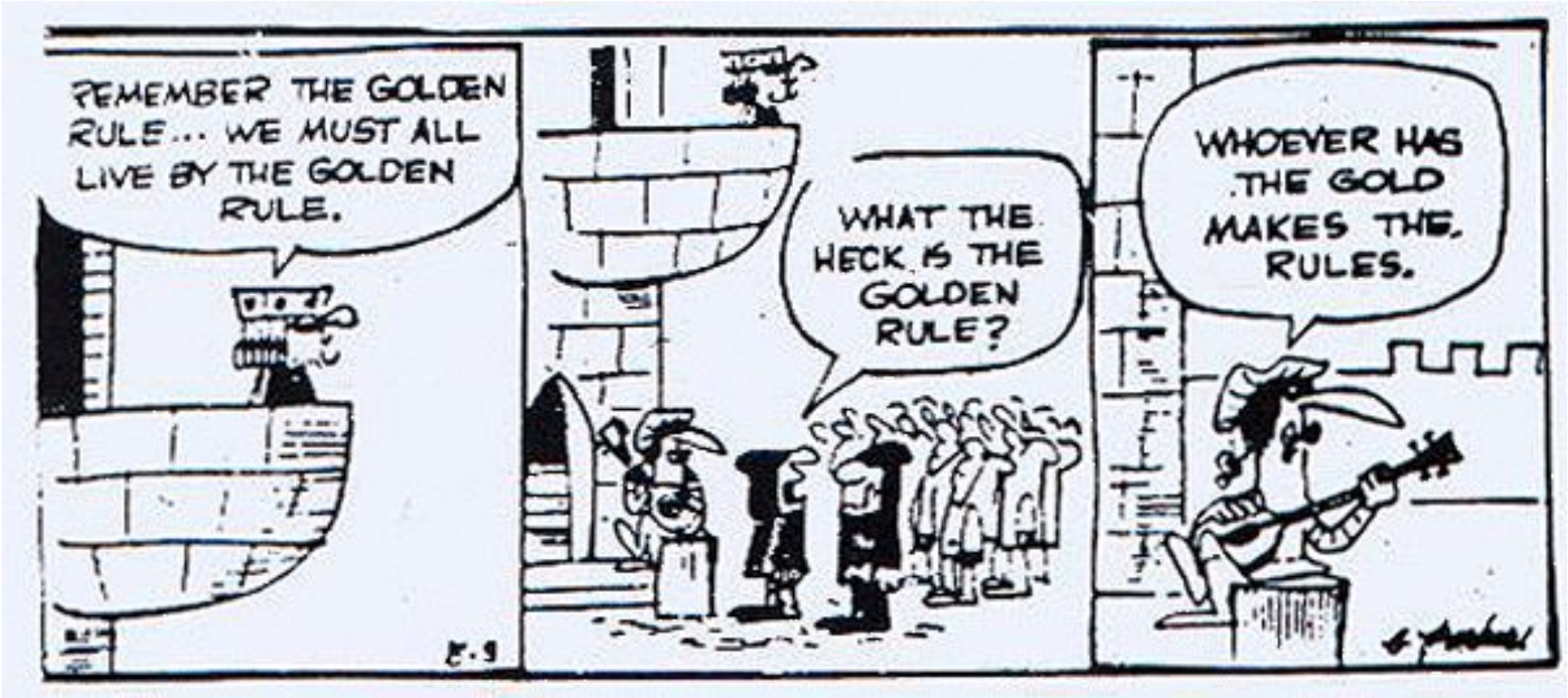
The Crisis in the Cleanup of the Santa Susana Field Laboratory

FEBRUARY 10, 2022

The Fundamental Message

Remember the Golden Rule


REMEMBER THE GOLDEN RULE... WE MUST ALL LIVE BY THE GOLDEN RULE.
WHAT THE HECK IS THE GOLDEN RULE?
WHOEVER HAS THE GOLD MAKES THE RULES.

EXTERNALITIES:

Transferring the Cost of Doing Business Onto Others

It is often cheaper for corporations and others to pollute because they are allowed to externalize environmental and social costs. Rather than pay to prevent pollution, or to clean it up, *they transfer the cost to innocent others in the form of health impacts*.

Grace was diagnosed with cancer in 2014, only weeks after her fourth birthday. She spent over one hundred days inpatient the first year of treatment and had chemotherapy 10x above standard treatment.

Grace relapsed in August of 2017, spending another six weeks inpatient while receiving strong chemo and four days of twice-a-day radiation.

