you have reason to be proud but now to just walk away and leave it for generations to come is more than criminal its immoral.

There are many families in our community , Simi Valley and the San Fernando Valley that have real health issues. Allen, you have heard these sad stories with your own ears but I guess it all fell on deaf ears.

The sole purpose of an EIS is so everyone will know all the issues both large and small and how these issues will be addressed. This EIS just is lots of words with no real substance. No real solutions only words about how we need to save our test stands. Words about saving the Native American artifacts when you know that the AOC's provide for that along with native or endangered plants.

NASA made a commitment to this community and the people who live here and we expect nothing less than your agency making good on your end by cleaning up this site to the levels required by the AOC.

I can only hope that you will follow through on this commitment so my grandchildren and all the children that will live in the communities that are below this site won't live in fear, the fear that I have lived with since 1989.

DO THE RIGHT THING AND FOLLOW THE AOC'S YOU SIGNED

Sincerely

Marie Mason

From:	Stephen Lenske
To:	MSFC-SSFL-EIS
Subject:	Comments to NASA Draft Environmental Impact statement
Date:	Tuesday, October 01, 2013 10:18:01 PM
Attachments:	Allen_Elliott_DEIS_Comments_former_WHNC_Board_Members.docx

Attached please find letter addressed to allen Elliott, SSFL Program Director, NASA MSFC AS01

October 1, 2013

FROM: Stephen A. Lenske
7525 Sedgewick Court
West Hills, CA 91304

TO: Allen Elliott,
SSFL Program Director,
NASA MSFC AS01,
Building 4494,
Huntsville, AL 35812

RE: NASA Draft Environmental Impact Statement

Dear Mr. Elliott,

The West Hills Neighborhood Council (WHNC) is an advisory body to the City of Los Angeles per its Charter. Neighborhood Council Board members are elected by the local stakeholders to represent them on issues related to land use, public health, public safety, and the environment. In fact, the WHNC has committees that address each of these issues.

The West Hills Neighborhood Council has been addressing the Santa Susana Field Laboratory cleanup for more than 10 years. As a former member of this Board for more than 10 years and holding the elected position as its President for more than 6 years, I have been to the Santa Susana Field Laboratory, and I have been to see some of the NASA test stands and other facilities at the site.

When NASA and the DOE signed the 2010 Administrative Order on Consent (AOC) with the DOE, the WHNC considered potential conflicts between the AOCs with the DOE's need to comply with a court order to perform an Environmental Impact Statement.

We also considered that the cleanup plans under DTSC's authority were being based on their authority under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). (1)

"California State Senate Bill SB 990 was codified as California Health and Safety Code Section 25359.20, effective January 1, 2008. As a result of this new direction from the State legislature, the California Department of Toxic Substances Control (DTSC) is transitioning their oversight of the SSFL cleanup from the State's RCRA Program to the California State CERCLA Program. A new Consent Order is being negotiated to finalize this transition. Cleanup at the SSFL will continue to be overseen by the DTSC and will meet strict federal and state cleanup standards. NASA is committed to cleaning up Area II and its Area I parcel to a level that is protective of public health and the environment and that meets regulatory processes and requirements."

DTSC did a presentation on the Agreements in Principle which are a part of the 2010 Administrative Order on Consent in September 2010. (2)

As a result of that discussion, and information from many more meetings and documents, the WHNC later discussed at their August 13 2011 Board meeting what CERCLA means, and the Nine Balancing Criteria among other issues. (3)

The letter which was addressed to the City Attorney of Los Angeles is attached. I believe that this letter was also generated to NASA after that meeting.

In May 2012, the West Hills Neighborhood Council called a "Special Meeting" after a meeting of their Environment Committee to address the issue of the NASA Environmental Impact Statement. A letter was subsequently generated to NASA Administrator Bolden requesting that a full Scope Environmental Impact Statement be performed by NASA. West Hills will be one of the most impacted communities due to the NASA remediation. Minutes of that meeting are linked below. (4) The letter to NASA Administrator Bolden is attached.

As resident of West Hills for more than 25 years and former member of the West Hills Neighborhood Council, I would like to reiterate our concerns related to the limited Draft Environmental Impact Statement that NASA has just produced, and support the votes of the West Hills Neighborhood Council that we submitted in resolution approved on August 3rd, 2011 and May 17, 2013.

For the protection of our community, I respectfully request that NASA do an Environmental Impact Statement that addresses all of the alternative scenarios as was presented at NASA's March 27, 2012, NASA Environmental Impact Study Meeting. (5)

Please also consider our comments in my signed WHNC letter to the City attorney including:

- **the request for the U.S. Government property to not be used for residential use;**
- **the use of the Nine Balancing Criteria of CERCLA;**
- **the need to monitor airborne emissions and dust from remediation;**
- **the need to monitor surface water and groundwater;**
- **to monitor soils at the Santa Susana Field Laboratory site until DTSC deems that the site is cleaned to all relevant and applicable laws;**
- **the future use of the site should be parkland or open space based upon the final characterization of the site;**
- **the WHNC recommended preservation of some of the test stands on the NASA property if it can be done in a manner that is protective of public safety and will not impede the cleanup beneath the test stands;**
- **the WHNC supports all environmental laws that are applicable to this site that were protective of endangered species and wildlife that uses the site as a major wildlife corridor;**
- **the WHNC supports all laws that are applicable for the protection of the Native American community and the archaeological sites that are on the National Register of Historic Places.**

Respectfully submitted,

STEPHEN A. LENSKE
***West Hills Neighborhood Council former Board member and Council President**
*** For identification purposes only**
October 1st, 2013

1) **State CERCLA: http://ssfl.msfc.nasa.gov/environmental-cleanup/default.aspx**
2) **Agreements in Principle: http://www.dtsc-ssfl.com/files/lib_pub_involve/meeting_agendas/64728_AgreementsInPrinciple09-22-10.pdf**
3) **WHNC August 3, 2011 Minutes: http://www.westhillsnc.org/uploads/WHNC_Minutes_8-3-11.pdf**
4) **WHNC May 17, 2012 Minutes: http://www.westhillsnc.org/uploads/WHNCMinutes20120517.pdf**
5) **NASA Environmental Impact Statement (EIS) Informational Meeting Presentation: http://ssfl.msfc.nasa.gov/documents/presentations/201203_EIS_Informational_Meeting/NASA_EIS_Presentation_March_27_2012.pdf**

From:	Diana Dixon-Davis
To:	MSFC-SSFL-EIS; Diana Dixon-Davis
Subject:	DDD NASA DEIS re Air Pollution, Traffic Studies, Remediations
Date:	Tuesday, October 01, 2013 9:37:21 PM
Attachments:	2013.09.29 DDD NASA DEIS re Transp,Air Pollution.doc

Dear Mr. Elliot,

Please find attached my third letter re the NASA DEIS.

this one deals with air pollution, Traffic Studies, and Remediations.

Diana Dixon-Davis
818/341-4242
10832 Andora Ave
Chatsworth CA 91311

Diana Dixon-Davis
10832 Andora Avenue
Chatsworth CA 91311
818/341-4242
Dixon-davis@hotmail.com
29 September 2013

Mr. Allen Elliott
SSFL Project Director
NASA MSFC AS0
Building 4494
Huntsville AL 35812

Draft Environmental Impact Statement for Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California, dated July 2013

Dear Mr. Elliot,

In order for the decision makers and the public to better understand the nature of the SSFL Clean up to Background (CUB) and have accurate information for making decisions and to do realistic cost/benefit analysis the following items of fact need to be corrected, topics need to added to the DEIS, and improved projections of environmental impacts made.

The current NASA DEIS is so limited in scope and constrained in considerations of remediations that it makes no sense under the NEPA process or subsequent laws. NEPA does not prohibit any actions, rather it should consider all possible and reasonable alternatives.(NEPA Documents)

How can we accept this DEIS as presented when in the DEIS Purpose and Need for Action (ES-1.0) the words "health of the community " is not included. The SSFL is located on the border of Los Angeles County , SSFL is surrounded by 10 million people. SSFL is not located in central Alaska where the entire population of the state is less than that of Ventura County. **The risk to the health of 10 million people , of the proposed actions, can not be ignored.**

If, the NASA DEIS Purpose and Need for Action (ES-1.0) , is amended to add the reason for a cleanup of the SSFL is to reduce the health risks to the community around the SSFL, then ***the current level of risk of the SSFL to human health must be measured***.

If, the only reason for cleanup remains as stated is to measure the effect on the local environment as described in the DEIS Purpose and Need for Action (ES-1.0 **.**

Yet the only presented alternative to "Do Nothing" is to "Cleanup to Background "(CUB). CUB is the least sparing of the local environment of all possible alternatives discussed during the scoping and EIS Planning stages.

Three major areas of the DEIS that need to be added and/or corrected are:

1. Air Pollution
2. Traffic Studies
3. Suggestions for Remediation.

AIR POLLUTION

Air pollution has been a major focus of Southern California and Los Angeles City Regulators for many years. We have strong environmental laws that govern tail pipe emissions, burning anything, and industrial by-products. To ignore this component in the SSFL cleanup is not to appreciate our unique problems. The LA area, and especially the San Fernando Valley, are in a basin that concentrates air pollution. The dry climate coupled with clear skies and sunshine almost year around leads to smog, heat inversions, and other negative effects on the ambient air.

1. The large number of trucks needed to haul out dirt from the SSFL, will produce large swatches of air pollution all along their routes. Numerous studies have been done on the negative effects of air pollution on Southern California communities.

One of the more recent studies done by McConnell, et al, Department of Preventative Medicine, The Keck School of Medicine (University of Southern California) published in Environmental Health Perspectives, May 2006 and followed by a March 2010 extension has found a significant increase in asthma and decrease in lung capacity of children living and/or going to school within 200 meters of a major roadway (freeway or secondary highway such as SR 27, Topanga Canyon Blvd).

There are 4 public elementary schools (Chatsworth Park, Nevada, Capistrano, and Justice Elementary Schools) one city park (Lanark) , and numerous smaller private schools, day care facilities, etc. within the 200 meters of the haul routes. Chatsworth Park's playground is only about 20 feet from Topanga Canyon Blvd. The majority of the non freeway haul routes are through residential neighborhoods where families with small children live.

The effect of the soil transport to hazardous waste dumps must include not just accident risks to children but also the ***life long*** effects of the air pollution on their lungs and risk for asthma.

2. These same considerations of added pollution to the air must also be done for the rest of the population living along these haul routes.

3. The current Best Practices of watering down soil, and covering with tarps during transport will not prevent major dispersions of dust and soil along the haul routes. This part of California is usually very dry, strong canyon winds in addition to Santa Ana winds, sunny most of the year, all lead to dusty conditions.

4. Provisions to test for and contain Valley Fever fungus spores (endemic to this area) must be incorporated into any soil removal plans.

TRAFFIC STUDIES

1. The NASA DEIS presented traffic studies do not match my on the ground observations. The high traffic levels on Santa Susana Road (a very windy and narrow mountain road) are abnormally high in comparison to Plummer and Roscoe which feed large, west side residential and commercial communities. The abnormally high numbers on Santa Susana Road might be a result of traffic to the extremely large Church at Rocky Peak. But Traffic that is clustered around church service hours. This portion of the study needs to be revisited.

2. Some of the traffic projects that disperse the soil, and demolition debris truck traffic both north and south on Topanga and onto the 101 and 118 make no sense since all 8 disposal sites listed in the NASA DEIS are located north and east of the SSFL. (2-18,19).

3. The estimated Truck traffic is probably an underestimated figure for the following reasons:

3.a. More soil will be excavated than the 2 foot planned because of soil churning by local rodents, chemical migration, and uneven bedrock structure.
3.b. The replacement of only 1/3 of the original soil is an unacceptable level of remediation. This implies double the truck traffic, necessary to bring in as much soil as removed.
3.c. Unexpected traffic delays, peak traffic issues, less than full loads because of equipment failures, and climatic and weather caused complications.

4 The projected traffic impacts must be adjusted for the current traffic conditions, especially on Topanga Canyon Blvd. Approximately 15 F-Level of service intersections can be counted between the 101 and the 118 freeway. Averaging projected traffic counts over an 8 or 12 hour work day is not valid.

If the F intersections are avoided during peak hours (7-9 am, 11:30-1:30, 4:30-6:30) the 12 hour work days shrinks to 6 viable hours. Furthermore the truck numbers do not count the round trips; up to the SSFL and back down, so all numbers must be doubled.

A suggestion to reduce truck usage is tor trucks containing “contaminated soil” should carry “clean” dirt back up. Trucks should not carry “clean soil” for remediation unless they have gone through a rigorous decontamination process. Both soil removal and remediation will probably require separate trucks, each of which will make a round trip.

Using the conservative NASA DEIS figures regarding soil removal; the proposed 38,731 trucks becomes 112,716 trucks trips (from disposal site to SSFL or reversed). If the trucks are scheduled at DEIS suggested 5 minute intervals, it will take 6.3 years of trucks traveling either down or up Woolsey Canyon and down or up Topanga Canyon Road. Since NASA is only 30% of the SSFL site, when we add in comparable truck traffic for the Boeing, DOE areas we actually get 14.6 years of truck traffic. And this is under perfect conditions with no road repairs, no traffic accidents, and no weather delays!

REMEDIATION

1. The damage done to Woolsey Canyon, Valley Circle, Roscoe, and Topanga Canyon Road by 14.6 years of constant heavy truck travel must be estimated. All the damage to Los Angeles City and Ventura County Roads must be repaired as part of the cleanup, This cost must be factored in the total cost of the CUB level of cleanup or to other alternatives with lower soil removal goals, as presented.