After a bone marrow transplant in 2017, Grace, now ten, is cancer free.

Grace, PH+ Leukemia

Source: Parents vs SSFL https://parentsagainstssfl.com/our-kids

Hazel was diagnosed with stage three neuroblastoma, an incredibly aggressive and dangerous cancer, when she was two years-old in 2013.

In March of 2018, at just 7 years old, Hazel passed away.

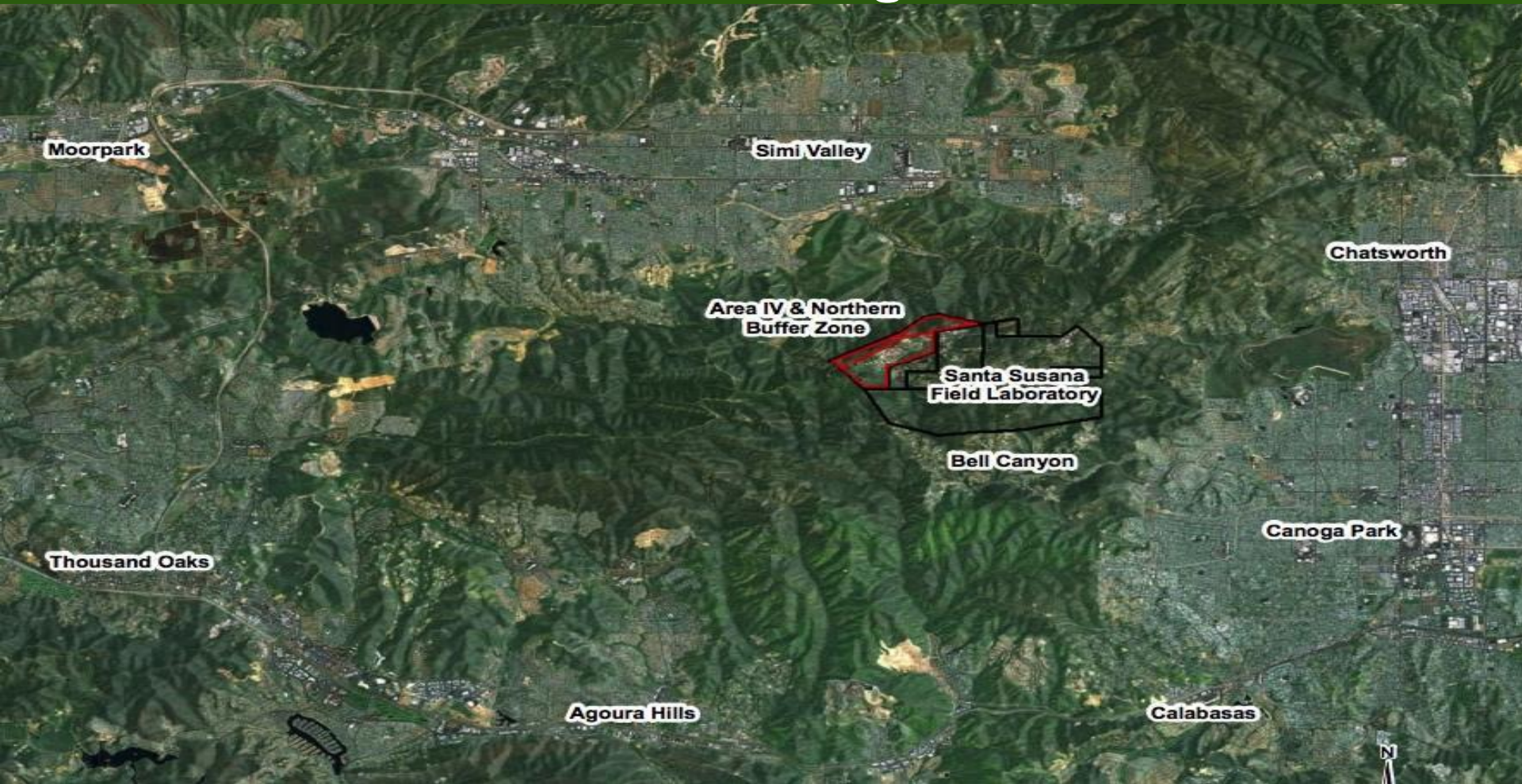
Hazel, Neuroblastoma

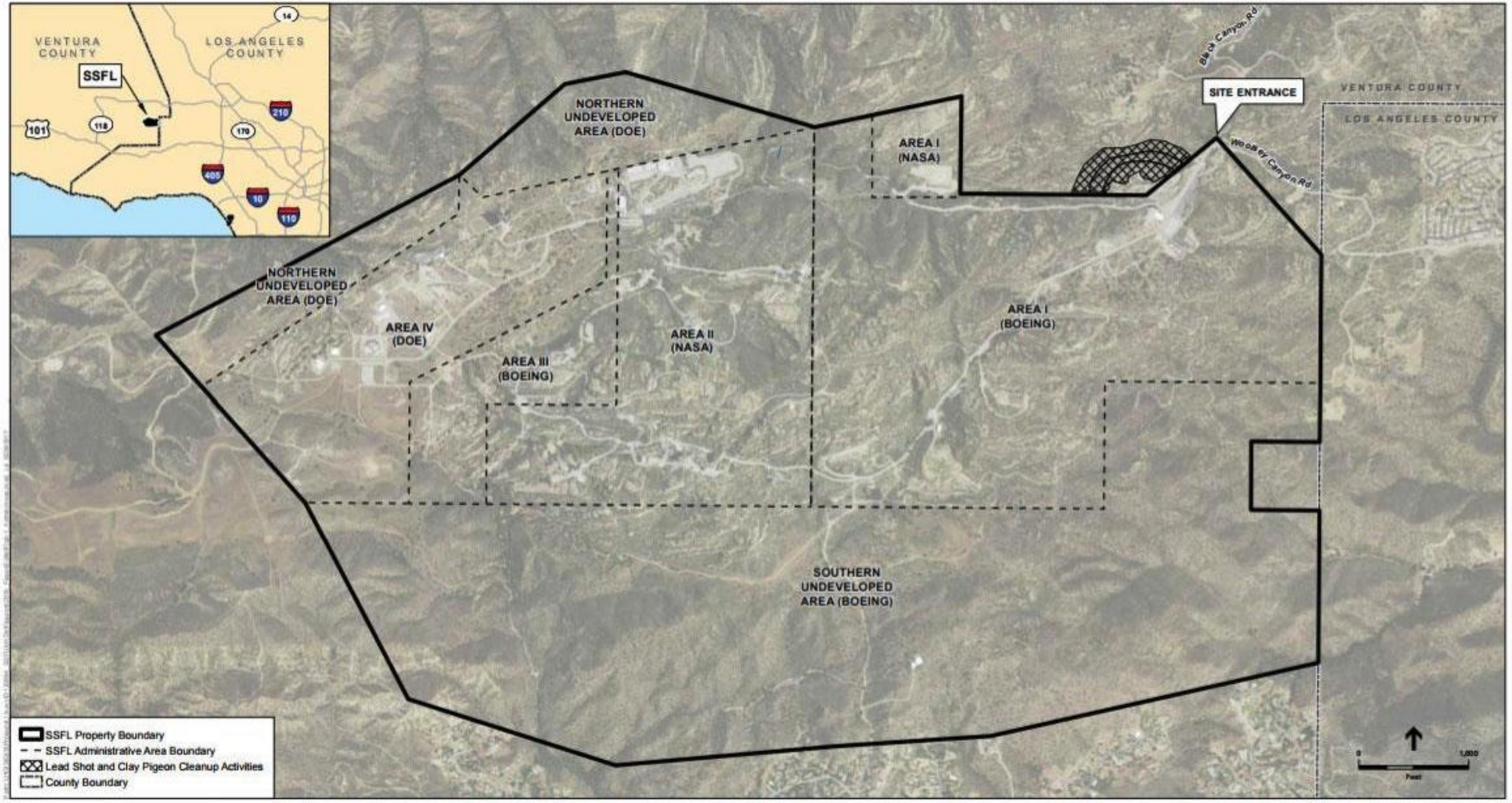
Source: Parents vs SSFL https://parentsagainstssfl.com/our-kids

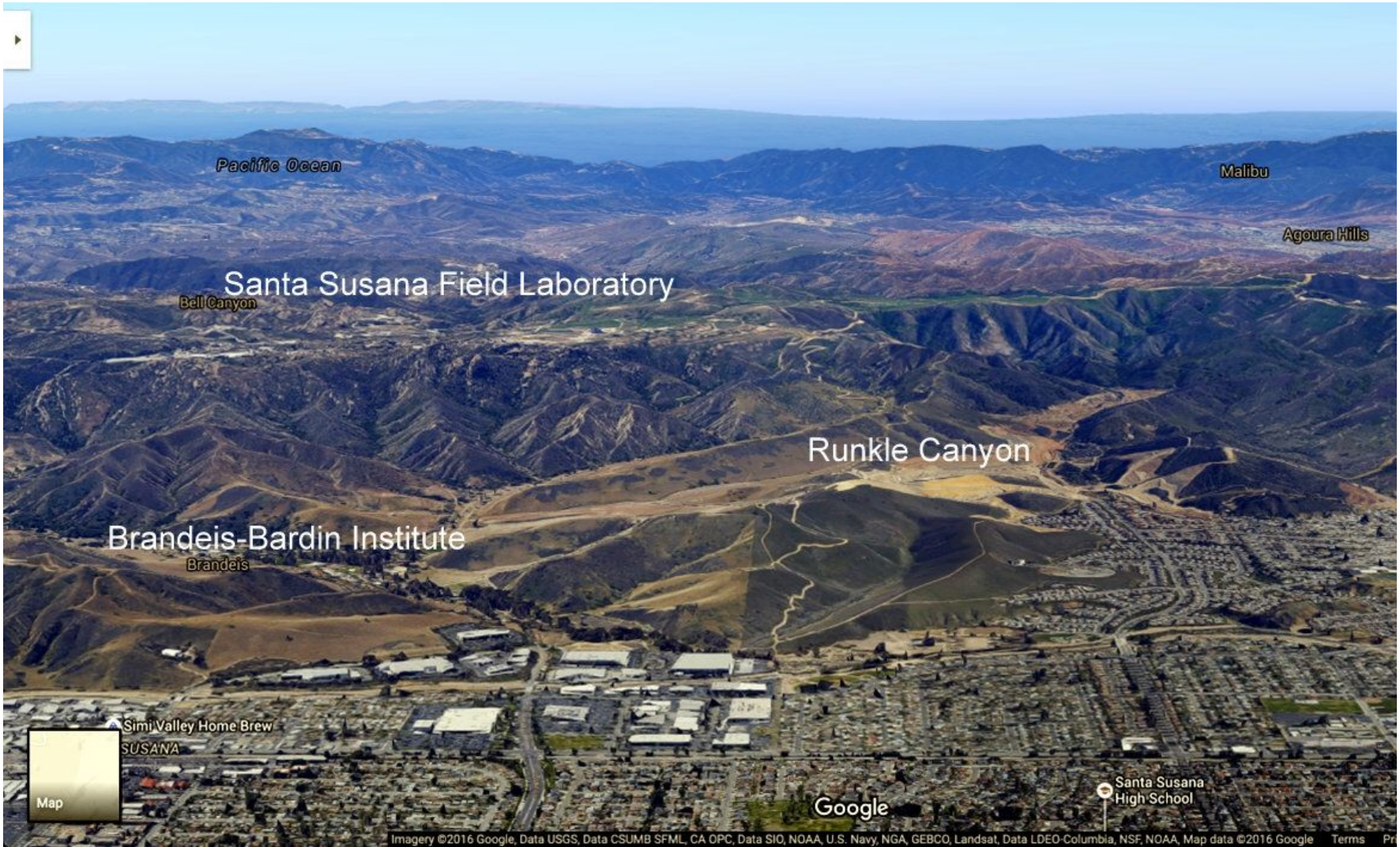
Santa Susana Field Laboratory

RESPONSIBLE PARTIES: DOE, NASA, AND THE BOEING COMPANY

SSFL Location – Elevation range 2,245– 1,175 feet




VENTURA COUNTY
LOS ANGELES COUNTY
SSFL
14
101
118
170
210
405
10
110
NORTHERN UNDEVELOPED AREA (DOE)
AREA I (NASA)
Black Canyon Rd
SITE ENTRANCE
Woolsey Canyon Rd
VENTURA COUNTY
LOS ANGELES COUNTY
NORTHERN UNDEVELOPED AREA (DOE)
AREA IV (DOE)
AREA III (BOEING)
AREA II (NASA)
AREA I (BOEING)
SOUTHERN UNDEVELOPED AREA (BOEING)
SSFL Property Boundary
SSFL Administrative Area Boundary
Lead Shot and Clay Pigeon Cleanup Activities
County Boundary
0
1,000
Feet


Pacific Ocean
Malibu
Agoura Hills
Santa Susana Field Laboratory
Bell Canyon
Runkle Canyon
Brandeis-Bardin Institute
Brandeis
Simi Valley Home Brew
SUSANA
Map
Google
Santa Susana
High School
Imagery ©2016 Google, Data USGS, Data CSUMB SFML, CA OPC, Data SIO, NOAA, U.S. Navy, NGA, GEBCO, Landsat, Data LDEO-Columbia, NSF, NOAA, Map data ©2016 Google
Terms