2. The amount of long term Southern Californian air pollution caused by these 113,000 truck trips and damage to the health of the residents of North West Valley must both be measured and mitigated. The use of natural gas or electric powered trucks could result in a major reduction in Green House Gas and other emissions. This remediation measure must be considered and its cost/benefits calculated.

3. Another way to reduce the impacts of the site cleanup is to reduce the amount of demolition and soil removal. The cost/benefit of STIG, phytoremediation, treat in place, encapsulation, etc. and other remediation strategies must be considered.

4. No soil or debris removal during peak traffic hours.

5. A NASA paid crossing guard at the Topanga and Devonshire intersection to protect children from truck traffic unless prohibition of truck traffic during school arrival and dismissal hours is implemented. Consider crossing guards and extra traffic signals all along the residential portions of the haul routes.

Diana Dixon-Davis
MA, Demography Epidemiology

From:	Daniel O Hirsch
To:	MSFC-SSFL-EIS
Subject:	CBG EIS comments
Date:	Wednesday, October 02, 2013 1:58:34 AM
Attachments:	CBG_comments_NASA_DraftEIS.doc CBG_EIS_comments_by_section.docx

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Please find attached supplemental comments on the EIS by Committee to Bridge the Gap.

COMMITTEE TO BRIDGE THE GAP

BRIDGING THE GAP BETWEEN NUCLEAR DANGERS & A SAFE, SUSTAINABLE FUTURE

Board of Directors

Daniel Hirsch, President

Susan Clark, Board Chair

Dr. Sheldon C. Plotkin, Secretary

Cindi Gortner

Professor Jack Miles

Pauline Saxon

Anthony Zepeda

1 October 2013

Allen Elliott
SSFL Program Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

by email to: msfc-ssfl-eis@mail.nasa.gov

Re: Supplemental Comments on Draft EIS for Cleanup of NASA Property at the Santa Susana Field Laboratory

Dear Mr. Elliott:

These comments supplement the oral testimony and associated written statement by the Committee to Bridge the Gap (CBG) presented at the 28 August 2013 NASA hearing on the Draft Environmental Impact Statement (EIS) for the cleanup of the contamination at NASA's property at the Santa Susana Field Laboratory (SSFL).

In December 2010, NASA executed a binding Administrative Order on Consent for Remedial Action (AOC) with the California Department of Toxic Substances Control (DTSC), in which NASA committed to cleaning up all detectible contamination to background levels. The contamination by and cleanup of the hazardous materials at SSFL is regulated under the federal Resource Conservation and Recovery Act (RCRA). The authority to implement and enforce in California RCRA has been delegated by the United States Environmental Protection Agency (EPA) to DTSC. NASA is subject to RCRA and thus to DTSC's regulatory authority over the cleanup of the toxic contamination at NASA's SSFL property.

Under RCRA and its delegation of authority to California, it is DTSC that determines the cleanup standards to be applied by a regulated entity such as NASA. In short, the polluter does not get to decide how much of the pollution it created it wishes to clean up; the regulator decides how much pollution the polluter must clean up. NASA thus has no discretion in the matter. It is a regulated entity and must comply with the directives of the regulator or face enforcement action.

Pursuant to that enforcement authority, DTSC entered into an Agreement on Consent for Remedial Action with NASA in 2010, requiring NASA to cleanup its site to background. The AOC has a provision which indicates that NASA will conduct an Environmental Impact Statement on ***how to implement*** *the cleanup to background requirements of the AOC.* In other words, NASA has no discretion not to clean up to background, but it does have some discretion as to how to meet that requirement—for example, via *in situ* treatment for some constituents of concern versus disposal of contaminated soil. The EIS is supposed to address those discretionary matters of how to comply with the cleanup to background, not whether to. To repeat: the choice of cleanup standard is not within NASA's discretion, only the means of achieving it. And enforcement actions, like the AOC, are not subject to NEPA.

The National Environmental Policy Act (NEPA) requires Environmental Impact Statements for *discretionary* actions of federal agencies that can significantly impact the environment. As the Council on Environmental Quality correctly directed, and as the AOC requires, the present NASA EIS must be about *how* to implement the cleanup to background requirement of the AOC, not whether to comply.

What is troubling is that NASA seems to have trouble complying with such direction and its own promises to comply. Despite having committed to not include alternatives that would violate the AOC, it nonetheless has done so. And it has not merely mentioned the alternatives as ones not considered further, it has gone ahead and included the very analysis that was supposed to be avoided, trying to hype the number of trucks that could be eliminated if NASA could get out of the commitments it made in the AOC.

But even were there no AOC, NASA would not have the discretion to choose any of those less protective options anyway. Under RCRA, and California's longstanding implementing statutes and regulations, the cleanup standard is picked by the regulator, not the polluter, and is based on potential prospective land use. That in turn is to be based largely on current zoning and general plan permitted uses. NASA's SSFL property is zoned agricultural; the use of the land before NASA took it over was agricultural; and the County General plan designation allows agricultural uses. Indeed, land near the NASA property is used for such purposes.

So, NASA has no discretion to not clean up to background. The AOC requires it. The decision is in the hands of the regulator, not NASA, and DTSC made clear in the discussions that led up to the enforcement consent order that it would require cleanup to the agricultural exposure scenario. And RCRA and implementing statutes and regulations require it, because of current zoning. In the DTSC analyses of comments about the proposed AOC, DTSC pointed out that because of elevated background values of contaminants at SSFL, cleanup to background and cleanup to the agricultural scenario would be comparable. And one needs to be clear: this is all based on RCRA and longstanding California law and regulation unrelated to SB990, the SSFL site-specific statute. The cleanup to background/agricultural levels is required because of local zoning by statute, regulation and guidance completely apart from SB990.

The NASA EIS thus is restricted to that which NASA has the discretion to implement, and it cannot choose to clean up to a lesser standard than background. The inclusion of non-compliant alternatives it cannot in fact choose, after promising not to, is improper and should be withdrawn.

Furthermore, the discussion of potential impacts from the legally impermissible alternatives is conclusory, without any technical basis provided, and clearly erroneous. The Draft EIS throws in soil volumes and truck trips for what it describes as residential, industrial, or recreational cleanup standards. But no basis is provided for the estimates, no source given, just an 'air grab," pulling numbers out of the air. And the very estimates demonstrate a fundamental lack of understanding of cleanup standards.

There is no such thing as a "residential standard," an "industrial standard," or a "recreational standard." These are exposure scenarios, not standards, and the actual cleanup standard for those scenarios varies by at least a factor of one hundred for each scenario, and depending on the input values employed for the calculation, by considerably more than that. This fundamental technical error raises serious questions about the competence or veracity of the preparer of the estimates. (And who in fact did? Did by any chance Boeing, which is lobbying against the cleanup, have a hand in these numbers? We don't know, because all one sees is the out-of-the-blue figures, with no basis or source provided.)

The cleanup standard for any exposure scenario is in fact a range. The standard risk range required under RCRA is to aim for a one in a million risk and fall back to no more than one in ten thousand if one can demonstrate to a regulatory some over-riding reason why one can't readily make the one in a million level. So, if the exposure scenario were, say, residential, the cleanup standard can't be known today. The regulator would have to decide whether to insist on a one in a million risk, or allow say three in a million, or 2 in 100,000 etc.

Did whoever came up with those air grab estimates base them on a one in a million risk, as generally required. Or did s/he in fact assume that NASA could get out of the basic requirement for one in a million risk and get an exception to a hundred times higher? One cannot tell. There can be no basis for assuming one would be allowed anything other than the one in a million level.

But the story doesn't even end there. Which residential exposure scenario is assumed? Under EPA guidance, there are two such basic scenarios, the suburban residential and the rural residential, the same as the agricultural. Which is meant here? I would bet that one is using suburban residential, despite the rural residential nature of the area and the zoning. The former is orders of magnitude less protective than the latter.

But again the story doesn't end there. Even within a specified exposure scenario, the resulting cleanup numbers are dependent upon the inputs. For example, EPA's standard assumption for suburban residential use is someone has a backyard garden that produces 25% of one's fruits and vegetables. Did that assumption get employed, or did one ignore it and assume no backyard garden at all. Such an assumption dramatically relaxes cleanup standards, inappropriately. Were standard inputs employed, or did the person who came up with the numbers weaken the inputs from what is generally used so as to relax the cited "cleanup standards" further and thus decrease further the estimated soil that would be remediated?

The brief discussion of these numbers refers to "lookup table" values for residential, industrial, or recreational standards. There is no such thing as a lookup table for them, unless the phrase is being misused.

But at the end of the day, the inclusion in the EIS is grossly improper. These are not alternatives; they would violate the AOC, as well as RCRA and the state enabling statutes and regulations; and NASA doesn't have the discretion to pick its own cleanup requirements in the first place. If the polluter could do

that, it would always opt for a restricted presumed future use that would permit it to avoid most of its cleanup obligations. The entire section should be removed.

A few additional points:

The EIS should make clear that the County of Ventura, the City of Los Angeles, and the City of Simi Valley have all gone on record supporting the AOC. Those within NASA trying to sabotage the AOC may wish to point to a couple of tiny "neighborhood councils" that Boeing has been working through to oppose the cleanup. But they are not legal representatives; the Los Angeles City Council, which has passed resolutions supporting the AOC, is the legal representative. Neighborhood councils are tiny advisory groups with no formal power or authority; there are dozens of them in LA.

US EPA has submitted comments that suggest it has not fully understood the situation at hand. EPA says it is "imperative" that the radioactivity at SSFL be cleaned up to background, but then suggests that in other situations one might leave uncleaned up two-thirds of the chemical contamination rather than cleaning it up to background. There is of course no technical rationale for cleanup to background for radioactivity to be imperative, but not so for the chemicals. The only reason given by EPA is that it understands that DTSC has put forward a policy of reducing by 50% the amount of hazardous waste sent for disposal in California, and to do that one might need to back up the contamination at polluted sites rather than clean them up. But the DTSC idea was a proposal, not a policy, and it was part of a bill put forward late in the most recent legislative session that failed and was withdrawn. There is no such policy and thus no reason to consider forcing contaminated sites to not get cleaned up. And in any case, it would violate the AOC.

If NASA were to prepare an EIS on a proposed action to strip the native vegetation of SSFL when it was in its pre-NASA pristine state, grade much of the site for construction of test stands and other buildings, and then pour a million gallons of TCE into the soil and groundwater, dump tons of perchlorate on the soil, spread large amounts of dioxins, PCBs, heavy metals, etc. in soil, groundwater, released to the air, and into surface water, NASA would have to conclude that such a proposed action would have significant negative environmental impacts. But here, the beneficial impacts of remedying that environmental damage are essentially ignored, and the negative impacts of the No Action alternative, refusing to clean up, are also not addressed in any serious fashion.

CBG Comments on Specific Sections of Draft EIS

ES-1.0 add "under the Administrative Order of Consent (AOC) with the State of California" at the end of the first sentence.

ES-2.0 add "as well as some solid rocket fuel work" at the end of the first sentence in the second paragraph. Perchlorate contamination arose in part from the solid fuel activities.

2nd ¶ deeded by whom? Who owned the land prior to 1958? Was work for the US government conducted on the land prior to the deeding to USAF?

explain also what that work was – development and testing of nuclear missiles? Was work done for other DOD entitites (e.g., Navy for SLBMs?)

3rd ¶ 1st sentence. This needs to be greatly expanded, even in the Executive Summary. What contaminants? How much of the pollutants (e.g., 1 million gallons of TCE)? What are the health effects of the different contaminants--cancers, leukemias, genetic effects, neurological disorders, immune impacts, etc. How did USAF and NASA manage to produce so much contamination? Were environmental standards not rigorously applied? What environmental media are contaminated? The entire DEIS creates the impression of suppressing discussion of the environmental damage done by the contamination and trying to divert attention to trucks needed for remediating the toxic mess. NASA seems desperately in this EIS to be trying to hide the fundamental environmental issue—the contamination—and divert attention to the tertiary issues of trucks. NASA contaminated its site extraordinarily, damaging the environment; the cleanup is necessitated by NASA's breach of fundamental environmental controls; there must be detailed discussion of the damage to the environment NASA created, as that created the need for the action, and informs what would be the effect if the No Action alternative—no cleanup—were to occur, in breach of all of NASA's obligations.

p. ES-2 at bottom. Only discusses communications received pushing for EIS to consider breaking the AOC, not the various communications insisting that NASA comply with its obligations under the AOC and evaluate in the EIS how to implement the AOC.

p. ES-3 mentions comments from DTSC about the EIS scope regarding non-compliant alternaives. One should describe those comments in more detail. DTSC is NASA's regulator, and informed NASA in strong language that doing what it originally proposed would breach the AOC.

ES-4 asserts the AOC requires cleanup to background or laboratory detection limits. This is not correct. It requires cleanup to background, and the background study obviously includes detection limits. What NASA and DTSC now propose to do is use a Lookup Table that violates the AOC by, even when there are measured background values, throwing them out and using instead hypothetical detection limits from some future lab, and adding to that various inflated statistical uncertainty values. This is at variance with the AOC, which requires the use of the measured background values, and bars the use of uncertainty for the on-site measurements which are to be compared to the background values.

p. ES-7 Claims proposed action would have significant impacts on the burro flats cave paintings. NO. AOC expressly exempts Native American artifacts. This statement thus is completely false.

Assertion that the entire 2850 acre site is a sacred site is absurd, and that the cleanup would have a significant negative impact on the sacred site is equally absurd. What would have a significant negative impact is failing to clean up the vast quantities of contaminants.

The environmental impact of cleaning up the pollution at SSFL is BENEFICIAL, not NEGATIVE. The impact of the NO Action alternative is significant and negative. NASA has it backwards.

Similarly about biological resources. The impact of cleaning up contamination is beneficial to biological resources, not negative.

p. ES-7 Admits the truck estimates are heavily inflated, using the values that would produce the absolutely highest estimates.