Space Preserve
Bell Canyon
Brandeis
Callahan Field
Simi Valley Cu
Sequoia Park
Garden Grove

SSFL History

Established in late 1940s for rocket testing

In 1949, Atomic Energy Commission undertook a search for a remote nuclear testing lab for work too dangerous to do in populated areas

Site was to be in area where population development was unlikely

SSFL ranked 5th out of 6 for meteorological safety criteria

Picked anyway, because of driving time to UCLA

UNCLASSIFIED

NAA-SR-30

Subject Category: BIOLOGY

UNITED STATES ATOMIC ENERGY COMMISSION

GENERAL REACTOR SITE SURVEY OF THE LOS ANGELES AREA

By
R. G. Chalker

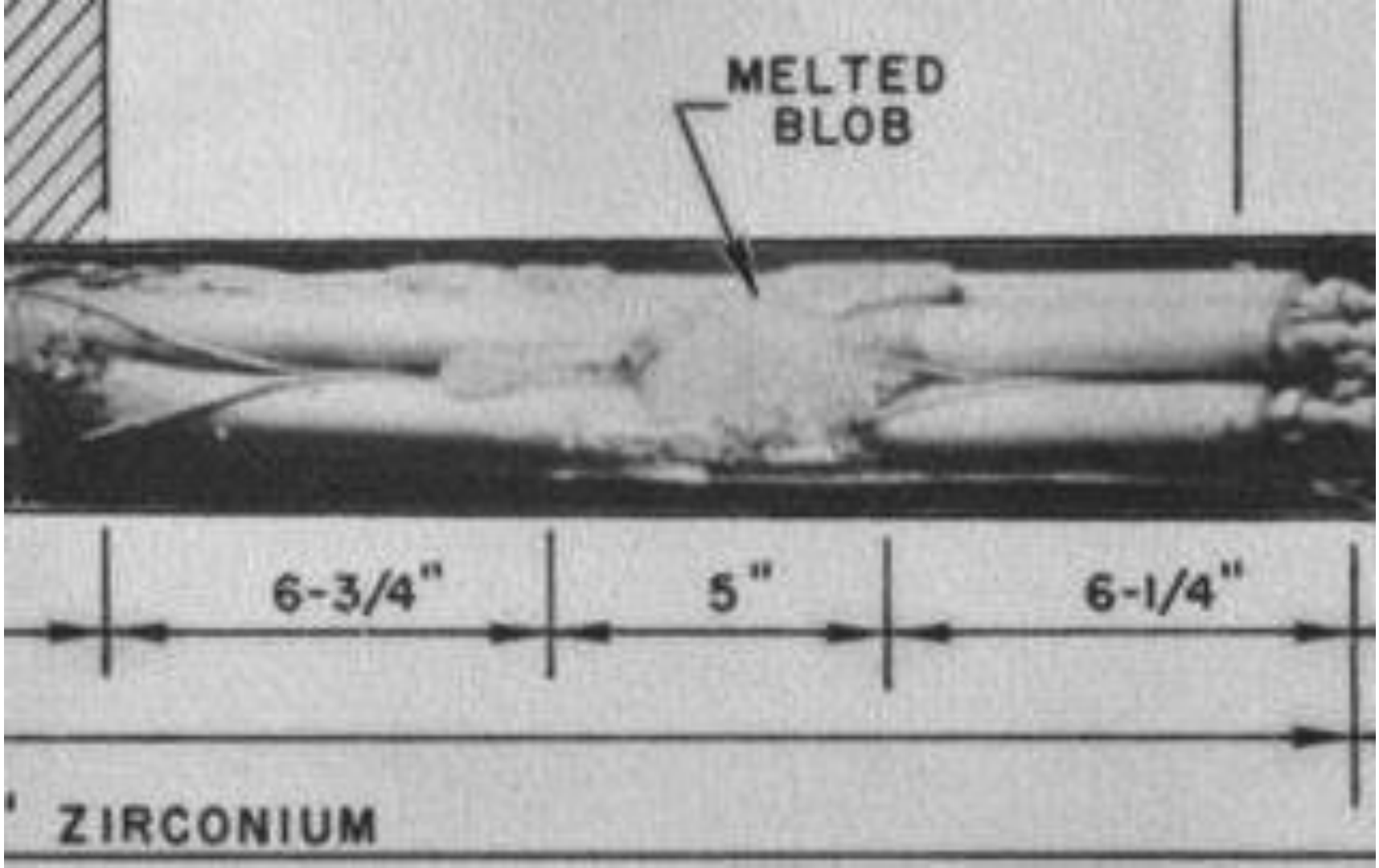
June 1, 1949

North American Aviation, Inc.
Los Angeles

Technical Information Service, Oak Ridge, Tennessee

SSFL History Cont.