ES-8 Absurdly, the EIS claims the effect of cleaning up groundwater and soil contamination that has been creating surface water pollution is negative. No, it is positive. Leaving the groundwater contaminated and allowing continued surface water contamination is what would be negative.

ES-9 Again, for health and safety, the EIS amazingly claims that cleaning up contamination results in negative impacts on health and safety; it is the pollution that is producing the negative impacts, leaving it in place would have negative impacts.

ES-10 Again, NASA has it backwards, claiming that the cleaning up hazardous materials has negative effects whereas it is the pollution by the hazardous materials that has the negative effects.

ES-15 again, absurd; says removing the contamination produces significant negative impacts on biological resources and remediation of pollution only moderate beneficial impacts. NASA's efforts to sabotage its commitments in the AOC are clear here. Under such an argument, no polluter would ever have to clean up the toxic mess it created.

Again, claims negative impact on EJ; but the pollution from the site, which apparently has caused cancers in the communities nearby, is a negative impact of NO ACTION, and eliminating that risk is a beneficial effect.

Exec Summary does not analyze impacts of the No Action alternative—major failure. Leaving the soil and groundwater polluted would have significant negative impacts.

ES-3.2 Give a single small paragraph describing the No Action alternative, but not a word of analysis about its environmental impacts, of leaving all the toxic contamination not cleaned up.

says only beneficial effects are hazardous waste and biology; not water quality, air quality, public health. This stuff is toxic pollution; cleaning it up is beneficial; without cleaning it up, water will continue to be polluted, toxic material will continue to spread when the wind blows; people's health will be at risk.

p. 1-7 Yet this fundamental need – protecting human health and the environment" is barely discussed in the EIS. No detail is provided.

4.2.3 No Action Alternative; again, just a few sentences; nothing about the significant impact if NASA doesn't clean up the polluted site.

p. 4-15 in passing acknowledges that recognized Native American artifacts are protected by the AOC and exempted from the cleanup to background requirement if it would place them at risk. yet NASA nonetheless hypes the issue of the artifacts as a significant negative impact, when it isn't, as the AOC exempts them.

p. 4-44 claims no action alternative would have negligible effect on biological features such as birds from contamination; no evidence provided, crazy. claim big effects from cleanup and ignore pollution effects. similarly for vegetation, they don't even identify effect of toxic materials on the vegetation.

4-81 claims no action alternative would have only moderate impacts on groundwater or surface water quality. this is absurd. the groundwater is heavily contaminated, causing its loss as a beneficial water source. surface water is continually contaminated at levels the LA RWQCB finds violates the NPDES discharge permit. Those are significant negative impacts. On the other hand, the EIS claims the minimal negative effects of cleaning up on water would be in fact "moderate." The beneficial impacts are similarly understated. No technical basis whatsoever is provided for these seat of the pants claims.

4-111 absurdly claims major impacts to air quality from cleanup, no impacts whatsoever from No Action, even though leaving all that contamination means constant resuspension and airborne release to neighboring communities of the toxic material.

4-122 again, absurdly claims cleanup would have impacts on EJ communities and that failing to clean up the contamination would have none.

4-128 crazily asserts that the health impacts of not cleaning up the contamination are not significant. Pure assertion, no technical basis provided. What are the contaminants? Very toxic materials.

4-152 similarly absurdly asserts that just walking away from the hazardous waste and contamination would not have significant environmental impacts. EPA recommended the site for consideration as a Superfund site, one of the most contaminated areas in the country. Leaving the contamination without cleanup would not have a significant environmental impact? Give us a break.

From:	Hawk, Daniel
To:	MSFC-SSFL-EIS
Cc:	Fellows, Merrilee (HQ-LD000)
Subject:	FW: Nuclear Lab Site Clean-up/ High CEC Cpyro/ LLNL.gov using in Bikini Island for Radiocesium mitigation
Date:	Monday, August 19, 2013 10:10:43 AM
Attachments:	Iris Smith 2012 Summer Student Poster edit V2-EditedAndFormatted.pptx

NASA please forward this email to in-charge for SSFL clean-up.
Thanks,
Dan

From: Hawk, Daniel
Sent: Monday, August 19, 2013 9:56 AM
To: nepa@hq.nasa.gov
Subject: FW: Nuclear Lab Site Clean-up/ High CEC Cpyro/ LLNL.gov using in Bikini Island for Radiocesium mitigation

NEPA team first workups of Cpyro was part of KSC undergrad research for Advanced Astronaut Carbon-Based Life Support. The filtration properties of carbon are well known. What if high CEC Cpyro can make otherwise untreatable soil to treatable, or reduce or mitigate the soil to a lessor degree? This would be of great value to NASA and the public. It is worth discussing the use of high CEC pyrogenic carbon as a viable contamination nuclear mitigator with Dr Hamilton at Lawrence Livermore National Laboratory/ DOE.

Respectfully,
Dan Hawk

From: Hawk, Daniel
Sent: Sunday, August 18, 2013 8:25 PM
To: Ray.Leclerc@dtsc.ca.gov
Cc: Marina.Perez@dtsc.ca.gov; Russ.Edmondson@dtsc.ca.gov; Mark.Malinowski@dtsc.ca.gov
Subject: Nuclear Lab Site Clean-up/ High CEC Cpyro/ LLNL.gov using in Bikini Island for Radiocesium mitigation

Ray, I am just dropping you a note. We are using pyrogenic carbon in Marshall Islands in support of the Congressional Marshallese Resettlement... perhaps Cpyro might be a solution to contamination clean-up for your project. Let me know if you would like to set up and experiment. See poster for some preliminary details.

Dr Terry Hamilton at llnl.gov is in charge of the Marshall Islands Project.

Sincerely,
Dan Hawk

From: Christine Rowe
To: MSFC-SSFL-EIS
Cc: Elliott, Allen (MSFC-AS01); ZORBA, PETER D. (HQ-LP040); Fellows, Merrilee (HQ-LD000)
Subject: NASA DEIS Comment regarding NRDC, Committee to Bridge the Gap, and the City of Los Angeles v Department of Energy
Date: Saturday, September 07, 2013 10:22:29 PM
Attachments: nrdc cbg la v doe.pdf

Dear Mr. Elliott,

It is my strongest opinion that it is irresponsible of NASA to consider this one cleanup alternative (the AOC) as the only possible alternative under NEPA despite all political pressures.

I am attaching the complaint by the National Resource Defense Council, Committee to Bridge the Gap, and the City of Los Angeles v the Department of Energy

This lawsuit is against the Department of Energy (DOE). Yet, NASA is under a similar NEPA process. It is my belief based on the requests of the parties of this lawsuit, that the parties wanted a full scope Environmental Impact Statement because the information on the Environmental Assessment was inadequate in their opinion.

While many parts of this lawsuit reference nuclear contamination which NASA does not have as a result of any NASA or Air Force activities to the best of my knowledge, they also reference various environmental laws that I believe NASA would also be obligated to comply with.

Furthermore, the City of Los Angeles references: *"The City seeks to protect the public health, safety, and welfare and the environment of its citizens and employees from the threats posed by radioactive and other contamination at and migrating from SSFL, including Area IV."* It is my opinion after reading the NASA DEIS that the risk of cleaning the U.S. Government portion of the Santa Susana Field Laboratory property to the Administrative Order on Consent level could potentially pose a greater public health, public safety, and risk to the environment - both local and global - than a more balanced approach to clean up.

It is possible, based upon my reading of the NASA Draft EIS, that there is a tremendous risk of impacting my community as the result of potential landslides if much of the vegetation is removed, and there will be a much greater risk of releasing naturally occurring contaminants above the NPDES permitting levels to the L.A. River system the more that the soil is removed and the closer we dig to bedrock. *"Migration of contamination, including contaminated groundwater and surface water, into City limits will also cause the City and its citizens financial and economic harm due to costs of remediation, devaluation of property values, loss of tax revenues, and physical harm to citizens."*

In fact, I believe the reverse is true - the longer that this cleanup is prolonged, the longer that the trucks are running through my community, the more trucks that enter my community, there is a greater risk of physical harm to the local residents within one mile of the traffic corridors; there is a potential for people along the route to be unable to sell their homes; and there is the potential for tremendous physical harm due to the routes that are major highways in the communities of West Hills, Canoga Park, Chatsworth, and Woodland Hills.

Why are we not being briefed by Fish and Wildlife representatives and other environmental agencies that understand the applicable laws, and the true risk of this cleanup under the Administrative Order on Consent (AOC) level to the environment?

While I would want NASA's attorneys to review this whole complaint, I would like to make specific reference to these sections:

"2. In deciding to proceed with this deficient cleanup of Area IV, DOE has failed to comply with the 1995 Joint Policy with EPA, as well as with the cleanup standards of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("CERCLA"), 42 U.S.C. §§ 9601, et seq.. DOE has done so, moreover, without preparing either an Environmental Impact Statement ("EIS") under the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4321, et seq., or complying with the CERCLA decision-making process. In addition, despite the fact that the cleanup may adversely impact federally protected endangered species within and near Area IV, DOE has failed to complete the mandatory federal consultation process with the U.S. Fish and Wildlife Service, in violation of the Endangered Species Act ("ESA"), 16 U.S.C. § 1531, et seq."

"8. NRDC's ability to participate effectively in the cleanup of the SSFL and Area IV, and to thereby protect the environment and its members near the site is injured by the federal defendants' failure to comply with NEPA, CERCLA, the ESA and the APA, because, by violating these statutory provisions defendants are denying NRDC information to which the organization is statutorily entitled."

"NRDC brings this action on its own institutional behalf and also on behalf of its members, who both reside near and regularly visit areas near the SSFL site. These NRDC members enjoy educational, recreational, and scientific activities in that portion of California where the SSFL is located, including observing and looking for Braunton's milkvetch and other plant and wildlife species in this area. These members' interests in living and recreating in a safe and healthy environment are injured by the federal defendants' failure to comply with NEPA, CERCLA, the ESA, and the APA, because, by violating these statutory provisions, and leaving massive quantities of radioactive and other contamination at the site, the defendants are threatening both the site and surrounding areas with permanent environmental damage."

"12. The ability of CBG to participate effectively in the cleanup of the SSFL site, and to thereby protect the environment and its members near the site is injured by the federal defendants' failure to comply with NEPA, CERCLA, the ESA and the APA, because, by violating these statutory provisions, defendants are denying CBG information to which the organization is statutorily entitled.

In addition, by leaving massive quantities of radioactive and other contamination at the site, the defendants are threatening both the site and surrounding areas with permanent environmental damage."

"These and other CBG members' interests in living and recreating in a safe and healthy environment are injured by the federal defendants' failure to comply with NEPA, CERCLA, the ESA, and the APA, because, by violating these statutory provisions, and leaving massive quantities of radioactive and other contamination at the site, the defendants are threatening both the site and surrounding areas with permanent environmental damage."

"14. Plaintiff City of Los Angeles ("City") is a municipal corporation organized and existing under the Constitution and laws of the State of California and the Charter of the City of Los Angeles. The City is located in Los Angeles County and its northwest boundary is near the SSFL.

The City seeks to protect the public health, safety, and welfare and the environment of its citizens and employees from the threats posed by radioactive and other contamination at and migrating from SSFL, including Area IV."

"15. The City's ability to participate effectively in the cleanup of the SSFL and Area IV, and to thereby protect the environment, City residents, and City employees near the site is injured by the federal defendants' failure to comply with NEPA, CERCLA, the ESA, and the APA, because, by violating these statutory provisions, defendants are denying the City information to which it is statutorily entitled. In addition, by leaving massive quantities of radioactive and other contamination at the site, the defendants are threatening both the site and surrounding areas, with permanent environmental damage. Migration of contamination, including contaminated groundwater and surface water, into City limits will also cause the City and its citizens financial and economic harm due to costs of remediation, devaluation of property values, loss of tax revenues, and physical harm to citizens."

"16. The City brings this action on its own behalf and on behalf of its citizens and employees, who reside near or regularly visit areas near the SSFL site. These citizens and employees enjoy educational, recreational, and scientific activities in that portion of California where the SSFL is located, including observing and looking for Braunton's milkvetch and other plant and wildlife species in this area. The City is concerned about the risks that the contamination at the SSFL, and Area IV, pose to the health, safety, and welfare of its citizens and employees, particularly in light of the discovery of tritium, perchlorate, and other contamination migrating off the site. These City interests in living and recreating in a safe and healthy environment are injured by the federal defendants' failure to comply with NEPA, CERCLA, the ESA, and the APA, because, by violating these statutory provisions and leaving massive quantities of radioactive and other contamination at the site, including groundwater contamination, the defendants are threatening both the site and surrounding areas with permanent environmental damage."

"STATUTORY FRAMEWORK

1. **The National Environmental Policy Act**

"20. NEPA is our "basic national charter for protection of the environment."

40 C.F.R.§ 1500.1. NEPA requires all agencies of the federal government to prepare a "detailed statement" regarding all "major federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(C). This statement, known as an Environmental Impact Statement ("EIS"), must describe (1) the "environmental impact of the proposed action," (2) any "adverse environmental effects which cannot be avoided should the proposal be implemented," (3) alternatives to the proposed action, (4) "the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity," and (5) any "irreversible or irretrievable commitment of resources which would be involved in the proposed action should it be implemented." 42 U.S.C. § 4332."

"22. Among the factors an agency must consider to determine whether a project may have "significant" impacts, and therefore whether an EIS is required, are the "context" and "intensity" of the action. 40 C.F.R. § 1508.27. Regarding context, the CEQ regulations provide that, for a "site- specific action," an agency must determine whether the "effects on the locale" are significant. Id. § 1508.27(a).