- Power of reactors was to be limited so as to reduce dose to nearby population
- A few years later, the limit was set aside and a large test reactor constructed nonetheless (the SRE, the one that had the partial meltdown)
- Now half a million people reside within ten miles


MELTED
BLOB
6-3/4"
5"
6-1/4"
ZIRCONIUM

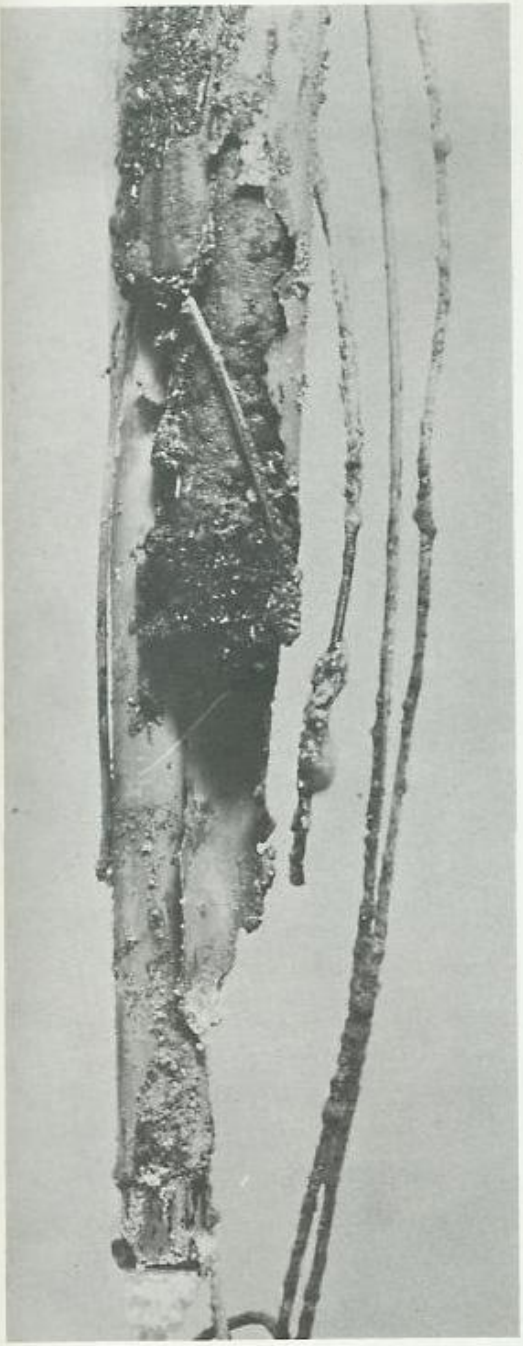