"23. As for intensity, the regulations provide that, among other relevant factors, the severity of the impact must be judged based on whether "the proposed action affects public health and safety"; "[t]he degree to which the effects on the quality of the human environment are likely to be highly controversial"; "the degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks"; "[t]he degree to which the action may adversely affect an endangered species"; "[w]hether the action threatens a violation of Federal [law] imposed for the protection of the environment"; and "the degree to which the action is related to other actions with . . . cumulatively significant impacts." Id. § 1508.27(b). With regard to the last factor, such cumulative impacts include "the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) undertakes such other actions." Id. § 1508.7."

"26. Even after a NEPA process is completed, where an agency learns of "significant new circumstances" or new "information relevant to environmental concerns and bearing on the proposed action or its impacts," the agency must undertake further review under NEPA. Id. § 1502.9(c); 10 C.F.R. § 1021.314"

Please see the complete complaint including:

2. The Comprehensive Environmental Response, Compensation, and Liability Act

3. The Endangered Species Act

B. DOE's Broken Promises **To Characterize And Cleanup Area IV**

In conclusion, the full complaint by the parties against the DOE related to the AREA IV property at Santa Susana has significant relevance to what actions NASA should take regarding its Environmental Impact Statement. It is my opinion that NASA, in just supplying the options of the cleanup to the AOC level, or a No Further Action level, is depriving the community at risk from having the necessary information to make informed decisions regarding the standards of cleanup, the risk to the community from various cleanup alternatives, the risks from the trucks, and the potential hazards to the local environment (endangered species, native plants, protected trees, and wildlife).

Let me reiterate again: "It is my strongest opinion that it is irresponsible of NASA to consider this one cleanup alternative (the AOC) as the only possible alternative under NEPA despite all political pressures. "

Thank you for this opportunity to comment on the NASA Draft Environmental Impact Statement.

Christine L. Rowe

West Hills resident of 35 years

NASA Section 106 consultant

September 7th, 2013

From:	Alec Uzemeck
To:	MSFC-SSFL-EIS
Subject:	SSFL NASA EIS Comments
Date:	Saturday, August 31, 2013 11:29:52 AM
Attachments:	Uzemeck NAS DEIS.doc

Attached are my comments regarding the NASA SSFL Draft Environment Impact Statement.

Alec Uzemeck

Comments on the NASA Draft Environmental Impact Statement
Alec Uzemeck 8/19/2013

The DEIS only provides a "no action plan" and one other plan that cleans to background. It is rumored that state and federal pressure drove this selection and no scientific review or analysis of other alternate plans was made.

NEPA requires that the Decision Maker be fully informed on all aspects of EIS and further should be informed of all alternate cleanup plans including those that are to be rejected along with an explanation for each rejection. The DEIS discusses the alternate cleanup plans but does include any metrics to allow comparison of the plans or their attributes. Items such as risk, cost, schedule or disposal volumes are not provided. The reasoning for the rejection of alternates is not provided other than to refer to the AOC agreement that was forced on NASA by the politicians. The metrics need to be included and full rejection reasons need to be shown.

Future land use is not factored in so that cleanup requirements under the various alternate plans cannot be compared and only two plans are shown, cleanup to background or the do nothing alternate plan. Future land use is an important aspect of USEPA cleanup evaluations that matche the cleanup against the eventual land use. Thus land that would be used for parks would have less stringent cleanup requirements than land that would be used for homes. The AOC requirement that the NASA property be cleaned to background applies the most stringent cleanup for property that now is proposed for future park use. Park use would have much less demanding cleanup criteria.

Backfill should be fully discussed in the DEIS. The DEIS states that soil to a two-foot depth will be considered permanently contaminated and removed. Additionally, soil beneath that level may be removed and cleaned and then reinstalled however none of the proposed soil remediation methods have been tried and proven to clean to the levels required by the AOC. In the event that the soil remediation fails the backfill will have to found from another source and significant delays will occur while looking for soil that complies with the stringent AOC standards. This entire process has a high probability of difficulties and the DEIS does not discuss any worst-case scenario or any plans for a corrective action to maintain the process and schedule.

The EIS further states that only one third of the soil will be returned to the site and does not provide any explanation why this reduced amount will suffice. Will there be areas without topsoil and biota? Will there be sufficient soil to minimize flooding and silt runoff?

The traffic analysis underestimates the number of truck trips. In the DEIS plan there would be trucks carrying away contaminated soil and those trucks coming back empty But additional trucks would be bringing back remediated soil or backfill and leaving empty. It is possible that some truck trips may be eliminated if the trucks leaving with debris could be used to bring back backfill however that close coordination of events is unlikely as previously discussed under the subject of backfill.

The DEIS did not discuss another factor to the trucking problem and that is that Boeing and DOE will also be conducting excavation and trucking to remove the contaminated soil. The DEIS says that NASA will operate on a schedule beginning at 7:00 AM to 7:00 PM. If all of the RP's excavation occurs simultaneously the roads from the site will be jammed or operating in extended hours thus creating a further hardship on the surrounding communities. This also assumes that sufficient trucks and drivers are

available to meet the 2017 completion date. I recommend that NASA and DTSC discuss extending the completion schedule perhaps to 2020 so as to not overload the necessary transportation and roads.

The archeology, architecture and biology are not sufficiently discussed in the DEIS and are not clearly described in the AOC. NASA and DTSC need to develop specific directions in these subjects before the DEIS goes forward. For example the AOC's speaks about protecting artifacts and the question arises is the Burro Flats cave considered an artifact or will it be removed?

The DEIS does not present the full information for the NASA site and assumes that the Best Management Practices will mitigate all of the cleanup negatives while many of these BMP's have not been tested or proven. The BMP discussion does not contemplate failure and no failure scenarios or recovery plans have been presented and the effects of the cleanup in an accelerated/ catch up recovery mode have not been discussed. The narrative regarding cultural items is confusing since it appears that more information is required from DTSC and from specialists.

From:	Fellows, Merrilee (HQ-LD000)
To:	MSFC-SSFL-EIS
Subject:	FW: Compass Rose SSFL NASA DEIS comments
Date:	Tuesday, October 01, 2013 11:03:21 AM
Attachments:	CA-VEN-1072 final final comments.doc

-----Original Message-----
From: john romani [mailto:jrcompass@earthlink.net]
Sent: Tuesday, October 01, 2013 8:52 AM
To: Fellows, Merrilee (HQ-LD000)
Subject: Compass Rose SSFL NASA DEIS comments

Dear Merillee,

Here are the Compass Rose comments regarding the Draft EIS and the last few NASA consultant meetings. I can't believe your not able to work today! The ACA is a law and will not be affected money wise by the Shutdown! We got your photo of that rock shelter across from the Coca Test Stands. It was fabulous! You have a great camera! I wanted to send Jennifer Groman our comments, but can't find her email address. Do you have an address for her? Once again, thanks for your continuing good work!

Dan Larson
Compass Rose Archaeological, Inc.

Final comments for the DEIS and NASA Consultant meetings

Prior to signing the ROD:

The boundaries of the Traditional Cultural Property (TCP), CA-VEN-1072 and CA-VEN-1803, must be determined prior to any soil test excavation or proposal of any mitigation measures. Environmentally Sensitive Areas (ESAs) should be established, including a buffer zone (15m-30m?), around CA-VEN-1072, as well as CA-VEN-1803. According to archaeologist Al Knight, the dividing line between Area II (NASA), Area III (Boeing), and the Southern Undeveloped Area (Boeing) exists more-or-less down the middle of the cultural deposit (midden) at CA-VEN-1072. If ownership of CA-VEN-1072 is indeed shared, this further complicates matters in terms of responsibility and will require a functioning cooperation between NASA and Boeing.

Establishing ESAs for CA-VEN-1072 and CA-VEN-1803

In consultation with Native Americans, archaeologists should complete an intensive re-survey of the area, using transects spaced in 5-15 meter intervals. Whichever cultural resource firm is hired, it would be highly advantageous if a few of the archaeologists had rock climbing experience (with credentials?), so that at least some of the normally inaccessible rockshelters, rock crevices, and rock ledges where artifact caches and/or rock art may have been hidden, could be inspected for their presence - particularly in the area of the Coca Test Stands. A sampling strategy of hand controlled excavations (e.g., Surface Scrapes, Excavation Units, and Shovel Test Pits) should be implemented to systematically define the boundaries of CA-VEN-1072 and CA-VEN-1803, and establish the ESAs. Each controlled excavation should be monitored by a local Native American with artifact identification experience. The results of the findings should be catalogued, analyzed, and presented as a written document to be included as part of the 36 CFR 800 compliance process.

Cultural Mitigation Measure #4 and 36 CFR 800

If Cultural Mitigation Measure #4 depends solely on the <u>current</u> knowledge of local archaeologists and anthropologists, then it must be considered inadequate. As part of 36 CFR 800, CA-VEN-1072 must be properly evaluated. Minimally, a complete evaluation needs to include all the information available about the site. Currently, NASA has chosen to ignore the potential information contained in the prior excavations completed in 1953, 1954, 1959, and 1960 at the site midden component. Although incomplete to date, Compass Rose Archaeological, Inc, Dr. Chester King, and Dr. Louis Tartalia have been conducting volunteer analyses of the collections. However, both NASA and Boeing should contribute monies to complete the analyses of the past collections of CA-VEN-1072 in order to comply with 36 CFR 800. It is the responsibility of the lead agency to know as much as possible about a cultural resource prior to establishing mitigation measures, particularly since CA-VEN-1072 has been listed on the National Register of Historic Places under criterion D - *that have yielded, or may be likely to yield, information important in prehistory or history.*

At this point, and based on the limited available data, it is simply assumed that the activities reflected at the CA-VEN-1072 midden constitute a sacred site. However, the types and/or diversity of activities that occurred in the midden portion of CA-VEN-1072, remain unknown. Greater data sets from CA-VEN-1072 would also allow the relationship to the archaeological sites located in Area IV (Boeing) to be analyzed and comprehended. To complete the analyses, monies would be needed to conduct special studies, including C14 dating, obsidian hydration and sourcing, botanical studies, as well as report write-up. This, however, would not constitute a complete mitigation. The Burro Flats collections of the 1950s and 1960 were excavated under different circumstances. Both the excavation and artifact identifications were conducted by relatively inexperienced students and volunteers. Screening of the excavated soils, when it occurred, was done in the field using relatively large-meshed screens (i.e. ¼ inch mesh) Units were not necessarily completed to sterile soil or bedrock; some were probably stopped at the end of the field class. Units were excavated in different sized levels, some were 12" thick and others were 6" thick.

In addition to completing the analyses of the prior collections, control samples should be taken from previously excavated areas to determine the types and diversity of small artifacts missed during the earlier collections. Further, samples should be obtained from the oven features at CA-VEN-1072 to determine what was processed and during what time periods. The establishment of the ESA and the completion of the additional work in the previously excavated areas of CA-VEN-1072, should also be part of the 36 CFR 800 compliance process.

The fact that the land containing CA-VEN-1072 is owned by NASA (Area II) and Boeing (Area III and the Southern Undeveloped Area), makes them both equally responsible for 36 CFR 800 compliance. Therefore, both NASA and Boeing should be jointly responsible for the costs incurred for completing the part of 36 CFR 800 compliance described above. This work should be completed prior to any further soil test excavations or proposal of any mitigation measures.

Implementation of the ROD

Following the methods instituted by the cultural resource management company, JMA (2012:15-22) in Area IV for Boeing, all vegetation removal around each individual or group of soil test sample(s) within the ESAs should be monitored by a qualified archaeologist and a local Native American, who has artifact identification experience. Each soil test hole in the ESAs should then be monitored by a qualified archaeologist and local Native American. It should be noted that the JMA method of monitoring of vegetation removal led to the recordation of numerous new archaeological sites during the soil testing that were missed during the previous surveys of Area IV.

Minimally, in areas outside the ESAs, all soil test holes should be monitored by a local Native American with artifact identification experience, after the vegetation removal is monitored by a qualified archaeologist and a local Native American. A predetermined area around demolition of any rocket test stands (minimally, the Coca Test Stands) and

any associated soil test holes, should first be surveyed and then monitored during vegetation removal by a qualified archaeologist and a local Native American. Finally, each test hole should be monitored by a local Native with artifact identification experience, since the test stands exist on the same landform as the Summer Solstice sunrise notch, which was undoubtedly sacred to the local Native Americans.

The use of such terms as "minor" impacts in the Draft EIS is considered to be highly inappropriate to both the Native Americans and archaeologists. If a 4.5 to 8 inch hole was drilled through a sacred artifact or human bone, these impacts would not be considered "minor" to a Native American or an archaeologist, especially within a sacred site. The areas within and outside the ESAs where all "minor" earth disturbing activities, will be conducted, such as drilling holes, creating fences, etc., should be surveyed first, then monitored as described above.

Further, to describe archaeological negative effects as "local," may not be correct. It was hypothesized by John Romani in his MA thesis (1981) that CA-VEN-1072 was the "private" viewing area for religious practitioners during the Winter and Summer Solstices. The site may also have been used to prepare the cerebral and physical necessities for at least the "public" Winter Solstice (and possibly the fall *Hutash* Festival) ceremonies held at the village of *Huwam* (CA-LAN-413), located several miles downstream in lower Bell Canyon. Therefore, if this hypothesis is correct, any archaeological negative effect has the potential to be more "regional," and not merely "local."

The 1967 revised Calabasas USGS topographic map depicts Bell Creek as a "blueline" stream that flows next to (within 100 feet) or through CA-VEN-1072, depending on the outcome of the boundary investigations, thereby requiring a Section 404 Permit as issued by the Army Corps of Engineers. From the consultants meetings to date, it does not appear that the Army Corps of Engineers has even been considered as a consulting party, a point brought up by the SHPO in their comments on the Draft EIS on September 25. This may be considered quite egregious, since in fact the Army Corp should be a cooperating, or even a responsible federal agency. Under any circumstance, their participation would assure an additional voice in the protection of the cultural resources on the SSFL. This is a grievous error and omission in the NEPA and Section 106 process so far, as well as in the Draft EIS.

Rocket Test Stands at the SSFL

Ideally, Compass Rose would like to see all nine of the test stands preserved, since, as understood, they are the least contaminated of the structures since they are located on or within bedrock. Most of the other contaminated structures (control buildings, pill boxes, etc.) can be demolished, with the preservation of at least single examples of the least contaminated of each). The Coca Stands may be the most important to our history of space flight, since they are associated with engine testing of both the Apollo and the Space Shuttle rockets. Unfortunately, they are the most contaminated and were also subjected to many structural changes. Nonetheless, Compass Rose would like to see the

Coca Test Stands preserved for their association with the advancement of space travel. The Chumash Native Americans from the Santa Ynez Reservation would like to see them demolished, since they claim there is an effect on the sense of place within the Sacred Site (CA-VEN-1072) below. However, based on our experience while monitoring the Winter and Summer solstice events, the only structure visible from CA-VEN-1072 is a single tank (possibly Vessel V 100, LH2 tank or Vessel V 99, GH2 tank). If this structure is demolished, then no structures associated any with any of the nine test stands will be visible from CA-VEN-1072.

General comments on the environmental process for the SSFL clean-up

It is the opinion of Compass Rose that from the very beginning, the environmental process for the SSFL clean-up has proceeded incorrectly. There never should have been two entirely separate processes, CEQA for Boeing and NEPA for NASA, along with the completely different scheduling. The SSFL consists of a continuous landform with a continuous prehistory and a continuous history.

Furthermore, the presence of two "blueline" streams (one being Bell Creek) that extends through the entire SSFL – thereby crossing both the NASA and the Boeing properties - means that a Section 404 permit is required by the Army Corps of Engineers, a federal agency. Since Bell Creek extends next to or though CA-VEN-1072, means that the Army Crops should have been involved in the process from the beginning as a responsible or at least, a cooperating agency. Since Bell Creek crosses both NASA and Boeing land and a Section 404 permit is required by the Army Corps, this would seem to tie both agencies/entities together at the federal level! Also, a series of easements called "outgrants," allow NASA and Boeing to cross each other's land. There are also outgrants for water, utilities, etc., without which Boeing would not be able to operate. The easements (outgrants) were granted to Boeing (originally Rockwell International) by the U.S. government. Even though the outgrants were granted prior to any of the present environmental laws, this would still seem to tie the two entities together at the federal level. Furthermore, the fact, according to archaeologist Al Knight, that both NASA and Boeing have land within the archaeological site, CA-VEN-1072, should have made them share responsibility for the cultural resources within the entire SSFL, or minimally, for all of Area II. Again, the Army Corps of Engineers should be a cooperating or responsible agency (minimally a consultant) under NEPA and the Section 106 process.

Based on the arguments above, NASA should have been the lead agency, Boeing a cooperating agency, and the Army Corps of Engineers a responsible or cooperating agency under NEPA, with all subject to Section 106, since NEPA tends to supersede State law (CEQA). In the worst case, this entire undertaking of the entire SSFL clean-up should have been subjected to a single, combined, EIR/EIS, subject to one schedule and one set of mitigation measures and procedures. As a result, the entire SSFL should be nominated as a single archaeological district. I believe that a complete analysis of the prior collections at CA-VEN-1072 will greatly help in defining the relationship with the sites in Area IV, which are owned by Boeing. This proposal is supported by the fact that there is a newly recorded rock art site in Area IV, and rock art is virtually always sacred

to the local Native Americans. Furthermore, the archaeological district should also encompass the site complex in lower Bell Canyon that includes the village of *Huwam/Jucjauybit*, Bats Cave (the cave of Munits), Castle Peak (a shrine mountain), and several other sites. Compass Rose and the late John Romani, believe that the area of the entire SSFL was a "private" viewing site for the solstices and preparation area for the "public" ceremonies held downstream at the village of *Huwam/Jucjauybit* and Castle Peak, for the Winter Solstice and possibly for the fall Hutash Festival).

The tie between upper (SSFL) and lower Bell Canyon is also supported on a more practical level. Groundwater chemical contamination has been found in test wells in lower Bell Canyon as a result of NASA rocket engine testing activities, as stated by NASA in a previous consultation meeting. Thus, the entire SSFL and lower Bell Canyon site complex should be considered as a single discontiguous archaeological district.

Finally, although the environmental process completed thus far for the SSFL clean-up is totally inadequate and inappropriate by combining Federal and State and with different completion schedules, the overly strict requirements of the 2010 A.O.C. is probably the main underlying problem. The 2017 deadline for the total completion of the SSFL clean-up is unrealistic given the inadequacies in the Draft EIS and the NEPA and Section 106 process so far. The deadline must be extended so that at least most of these major problems can be resolved.

Furthermore, as supporters of cultural resource protection, both Native American and historic, the strict clean-up guidelines to "background" levels in the 2010 A.O.C. are inappropriate for proper protection of the historic properties within Area II. The clean-up should have been to the "residential" level, thereby taking into account the possible contamination in the surrounding communities, since the involved parties, NASA and Boeing, seem to want the entire SSFL to become some form of parkland.

From:	Fellows, Merrilee (HQ-LD000)
To:	MSFC-SSFL-EIS
Subject:	FW: letter re NASA DEIS about SSFL clean-up
Date:	Monday, October 21, 2013 6:14:30 PM
Attachments:	5416 Manton Avenue.docx

I believe the earlier forward of this (done at Dr. Saur's request) may not have included the attachment.
His submission was timely received.

Merrilee

From: Albert Jackson Saur [mailto:alsaur@igc.org]
Sent: Sunday, September 29, 2013 4:51 PM
To: Fellows, Merrilee (HQ-LD000)
Cc: Chris Rowe
Subject: letter re NASA DEIS about SSFL clean-up

Dear Merrilee,

I have composed my own letter regarding the draft Environmental Impact Statement about the clean-up of the NASA-controlled property at the Santa Susana Field Lab. I have attached a copy of the letter to this e-mail. I would like to e-mail the letter to Mr. Elliott also but I don't have an e-mail address for him. Can you send it to me? If not, can you forward a copy of the letter to him by e-mail (or fax, or other means)?

Thanks very much

Albert J. Saur PhD

5416 Manton Avenue

Woodland Hills, CA 91367

September 30, 2013

Allen Elliott
Program Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

RE: NASA Draft Environmental Impact Statement

Dear Mr. Elliott,

In this letter I present some of my comments on the Draft Environmental Impact Statement (DEIS) relating to the clean-up and remediation of the portion of the Santa Susana Field Laboratory controlled at present by NASA. My qualifications include former employment at Atomics International, a division of North American Aviation, and a long time residence in Woodland Hills, California. I was employed at Atomics International from November, 1955 until 1965, when I transferred to the Rocketdyne Division of North American Aviation. In 1968 I left North American and went to work for the AiResearch Manufacturing Company in Los Angeles and in Torrance, California.

One comment and objection to the DEIS is that the preparers have considered only two clean-up options:

1. Do nothing. Leave the property as it is.
2. Clean up the property to the condition it was in before it was used as a field laboratory.

I recommend that NASA redo the DEIS and include a clean-up standard in keeping with the proposed ultimate use of the land: a park. Using "park" rather than "original condition" as the basis for the clean-up standard would require much less replacement of soil at the site and much less truck traffic along routes that necessarily go past schools, residential areas, recreational areas, and through a street (Topanga Canyon Boulevard) that already has very heavy traffic. The standard chosen for the DEIS requires the removal of about 500,000 cubic yards of slightly contaminated soil with the replacement of 250,000 cubic yards. Moving this much material within two years requires at least 50 loaded trucks per day with the same number of empty trucks returning, or approximately one every five minutes in one direction or the other.

In addition to the truck traffic required to clean up the NASA site, there will be truck traffic needed to clean up the remainder of the SSFL – the park owned and controlled by the Boeing Corporation. Whatever standard of clean-up that is finally used in cleaning up the NASA portion will probably also be used for the Boeing portion.

The preparers of the DEIS did not consider the total risk of any clean-up standard. In the case presented in the report, the risk of a polluted or partly polluted site was not weighed against the risk to the general public of the activity required to achieve the "original" condition. Any activity associated with cleaning up the site involves risk to some populations. I think it would be appropriate to compute the total risk of each of several clean-up approaches and choose the one with the smallest total risk. Aside from the personal satisfaction that dedicated environmentalists get from a "perfect" clean-up, I see no reason for insisting that such a stringent standard should be applied.

Another comment is that I think it would be a good thing to leave at least one of the rocket engine test stands intact. An intact test stand would be an interesting souvenir of the early part of the space exploration age and an attractive exhibit if the land is to become a park. Leaving a test stand intact would encourage people who decide such things to make the land into a park instead of eventually selling it to developers.

In my opinion the draft EIS for the clean-up of the NASA property at the SSFL should be redone, with detailed consideration of several clean-up standards and an assessment of the total risk associated with each one. If that is done, the resulting document will be a useful tool in deciding which clean-up standard to use. In its present form, the document is useful only in fueling a controversy over the risks of the one clean-up standard described therein.

Sincerely yours,

Albert J. Saur, Ph.D.

cc.: Merrilee Fellows

From: Diana Dixon-Davis
To: MSFC-SSFL-EIS; Diana Dixon-Davis
Subject: FW: Response to NASA-DEIS re Chats.Nat.Prsrv, Wildlife Corrid.
Date: Monday, September 30, 2013 10:01:51 PM
Attachments: 2013.09.25 DDD NASA SSFL DEIS Resp re Wildlife corridors.doc

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From: dixon-davis@hotmail.com
To: msfc-ssfl-eis@mail.nasa.gov; dixon-davis@hotmail.com
Subject: Response to NASA-DEIS re Chats.NatPreserve and Wild life corridors
Date: Mon, 30 Sep 2013 19:58:51 -0700

Dear Mr. Elliott,

Please find attached my second response to the NASA-DEIS.

This letter deals with Chatsworth Nature Preserve and the
Wildlife corridors found in the SSFL.

Diana Dixon-Davis
818/341-4242
10832 Andora Avenue
Chatsworth CA 91311

Diana Dixon-Davis
10832 Andora Avenue
Chatsworth CA 91311
818/341-4242 Dixon-davis@hotmail.com
25 September 2013

Mr. Allen Elliott
SSFL Project Director
NASA MSFC AS0
Building 4494
Huntsville AL 35812

Draft Environmental Impact Statement for Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California, dated July 2013

Dear Mr. Elliott,

The NASA DEIS contains three major deficiencies in regard to wildlife corridors:

1. Effects on Chatsworth Nature Preserve are not evaluated.
2. Ignoring known , research verified, wild life ranges,
3. Use of flawed resources for DEIS wildlife corridor characterizations.

There needs to be a reassessment of singular impact (NASA) and cumulative impacts (remainder of the SSFL Site i.e Boeing and DOE) and the effects of Clean Up to Background (CUB) on Biology. It can not be claimed that CUB is considered beneficial to Biology. (Table ES-2). Air pollution and water pollution and diversion must be factored into a cost/benefit analysis as to the impact on local communities, not just the SSFL site.

The Chatsworth community requests (see their DEIS Response of 3 Sept 2013) a major revision of the NASA DEIS which will then include several alternatives between “Do Nothing” and “Clean-up to Background” (CUB). CUB cleanup levels for approx 450 trigger point chemicals and compounds will leave the SSFL stripped of all flora, fauna, and most of its soil! I and my community want to be presented alternatives that will leave the area as natural as possible. I want the area to become a State or Federal Park; connected up with the Rim of the Valley master park, with a realistic preservation of this "choke point" wildlife corridor from the Santa Clarita Woodlands to the Santa Monica Mountains National Recreational Area.

1. The ***Chatsworth Nature Preserve*** (CNP) is repeatedly identified as the Chatsworth Reservoir thorough out the DEIS (i.e Figure 2.1-1, et al) .This Los Angeles City, Department of Water and Power property was reclassified as a Nature Preserve in 1997 with some areas having a ***Perpetual Environmental Easement as of 2011***. This needs to corrected throughout the DEIS.

1. a. The individual and cumulative effects of air pollution, accidents, and dust and debris from the large number of trucks removing and bring in soil under CUB must be assessed on this Nature Preserve and its Permanent Environmental Easement wetland. Since all truck traffic and employee traffic will pass around a significant part of the Chatsworth Nature Preserve. The CNP's Permanent Environmental Easement is within a few feet of the intersection of Woolsey Canyon Road and Valley Circle Drive. This level of traffic will negatively effect movement of wildlife into and out of the CNP. The community of Lake View Manor and along Roscoe Blvd will also be subject to major traffic impacts.

1.b. The individual and cumulative effects of the diversion and disruption of water flow into the Chatsworth Nature Preserve and local Blue Line streams (Bell Canyon, Black Canyon) must also be evaluated.

2. . ***Wildlife corridors and ranges cover all of the SSFL***, including the NASA area. Wildlife do not recognize the boundaries of the NASA property, As shown by Dr. Seth Riley* Assistant Adjunct Professor, UCLA, Department of Ecology and Evolutionary Biology who has mapped the home ranges of many of the Los Angeles and Ventura County mountain lions. (See mapped home ranges at http://aprodxn.com/laist/zfiles/LAist-mountain-lion-map.jpg). The wildlife corridor section of the SSFL DEIS must be corrected based on this research and the effects of CUB re-evaluated.

* (Dr.Seth Riley's research focuses on the ecology and conservation of wildlife in fragmented urban landscapes. Specifically, this includes the behavior and ecology of wide-ranging mammalian carnivores such as mountain lions and bobcats, the effects of fragmentation and roads on the population genetic structure of wildlife (including carnivores, reptiles, and birds), and the effects of urbanization on the diversity and abundance of reptile and amphibian communities. Seth is also interested in conservation and management of wildlife in National Parks, and in the effective long-term monitoring of National Park resources. UCLA Website).

3. The use of questionable data and unverified sources must be corrected. This portion of the DEIS must be redone.

An expert on wildlife corridors has evaluated the “Wildlife Corridors” described in the DEIS with the following criticisms:

“In sum, this NASA DEIS statement: “However, the NASA administered portions of SSFL are outside of the critical habitat corridors in the region identified by the U.S. Fish and Wildlife Service (USFWS) (Figure 3.4-2) (Ventura County, 2005)" contains two important factual errors

1. the corridors were not identified by the USFWS and
2. the citation is not to the source of the corridor maps either, it was taken from another source and printed in the UCSB report then is cited as "Ventura County, 2005".

This is a serious error of professional judgment; the use of unvalidated predictive wildlife movement models for the purpose of impact assessment. “

IN SUMMARY A cost/ benefit should be done to analyze costs associated with CUB cleanup versus costs to the surrounding communities and the Chatsworth Nature Preserve of truck traffic, damage to environment, and destruction of historical and cultural treasures. These costs must be weighed against currently unknown community health benefits of CUB on site. Cleanup of SSFL to Parkland Standards also has the very high and known benefits of creating a large park connecting the Santa Monica Mountains National Recreational Area, through the Rim of the Valley (proposed National Park) , Santa Susana State Historic Park, with the Santa Clarita Woodlands Park, and the Angeles National Forest.

Diana Dixon-Davis

Marie Mason
6437 Clear Springs Road
Susana Knolls CA 93063

October 1, 2013

Mr. Allen Elliott
SSFL Program Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812

by email to: msfc-ssfl-eis@mail.nasa.gov

RE: Comments on Draft EIS for Demolition and Cleanup Activities at the SSFL

Dear Allen,

I have been involved with the effort to get this site cleaned up since 1989. I have spent time going to endless meetings, time that I should have spent with my family. Now after all these years when I finally thought we had achieved our goal with the signing of the AOC's by NASA we are again faced with your agency just walking away and leaving all the contamination behind.

Now with the release of your Draft Environmental Impact Statement it is clear that your agency has no plans for follow the signed agreement. Our community viewed this signed agreement as a commitment between your agency and the families of our community. This seems to be a commitment that your agency signed but had no intention of keeping.

NASA dumped huge amounts of contaminates, just one of the most toxic TCE was poured onto the ground in so many gallons that can't even be counted or accounted for. We have always been told it will take to the end of time to clean up this ground water contamination.

This EIS just wants to leave all the rocket test stands because they are historical but everyone knows and it is well documented that is exactly where most of the TCE was dumped on the ground. If you leave these stands than you are planning on walking away from your responsibility and commitment to this community to follow the AOC agreement you signed.

There is much talk about how awful the truck traffic will be so we should just leave it all there. The trucks have been going up and down to this facility for over 50 years and no one seemed to be worried about what was in the trucks or how it would affect the surrounding communities. NASA could have cared less about this issue until you faced cleaning up the mess you want to leave behind.

This EIS has almost no discussion about all the contamination you have placed there or any discussion on how you plan to clean it up. There is only discussion on how you can walk away and leave it behind hiding behind the words Historical, Truck Traffic, Native American Artifacts. These are all issues your agency could have cared less about when you were trying to get to the moon. Well you got there and you have reason to be proud but now to just walk away and leave it for generations to come is more than criminal its immoral.

There are many families in our community , Simi Valley and the San Fernando Valley that have real health issues. Allen, you have heard these sad stories with your own ears but I guess it all fell on deaf ears.

The sole purpose of an EIS is so everyone will know all the issues both large and small and how these issues will be addressed. This EIS just is lots of words with no real substance. No real solutions only words about how we need to save our test stands. Words about saving the Native American artifacts when you know that the AOC's provide for that along with native or endangered plants.

NASA made a commitment to this community and the people who live here and we expect nothing less than your agency making good on your end by cleaning up this site to the levels required by the AOC.

I can only hope that you will follow through on this commitment so my grandchildren and all the children that will live in the communities that are below this site won't live in fear, the fear that I have lived with since 1989.

DO THE RIGHT THING AND FOLLOW THE AOC'S YOU SIGNED

Sincerely

Marie Mason

From:	Carla Bollinger
To:	MSFC-SSFL-EIS
Cc:	Elliott, Allen (MSFC-AS01); Fellows, Merrilee (HQ-LD000)
Subject:	NASA SSFL Comment; DEIS
Date:	Tuesday, October 01, 2013 12:03:07 PM
Attachments:	NASASSFLcommentsept2013.docx

Dear Allen,

My NASA SSFL DEIS Comment is attached.

Carla Bollinger
Section 106 Consulting Party Member
Carla.bollinger@halo.com
Home: carlamamay@aol.com
Mobile; 818-307-6418

Carla Bollinger
22425 Woolsey Cyn. Rd. #102 • West Hills, CA 91304
Carla.bollinger@halo.com • 818-307-6418

October 1, 2013

Mr. Allen Elliott
SSFL Project Director
NASA MSFC ASO, Building 4494
Huntsville, AL 35812

Comment: DEIS for Santa Susana Field Lab (SSFL), Ventura County, CA
NASA portion AREA II and 42 acres AREA 1: Impact Statement for Demolition and Environmental Cleanup under Administrative Order on Consent (AOC)

Rock Art to Rocket Ship: There is no other place on Earth representative of human's achievements in a broad range from prehistoric to modern time (circa AD1000 to 2006) as represented in the historic and sacred districts of Native Americans artifacts juxtaposed with rocket engine test stands. The site teems with Native American archeological and cultural assets including Burro Flats' pictograph representations of earth, animals, humans, symbolism and astral images. Rocket engine development and testing on Alfa, Bravo and Coca test stands built in the dramatic sandstone rock formations are testimony to the greatest culmination of mankind's scientific engineering achievements.

Each Test Stand in NASA Area II Historic Resources, built in the natural boulder settings, has rocket development historical significance:
Alfa 1 and 3: Tested Navajo, Jupiter, Thor, RS-27, Cold War Intercontinental Ballistic Missiles (ICBM) and Atlas engines (supported first manned orbital flight, 1962.)
Bravo Test Stands 1 and 2: Thor, F-1, Atlas, E-1 and Delta engine programs, project Mercury Missions, 1st manned mission: Mars Mariner**.**
Coca 3 and 4: Atlas, supported the second stage of Saturn 1B and V (Apollo,) Atlas, J2 (Space Shuttle Main Engines SSME)

Development of manned and unmanned space flights that reached outer space in the sphere of rock art astral images created by Native Americans is a phenomenon. Missile and outer space exploration, from the Atlas Intercontinental Ballistic Missile, Apollo rocket engines (Saturn V) to the Space Shuttle Main Engine (SSME) happened through development/testing at the NASA SSFL site. Sacred and historical districts of Native American and Rocket Engine development/test stand sites must be preserved, not demolished. Rocket engineers and scientists lamented Rocketdyne/Boeing's destruction of the first test stand built, Vertical Test Stand I in the "Bowl" area. Further demolition of any remaining test stand is destruction of historical assets and a callous disrespect to all the men and women who worked tirelessly during the 1940's through the present decade to make California and America a leader in outer space exploration. NASA rightfully calls the test stands "Historic Resources". All remaining test stands need to be preserved, not just one, an Alpha Test Stand, as suggested in the September Section 106 Consulting Meeting.

AOC: There are many "legal potholes" to the AOC, everything from the lack of implementation and adherence to the NEPA process to a comprehensive health risk assessment of an extreme cleanup to background level. The destruction of a natural landscape can lead to greater eco-destruction from future climate conditions, wildfires, flooding after a drought period made more severe from loss of natural vegetation, an insurmountable loss of habitat in the Simi Hills, a crucial wildlife corridor. The AOC needs to be legally challenged because it lacks the proper procedures to follow historical, cultural, and environmental federal and state laws. SB990 was found to be unconstitutional and lacking scientific evidence that the SSFL requires a radical cleanup procedure or poses any significant threat to public health. (Ref: Report #IG-13-007, Appendix F) The AOC is just as unlawful as the SB 990.

Environmental Justice: The contamination cleanup is challenging but better served to apply technical scientific methods on site, ongoing monitoring and cleanup while minimizing the need to remove soil/vegetation as opposed to moving tons of hazardous and non-hazardous earth and rock to other southwest locations. Locations such as Buttonwillow or Kettleman in the San Joaquin Valley, already recipients of large volumes of various contamination materials, are protesting future waste dumping. The Center on Race, Poverty and the Environment, (CRPE) has sponsored a bill, AB1329, that passed the California Assembly in May, 2013 and Senate in September, 2013, to prevent hazardous waste dumping in over-burdened communities; an environmental initiative that ensures justice fair and equitable environmental policies for all residents. NASA and Boeing have targeted these communities to receive SSFL hazardous and non-hazardous soil. Another targeted contamination dumping site, the Mojave Desert, must also be protected and not made into a manmade giant toxic dumping ground.

Health and Safety Risk Assessment: Moving 80,000 truckloads of soil and rock through the San Fernando Valley and beyond will cause great risk to lives. The beginning of the route from SSFL, Woolsey Canyon Road, was built to support delivery of materials to the SSFL. Los Angeles City and County does not have records on file of the load capacity for Woolsey Canyon. This road does not support the proposed truckload hauling of soil and rock. Because of the rock formations along the route the road is steep with hairpin turns. Full size dump trucks cannot make these turns without crossing over the 2-lane dividing lines, a road condition with high-risk accident danger. Because of the natural terrain, the road cannot be rebuilt or widened to accommodate years of heavy truck usage. The turn at Woolsey Canyon onto Valley Circle Boulevard is another high risk point and will severely hamper the movement of traffic at this turning point and throughout the route from the SSFL to any designated landfill site.

How much water during a natural drought condition will be needed to prevent huge dirt-dust contamination being kicked up during soil-rock digging in the surrounding area? What is the effect of diesel fumes and the release of toxic chemicals during excavation on the population located near the SSFL and along the truck routes that will occur in an extreme cleanup for a projected ten years? The risk assessment factors for an extreme cleanup need to be addressed.

Contamination Assessment: Is it possible to perform an accurate assessment of the actual amount of chemical residue from the Topanga fire, 2005, versus rocket engine cleaning chemicals that are in the soil? How can the State of California and the federal government determine fracking, a process of shooting a 90 plus toxic chemical cocktail deep into the earth, known to cause earthquakes and poison our water, is acceptable yet there is a hyperbole

legislation to cleaning SSFL to background level? DTSC has tested and found that the land at the base of Runkle property, adjacent to the SSFL, downhill on the Simi Valley side and in the SSFL watershed, is not contaminated and a large housing development can be built at this location. The Summit Mobile Home property on Woolsey Canyon on the Los Angeles County side, within one mile of the SSFL has also been soil tested and not shown to have SSFL contamination. Bell Canyon Creek supports a healthy population of amphibians and reptiles. The SSFL site is home to all species of wildlife from flying, crawling and walking. This is an indication that the ongoing SSFL on-site cleanup is working.

Rational Approach to Cleanup: A seemingly punitive and irrational approach to the SSFL cleanup has prevailed by a group of activists. There is no question or argument that during the post-WWII/Cold War and rocket exploration that rocket engine cleanup and chemical handling was not properly handled and cases of health conditions, including cancer, may be attributed to this factor. However, this was also the era of smoking, even smoking on the job. There is no way to determine which caused a slightly higher cancer incidence at the SSFL, chemicals or smoking. While there is a slightly higher incidence of cancer for SSFL workers, many of the engineers, including Samuel Hoffman, North American Aviation-Rocketdyne team leader of rocket propulsion (1949 through 1970), lived a long life (1902 – 1995). There are many SSFL engineers, scientists, machinists, workers who have lived beyond 80 years old.

Recently Boeing has been threatened with a lawsuit for demolishing and moving “contaminated” structures and materials from the SSFL to other sites. An extreme cleanup by NASA to the rigid AOC background level will require moving “hazardous” and “non-hazardous” material to other locations. This supports the concern that an extreme cleanup will cause another contamination problem in a new location where SSFL soil will be relocated.

A cleanup to background level as outlined by the AOC, will cause great harm to the environment, at the site and offsite, destroy historical and sacred Native American archaeological districts, historic rocket development test stands and structures, and threaten a sensitive ecological habitat. At risk from an AOC cleanup are the rare and endangered Braunton’s Milk-Vetch and Santa Susana Tarplant as well as many other native plants. SSFL, an integral part of the crucial wildlife corridor in the Simi Hills connecting the Santa Susana with the Santa Monica Mountains, must be protected, not destroyed. The National Park Service (NPS) is considering the takeover/management of the SSFL as an open space – historic park site. If the mandates of the AOC are enforced, the land will be destroyed along with all cultural/historic assets. All will be lost. NPS will not be interested in the property. Eventually, the possibility of a large developer of residential property will want to purchase this land. This must be prevented from happening by preserving the natural and manmade resources at the SSFL site. The community and environment is much better served by having NPS and possibly the Native Americans, Santa Ynez Chumash, become the stewards of this unique landscape and historical site.

In summary, common sense, respect for the natural environment and historic sites, federal law on federal property, not state law, must be applied to handling the NASA-SSFL cleanup. A responsible cleanup without destruction to a natural place, acceptance of a long-range ecological restoration without severe damage to the environment caused by excavation and relocation, is a rational approach. We, the current caretakers of this sensitive eco-system, Native American sacred sites, cultural, and historic sites from prehistoric to modern technological structures, must preserve all that is sacred.

Sincerely

Carla Bollinger
Section 106 Participant

Affiliations but not speaking on their behalf: Santa Susana Mountain Park Association, Chatsworth Nature Preserve Coalition, SFV Audubon Society Member, Sierra Club Member, Southwestern Herpetologist Member, SSFL Public Participation Group Member representing Woolsey Canyon residents, and Associated Historical Society of Los Angeles Member.

From:	Roger Gerrish
To:	MSFC-SSFL-EIS
Cc:	erik.rodriguez@lacity.org; Albert Saur; "Chris Rowe"; Melanie King
Subject:	NASA SSFL DEIS 10-1-2012
Date:	Wednesday, October 02, 2013 12:08:11 AM
Attachments:	NASA SSFL DEIS 10-1-2012.doc

Dear MR Elliott
Please see attached letter

Thank you
Roger Gerrish

To: Allen Elliott
From: Roger Gerrish
Subject: NASA SSFL DEIS
Date: 10/1/2013

Dear Mr. Elliott,

I am the co-chair public safety of the Woodland Hills Warner Center Neighborhood Council committee and area 2 board member. I am very concerned about the proposed clean up at the NASA site in the Santa Susana Pass. I understand there could be up to 200,000 truck trips between all parties involved in this process. What would be the environmental impact of this? I am also concerned about transporting contaminated soil in open trucks utilizing only tarps to contain to contaminated soil.

What would happen in the event of an accident with these trucks? Is there a cleanup plan for this and what are the dangers of having these contaminants air born either from an accident or just blowing out of the trucks during normal operation?

I would like to see cleanup levels changed to residential standard. If cleanup is absolutely necessary, however in my opinion there will be more negative impact in doing cleanup rather than just keeping things the way they are.

There will also be negative impact on plant and wildlife in the area. If this over the top cleanup takes place, this whole project as it stands just seems bad for the community at large. I hope some form of alternate planning can be considered.

Sincerely yours,

Roger Gerrish

ROGER GERRISH
21041 Ave San Luis Woodland Hill 's CA 91364
rogergerrish@gmail.com
Tel 818 585 8897

From:	Taylor Bradley Jacobs
To:	MSFC-SSFL-EIS
Subject:	Public Comment for SSFL Project
Date:	Tuesday, October 01, 2013 10:50:00 PM
Attachments:	SSFL Case Study.docx

Dear Mr. Elliott,

In this email is a public comment that I wrote in regards to the proposed project at SSFL. I appreciate all the time and effort that you and your staff must have put in to compile this information about the project and hope that my comment will be helpful to you going forward with process. Feel free to contact me at this email if you would like. Thanks!

Taylor Jacobs

September 30th, 2013

Comments Due: October 1st, 2013

Allen Elliott
National Aeronautics and Space Administration
SSFL Program Director
NASA MSFC AS01, Building 4494
Huntsville, AL 35812
msfc-ssfl-eis@mail.nasa.gov

RE: Proposed Demolition and Environmental Cleanup Activities at Santa Susana Field Laboratory

Allen Elliott,

My name is Taylor Bradley Jacobs, and I am currently a student at the University of Colorado at Boulder's Environmental Design School, with an emphasis in City Planning. I am writing this public comment as a generally concerned citizen in the hopes of aiding your process in deciding between the proposed Demolition and Environmental Cleanup Activities outlined by the DEIS and the No-Action alternative. I believe that first and foremost that it is a good idea to remediate the lands that the Santa Susana Field Laboratory (SSFL), but I believe certain alternatives are left unexplored in the DEIS. Restoring the lands would give Ventura County valuable open space for development in Area I (the Liquid Oxygen Plant Area- 41.7 acres) and all of Area II (409.5 acres), but due to the SSFL history in Ventura County I believe these structures may have historical relevance to the County and their disposal should be appropriately considered.

In Section 1.1 of Appendixes A, B, C, D of the DEIS, it is outlined that on the site there is approximately 500,000 cubic yards of contaminated soil from past and SSFL uses. It is also stated that 64% of this soil (320,000 cubic yards) will have to be removed, and the other 180,000 cubic yards may have to be excavated to remediate successfully. This remediation effort when compounded with the Proposed Action proposal of removing the 55 structures on the sites would essentially destroy all existing ecology on the site if not properly executed. I believe that it would be far more productive and cost effective to work with the County of Ventura's Planning Department to come up with a rough plan for development or preservation in the future on the site. Creating a plan would naturally inform upon what methods should be employed for remediation in specific areas. This could also save some of the landscapes of the Historical Indian sites, and buildings from the SSFL by slating them to be historical landmarks, museums, or adaptive reuse projects for the county. This could save both the County and NASA money by approaching this process with a little vision down the road of what they want the land to become.

The site also has three NRHP eligible districts (Alfa, Bravo, and Coca) with three buildings from each district eligible for the status. If the proposed action option is chosen than the buildings will no longer be there; therefore ineligible for NRHP status. But if the no-action alternative is chosen than the buildings

will remain but the land will stay contaminated and unproductive. The two-option plan is acting as a double edged sword that prevents responsible land use methods and much as it is trying to promote them. In appendix C of the NHPA's (Section 106) prepared report on "Findings of Effect Consultation Report, Ventura County, California" on page 5 it states: "NASA has found that the Proposed Action – demolition of up to 100 percent of structures, soil cleanup to background levels, and groundwater cleanup – would result in and adverse effect on historic properties…" By keep this plan as only a two-option project it detracting from what Section 106 was passed to do by the NHPA "preserve the historical and cultural foundations of the nation as a living part of community life." (A Citizen's Guide to Section 106 Review Pg. 4). For these reasons I hope you will consider opening up the project to more alternatives than just the proposed action and the no-action option.

Any questions of follow up communication may be sent to my school e-mail taja6029@colorado.edu. I greatly appreciate all of your time in considering my comments and all of your hard work at NASA.

Sincerely,

Taylor Jacobs

Addendum to Public Comment

Sources:

http://www.achp.gov/docs/CitizenGuide.pdf

http://ssfl.msfc.nasa.gov/environmental-cleanup/environmental-impact-statement/

Background:

SSFL is located in southeastern Ventura County, California. NASA administers part of Area I (the Liquid Oxygen [LOX] Plant Area, (41.7 acres) and all of Area II (409.5 acres). The Boeing Company owns the remainder of the 2.850 acres of SSFL property.

Since 1948, site activities at SSFL included research, development, and testing of liquid-fueled rocket engines and components. From the 1950s through the early 1970s Rocketdyne (one predecessor to Boeing) conducted operation in Areas I and III in support of various government space programs and in Area II on behalf of the United States Air Force, and then of NASA. NASA gradually discontinued test activities in the 1980's and conducted its final tests in 2006. Area II was deeded to the USAF in 1958 and to NASA in 1973. The LOX Plant in Area I was transferred to NASA in 1976. NASA reported its Santa Susana property as excess to its mission needs in September 2009. (From Executive Summary-Background section in DEIS)

In accordance of the National Historical Preservation Act (NHPA) Section 106, NASA was required to draft an EIS statement about the different historical structures that would be affected if the proposed action of the plan were to get approved.

From:	Diana Dixon-Davis
To:	MSFC-SSFL-EIS; Diana Dixon-Davis
Subject:	Response to NASA-DEIS re LUT,Health Risks, 7 CU Levels
Date:	Monday, September 30, 2013 9:58:55 PM
Attachments:	2013.09.25 DDD NASA SSFL DEIS Resp re Wildlife corridors.doc

Dear Mr. Elliott,

Please find attached my second response to the NASA-DEIS.

This letter deals with Chatsworth Nature Preserve and the Wildlife corridors found in the SSFL.

Diana Dixon-Davis
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25 September 2013

Mr. Allen Elliott
SSFL Project Director
NASA MSFC AS0
Building 4494
Huntsville AL 35812

Draft Environmental Impact Statement for Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California, dated July 2013

Dear Mr. Elliott,

The NASA DEIS contains three major deficiencies in regard to wildlife corridors:

1. Effects on Chatsworth Nature Preserve are not evaluated.
2. Ignoring known , research verified, wild life ranges,
3. Use of flawed resources for DEIS wildlife corridor characterizations.

There needs to be a reassessment of singular impact (NASA) and cumulative impacts (remainder of the SSFL Site i.e Boeing and DOE) and the effects of Clean Up to Background (CUB) on Biology. It can not be claimed that CUB is considered beneficial to Biology. (Table ES-2). Air pollution and water pollution and diversion must be factored into a cost/benefit analysis as to the impact on local communities, not just the SSFL site.

The Chatsworth community requests (see their DEIS Response of 3 Sept 2013) a major revision of the NASA DEIS which will then include several alternatives between “Do Nothing” and “Clean-up to Background” (CUB). CUB cleanup levels for approx 450 trigger point chemicals and compounds will leave the SSFL stripped of all flora, fauna, and most of its soil! I and my community want to be presented alternatives that will leave the area as natural as possible. I want the area to become a State or Federal Park; connected up with the Rim of the Valley master park, with a realistic preservation of this "choke point" wildlife corridor from the Santa Clarita Woodlands to the Santa Monica Mountains National Recreational Area.

1. The ***Chatsworth Nature Preserve*** (CNP) is repeatedly identified as the Chatsworth Reservoir thorough out the DEIS (i.e Figure 2.1-1, et al) .This Los Angeles City, Department of Water and Power property was reclassified as a Nature Preserve in 1997 with some areas having a ***Perpetual Environmental Easement as of 2011***. This needs to corrected throughout the DEIS.

1. a. The individual and cumulative effects of air pollution, accidents, and dust and debris from the large number of trucks removing and bring in soil under CUB must be assessed on this Nature Preserve and its Permanent Environmental Easement wetland. Since all truck traffic and employee traffic will pass around a significant part of the Chatsworth Nature Preserve. The CNP's Permanent Environmental Easement is within a few feet of the intersection of Woolsey Canyon Road and Valley Circle Drive. This level of traffic will negatively effect movement of wildlife into and out of the CNP. The community of Lake View Manor and along Roscoe Blvd will also be subject to major traffic impacts.

1.b. The individual and cumulative effects of the diversion and disruption of water flow into the Chatsworth Nature Preserve and local Blue Line streams (Bell Canyon, Black Canyon) must also be evaluated.

2. . ***Wildlife corridors and ranges cover all of the SSFL***, including the NASA area. Wildlife do not recognize the boundaries of the NASA property, As shown by Dr. Seth Riley* Assistant Adjunct Professor, UCLA, Department of Ecology and Evolutionary Biology who has mapped the home ranges of many of the Los Angeles and Ventura County mountain lions. (See mapped home ranges at http://aprodxn.com/laist/zfiles/LAist-mountain-lion-map.jpg). The wildlife corridor section of the SSFL DEIS must be corrected based on this research and the effects of CUB re-evaluated.

* (Dr.Seth Riley's research focuses on the ecology and conservation of wildlife in fragmented urban landscapes. Specifically, this includes the behavior and ecology of wide-ranging mammalian carnivores such as mountain lions and bobcats, the effects of fragmentation and roads on the population genetic structure of wildlife (including carnivores, reptiles, and birds), and the effects of urbanization on the diversity and abundance of reptile and amphibian communities. Seth is also interested in conservation and management of wildlife in National Parks, and in the effective long-term monitoring of National Park resources. UCLA Website).

3. The use of questionable data and unverified sources must be corrected. This portion of the DEIS must be redone.

An expert on wildlife corridors has evaluated the “Wildlife Corridors” described in the DEIS with the following criticisms:

“In sum, this NASA DEIS statement: “However, the NASA administered portions of SSFL are outside of the critical habitat corridors in the region identified by the U.S. Fish and Wildlife Service (USFWS) (Figure 3.4-2) (Ventura County, 2005)" contains two important factual errors

1. the corridors were not identified by the USFWS and
2. the citation is not to the source of the corridor maps either, it was taken from another source and printed in the UCSB report then is cited as "Ventura County, 2005".

This is a serious error of professional judgment; the use of unvalidated predictive wildlife movement models for the purpose of impact assessment. “

IN SUMMARY A cost/ benefit should be done to analyze costs associated with CUB cleanup versus costs to the surrounding communities and the Chatsworth Nature Preserve of truck traffic, damage to environment, and destruction of historical and cultural treasures. These costs must be weighed against currently unknown community health benefits of CUB on site. Cleanup of SSFL to Parkland Standards also has the very high and known benefits of creating a large park connecting the Santa Monica Mountains National Recreational Area, through the Rim of the Valley (proposed National Park) , Santa Susana State Historic Park, with the Santa Clarita Woodlands Park, and the Angeles National Forest.

Diana Dixon-Davis

From:	Diana Dixon-Davis
To:	MSFC-SSFL-EIS; Diana Dixon-Davis
Subject:	Response to NASA-DEIS re LUT,Health Risks, 7 CU Levels
Date:	Monday, September 30, 2013 9:45:02 PM
Attachments:	2013.09.26 DDD DEIS LUT Comparisons, Health Risk Assesments.doc

Dear Mr. Elliott,

Please find attached one of my responses to the NASA-DEIS.

This letter deals with Health Risks, 7 levels of Cleanups,
LUT, and misc suggestions.

Diana Dixon-Davis
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26 September 2013

Mr. Allen Elliott
SSFL Project Director
NASA MSFC AS0
Building 4494
Huntsville AL 35812

Draft Environmental Impact Statement for Demolition and Environmental Cleanup Activities for the NASA-administered portion of the Santa Susana Field Laboratory (SSFL), Ventura County, California, dated July 2013

Dear Mr. Elliot,

In order for the decision makers and the public to better understand the nature of the Clean up to Background (CUB) and have accurate information for making decisions and to do realistic cost/benefit analysis the following points below need to be added to the DEIS.

If the reason for a cleanup of the SSFL is to reduce the health risks to the community around the SSFL, then ***the current level of risk of the SSFL to human health must be measured***, and then the benefits of cleanup can be estimated. Without this basic piece of information, no valid decision making can be made. No decision made today can rewind the clock and fix health risks that occurred in the past and are no longer extant today.

In addition, a cost/ benefit and health-risk based re-evaluation of the all cleanup proposals based on the ultimate use of the SSFL and NASA sites must be added to the DEIS. Many of my thoughts are also presented in Paul Martin's, Office of Inspector General Report, 14 February 2013, NASA's Environmental Remediation Efforts at the Santa Susana Field Laboratory, Report no.IG-13-007. This analysis should be included in the DEIS documents section to aid decision makers.

Furthermore, there needs to be a summary/cumulative assessment made which combines the singular impact (NASA) and cumulative impacts (remainder of the SSFL i.e.Boeing, DOE Site) and the effects of Cleanup to Background (CUB) on Health Risks—current and future, and those caused by CUB and if finally presented, each one of the proposed cleanup standards and proposals..

Suggested Improvements and Correctable Omissions from the DEIS

1. ***REPLACEMENT SOIL CONSIDERATIONS*** Before any decisions are made, fill dirt at an acceptable level of "cleanliness" must be identified. The soil must be available in sufficient quantity and at an acceptable price to satisfy the selected cleanup strategy. **Replacing "contaminated" soil with more contaminated soil is an unacceptable alternative**. The surrounding community expects 100% replacement with CUB safe soil, and within the fiscal restraints set by the Federal Government.

1.a. **This requirement for identifying acceptable quantity and quality of fill soil must be met before any cleanup strategy is selected.** The quantity and quality availability of "clean" replacement soil that meets the current required background values (CUB Levels) , uncontaminated, and matching current soil structure, without non-native species, and suitable to support local flora and fauna, must be identified. Until this basic requirement is met, no selection of alternative cleanup strategies should be made.

1.b. Once acceptable fill soil is identified and quantified, then CUB soil removal can be considered; prioritized as to "most contaminated" to least "contaminated" areas. Once the **supply of "clean replacement soil" is used up, no more soil removal should occur** . Other cleanup strategies will need to be employed. This is why multiple strategies and cleanup levels must be studied and presented in the DEIS (See 2.0 below).

1.b. **The DEIS currently only proposes replacing 1/3 of the soil removed**. This is also an **unacceptable solution**. Improper restoration of the physical environment will lead to many unwanted consequences such as: increased water run off, erosion, insufficient soil to support local flora and consequently local fauna. (ES-5.1.1)

1.c. Because the top 2 feet of soil is deemed non-treatable by the DEIS, it will under the current DEIS all be removed. **This is an unacceptably rigid standard**.

2. ***COMPARISON TABLE OF 7 CLEANUP STANDARDS*** There needs to be a revision of the NASA DEIS which will, at a minimum, include the standard 6 alternatives between "Do Nothing" plus the Look up Tables (LUT) "Cleanup to Background" (CUB) levels for the approximately 450 trigger point chemicals and compounds . To my knowledge all other EIS evaluation for major projects done for California and all other states include these varied standards. Exclusion of these intermediate evaluations for only the NASA/ DEIS raises serious questions as to its even minimal usefulness.

2.a. The full range of alternatives considered must , at a minimum, include the 6 standard DEIS alternatives. A realistic evaluation of how this site will be used in the future is required. (Are future owners seriously planning to farm this land with its topography and lack of water ?) The Look Up Table values for each chemical/compound need to be compared to each of the 6 Standard EIS Cleanup Levels.

Table to be Added: 6 Standard EIS Cleanup Levels
Compared to Look-Up Table Values:

1. Do Nothing,
2. Clean up to Agriculture Standards
3. Clean up to Rural Residential Standards,
4. Clean up to Urban Residential Standards,
5. Clean up to Industrial Standards,
6. Clean up to Parkland Standards .
7. Look Up Table Values (CUB)

2.b. . For every chemical and compound to be tested for, an extended Tables must be added for (at least) the 6 Standard EIS Alternatives which must show the usually used and accepted Federal and State detection contamination/concentrations expected to achieve that standard of cleanup.

2.c.. The known or postulated health risk to the community must be calculated and shown for each of the 7 Standard EIS Alternatives for each chemical to be tested for.

3. HEALTH RISK ASSESSMENTS The current existing total level of health risk to the community that the current SSFL site poses (as is, before cleanup) must be calculated and compared to the postulated "improvements" resulting from the CUB cleanup, in order to see if cleanup achieves a measurable level of improvement to public health.

3.a . Health Risk evaluations must include all realistic ,on-site and off-site risks. The DEIS can not ignore the effects on the surrounding community and on the populations living along the haul routes and proposed dump sites. These health risks include, among others, air pollution, traffic, water usage and run-off, dust exposure, Valley Fever (sometimes lethal fungus infection endemic to area), truck and employee accidents. An analysis of and monitoring of the level of "contamination" in the streams leaving the SSFL site (Bell Canyon, Black Canyon, and all other "blue line" streams) must be done to see if retaining and treating ground and surface water on site is still feasible and required. The lack of information on air pollution caused by CUB projected truck traffic, especially in Woodland Hills, Canoga Park, and Chatsworth is a serious omission. Especially children and adults, will bear heightened health risks.

3.b. The amount of reduction in health risk to the community that each of the 7 alternatives will achieve must be calculated. The total cost to achieve each alternative must be calculated.

3.c. A re-evaluation must be done of the criteria that any one of the 450 chemicals can trigger a cleanup of an area on the site. The actual level of health risk of this one "trigger" must be weighed against the cost to the environment, etc. of this extreme interpretation of cleanup criteria. Arsenic occurs at a naturally high level and is already "exempted" in some cases from triggering total soil removal.

3.d. Under the current LUT and CUB, measuring ¼ of a banana and 1/16 tsp.(a few drops) of beer would qualify soil as contaminated and require removal to a "hazardous" waste site. These levels of Cleanup stain credulity and require a health risk based evaluation.

4. ***Evaluation of the cost/benefits of slower but equally/ almost as effective remediation alternatives*** such as phytoremediation (plant based), treat soil and water in place, encapsulation of contaminated soil, and natural attenuation must be done. There is no requirement that the SSFL Cleanup be completed by a date certain, only a politically set date. (ES-3.1.2.2)

5. ***Consideration of differential/ alternative cleanup treatments for different areas*** within the site must be evaluated. This consideration must be done in regards to the Chumash religious and cultural areas and the Test Stand areas so that these historical sites are preserved and not destroyed or altered by the cleanup process.

6. ***Consideration of the ultimate use of the SSFL*** as a park and then work backward to re-evaluation of the health risks and the cost/benefits of the entire cleanup with this outcome in mind.

7. ***Alternate uses for Federal Funds***. It is quite possible that the funds spent on the highest level of cleanup could be much more effectively used for public health measures that would broadly benefit everyone living around the SSFL site. This might reduce health risks much more than CUB will do. See especially the current use of ground water and wells in the Simi Valley area. NASA and the Federal Government must decide how much money will be spent on this project and to what benefit., especially when many other cleanup projects go unfunded.

IN SUMMARY A cost/ benefit should be done to analyze costs associated with CUB cleanup versus costs to the surrounding community of truck traffic, damage to environment, and destruction of historical and cultural treasures. These costs must be weighed versus currently unknown community health benefits of CUB on site. Cleanup to Parkland Standards also has the very high and known benefits of a large park connecting the Santa Monica Mountains National Recreational Area, through the Rim of the Valley (proposed National Park) , Santa Susana State Historic Park, with the Santa Clarita Woodlands Park, and the Angeles National Forest.

Diana Dixon-Davis

From:	Dee Goldberg
To:	MSFC-SSFL-EIS
Subject:	Please tell NASA to follow their agreement
Date:	Monday, September 30, 2013 1:51:48 PM
Attachments:	Santa Susana F.L. Clean up letter to NASA.doc

Hi Mr. Elliott,

Please read my attached letter regarding the SSFL site here in Simi Valley, California.
This is an important issue to me and my family.

Thank you so much for your time,

DeAnna Goldberg, resident of Simi Valley and concerned parent

Subject: SSFL EIS- Enforce the Cleanup Agreement!

Dear Mr. Elliott,

I am a deeply concerned resident of Simi Valley, California. I am worried that the Santa Susana Field Lab Site will again be bypassed for a thorough clean up all because the large organizations (NASA, Department of Energy, and Boeing) are doing everything in their power to persuade people in the public eye that it is too much money and effort to clean it up. They ruined the environment up there and now it has affected everyone that lives near this site, from the air we breathe on a windy day to the water we drink or are exposed to in and around the area.

I'm a resident here and have been living in the Conejo Valley for over 13 years. I was amazed to learn, approximately eight years ago, that there had been a partial nuclear meltdown so close to where I live and also amazed that they were still contaminating the area with rocket fuel up to a few years ago. There are still contaminants from the nuclear meltdown, as well as, rocket fuel waste that contaminate the ground and the ground water, which Simi Valley still uses some of this for drinking water. All these agencies need to clean up the land and the water all the way to background.

I attended the last Work Group meeting with NASA and let them know that my position still stands on getting this site cleaned up. It is an atrocity that it hasn't been cleaned up yet and should have been done years ago. Now, we are the leading county in the state of California with the highest breast cancer rate and with all the public communication that I do I am pretty sure that that is not the only cancer with a high rate here. Cancer is an abundant illness here and most people don't understand why.

Most residents here are not familiar with the S.S.F.L. site; they're not educated on the condition up there and how it has affected the areas of West L.A. County and East Ventura County. Unfortunately, it is too late to stop development around the site. There are already too many houses and developments too close to such a disaster. The only way these agencies might be able to bypass any clean up would be to grant every resident within a certain several mile radius water filtration systems that provide each dwelling with clean water. Still, that won't provide anyone with any protection against the contaminants that are carried through the wind. Two nuclear scientists that I have talked with at some of these meetings have told me that they aren't really sure if there is any water filtration system out there that can take radionuclide contamination out of the water supply and they certainly can't take any contamination out of the air that we breathe unless they clean up the site to background.

There is no getting around the fact that these organizations are responsible for the clean-up. They owe it to all the residents living near and around the site to get rid of these cancer causing contaminants once and for all. Just think how many jobs they will be creating by cleaning up the site.

Please help the residents here by taking a stand. Ensure that NASA, as well as the other responsible parties, will clean up the site responsibly to background levels.

Sincerely,

DeAnna Goldberg, resident and mother of three children in Simi Valley, California

From:	Rick
To:	MSFC-SSFL-EIS
Subject:	SSFL DEIS comments
Date:	Monday, September 30, 2013 5:42:14 PM
Attachments:	Brandlin_NASA_DEIS_Comments.docx

Mr Allen Elliott
SSFL Project Director
NASA MSFC ASO1, Building 4494
Huntsville, Alabama, 35812

Dear Mr. Elliott:

Please fine attached my comments on the NASA SSFL DEIS, with my contact information.

Thank you.

Richard Brandlin, M.S. Env. Mgmt, LEED AP

September 30, 2013

NASA SSFL DEIS Comments

Allen Elliott,
SSFL Program Director,
NASA MSFC AS01, Building 4494,
Huntsville, AL 35812

Dear Mr. Elliot:

Please find below my comments on the Draft Environmental Impact Statement for the NASA portion of the Santa Susana Field Laboratory.

I add my name to the long and growing list of interested parties for whom the NASA SSFL DEIS is fatally flawed from both a strategic and technical perspective. In the larger sense, the DEIS is artificially constrained by three impediments: 1. Slavish adherence to the 2010 AOC which compels the parties to attain clean-up levels that bear no relation to the public health risk posed by the site , 2. As the result of political pressure from Senator Barbara Boxer and the Council of Environmental Quality Chair Nancy Sutley, and in contravention of the letter and spirit of the NEPA process, NASA has produced an analysis of only two alternatives, one of which is the “No Action” alternative, itself a creature of the 2010 AOC which leaves no room for a middle ground; and 3. Failure to consider the combined effects of three separate but parallel cleanup actions from the Responsible Parties .

From the technical side, some of the analysis that did occur failed to adequately account for the preservation of historical and cultural resources as well as a failure to analyze or mitigate impacts from cleanup activities, specifically truck traffic impacts on surrounding streets and communities. I urge you to review and revise your analysis regarding the preservation of Native Peoples sacred grounds, particularly the Burro Flats area, and preservation of the Alpha

and Bravo test stands and ancillary buildings and structures that are critical to historical perspective on the U.S. space program, and to retain as much as possible for future generations. As to truck traffic, the DEIS should be revised to include the transportation risk in terms of additional morbidity/mortality per transportation mile for the evaluated alternative. ANY fatalities from site remediation activities are completely unacceptable.

Given the oppressively destructive consequences of NASA adherence to the AOC, I offer my position that the No Action alternative is actually preferable to AOC-level clean-up. I also strongly support a Modification In Principle of the type supported by the SSFL Community Advisory Group that would allow parties to the AOC to revert to the risk based clean-up scenario contemplated by the CA Dept. of Toxic Substances Control-approved SSFL Standardized Risk Assessment Methodologies, rev. 2007, to implement a cleanup standard consistent with the future land use of administered parcels, thereby creating a path forward toward resolution of the contamination issues at the SSFL, and final disposition of the site.

Richard Brandlin, M.S. Env. Mgmt, LEED AP
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