Figure IV-A-6. Bottom of Damaged Element in Channel 55

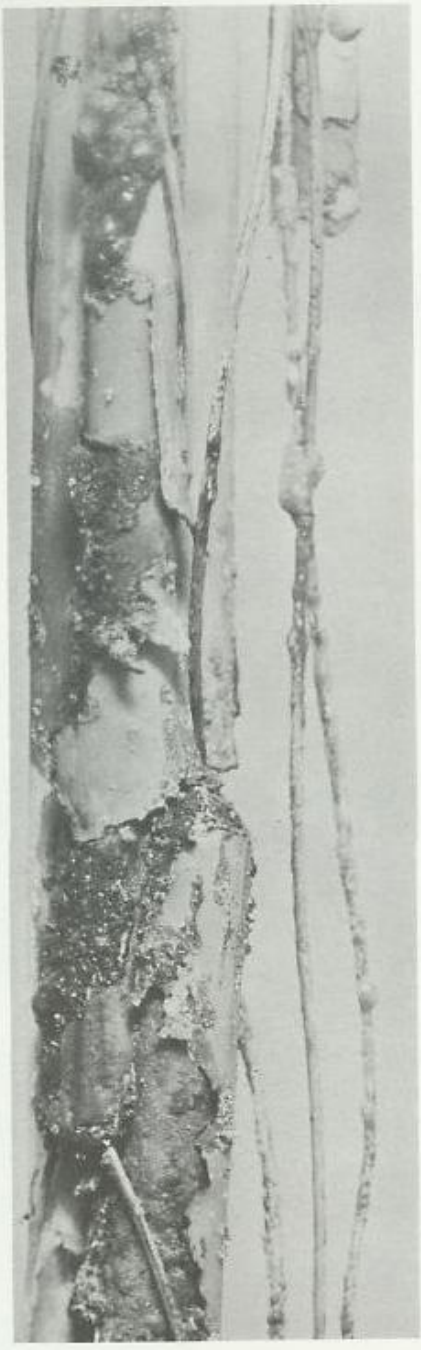
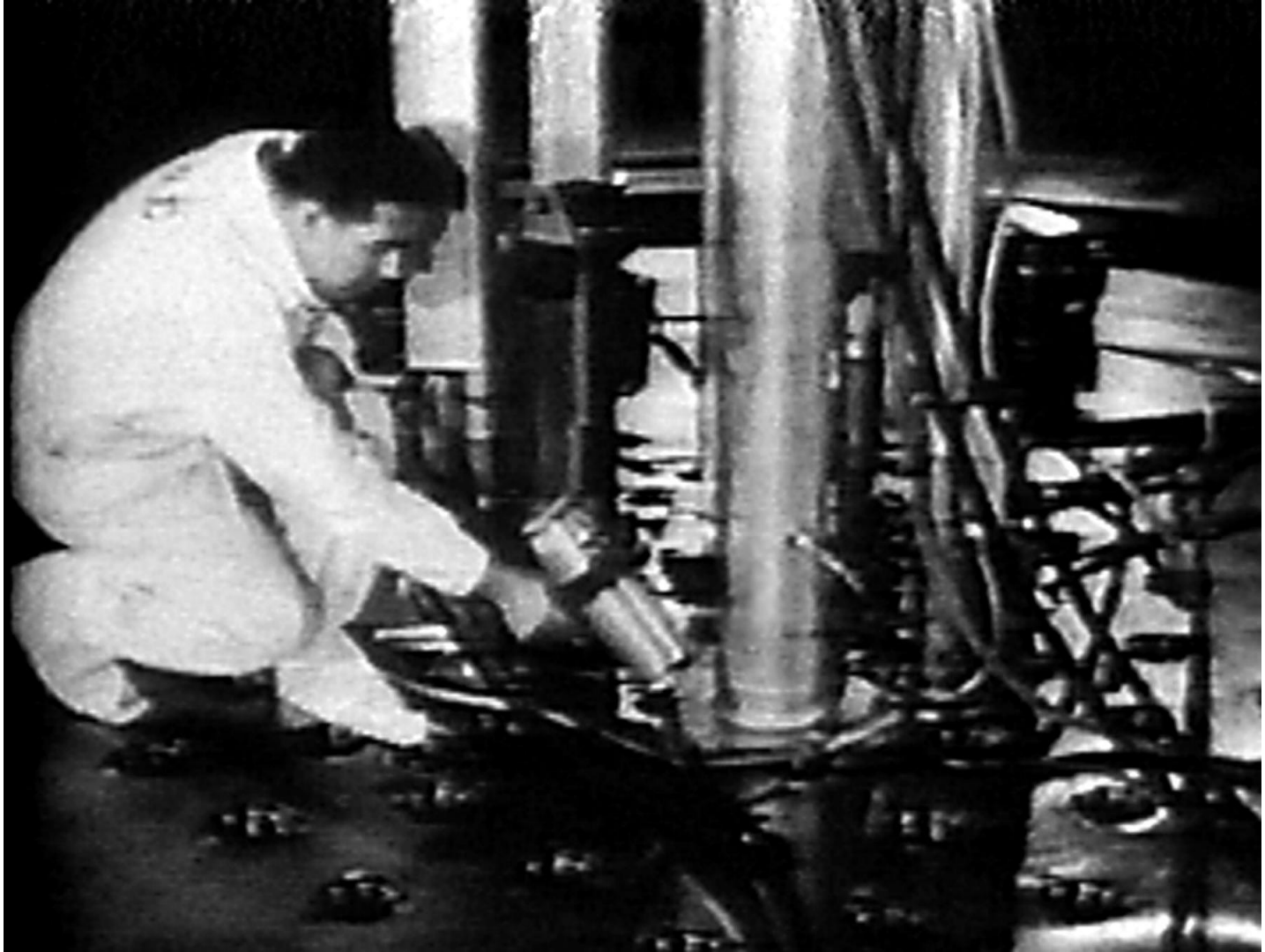
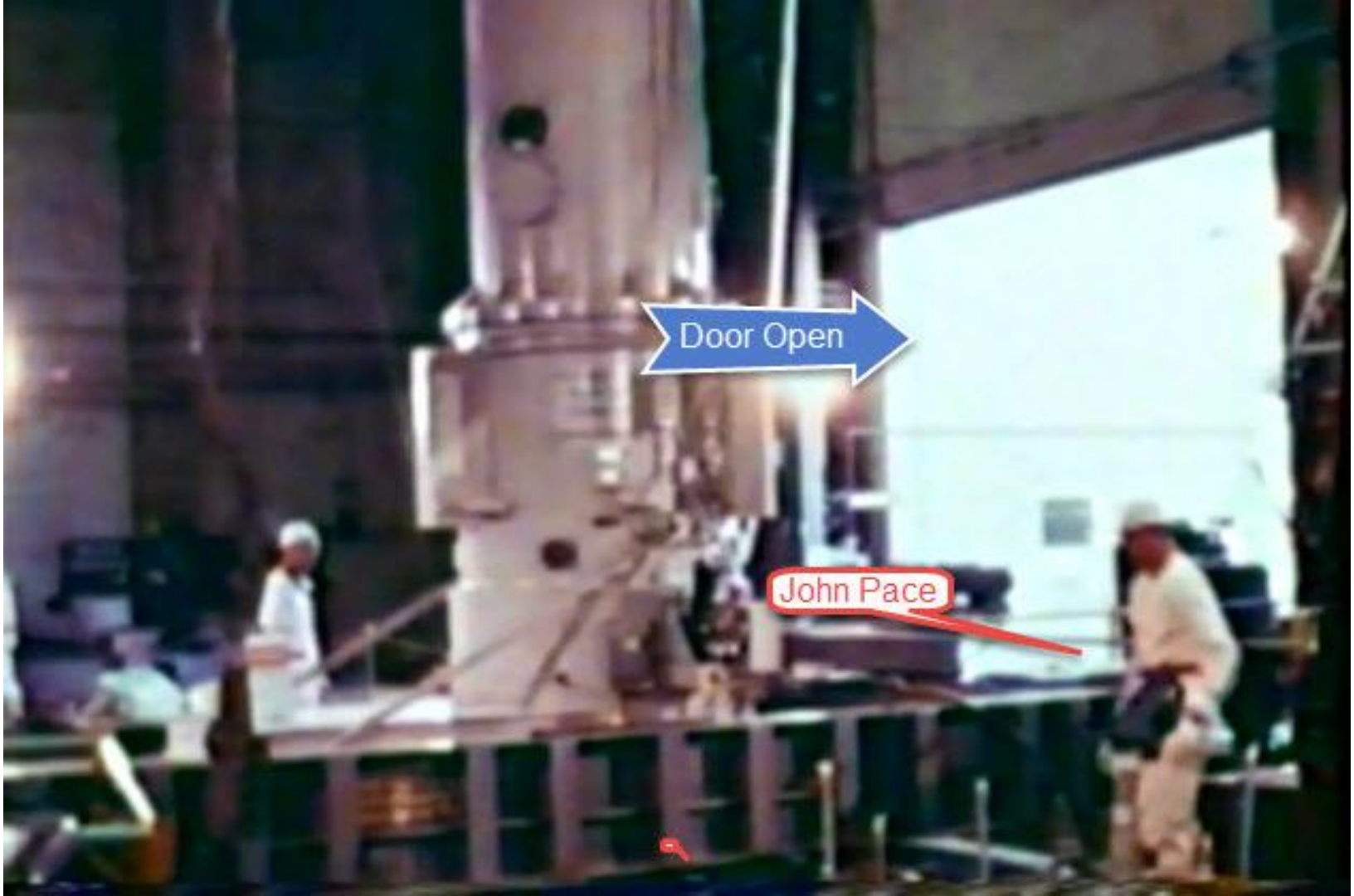


Figure IV-A-7. Midsection of Damaged Element in Channel 55




Door Open
John Pace

NUMEROUS OTHER ACCIDENTS AND RELEASES

At least 3 other reactors suffered accidents:

- SNAP8ER—80% of nuclear fuel damaged
- SNAP8DR—35% of fuel damaged
- AE6—release of fission gases

Radioactive Fires at the Hot Lab

Releases from Plutonium Fuel Fabrication

Numerous Other Spills and Releases

SSFL NUCLEAR WORK OCCURRED OVER FOUR DECADES

Nuclear Area at Santa Susana Field Laboratory

Over 30,000 rocket engine tests took place over five decades.

Extremely Toxic Chemicals Were Released in the Rocket Work

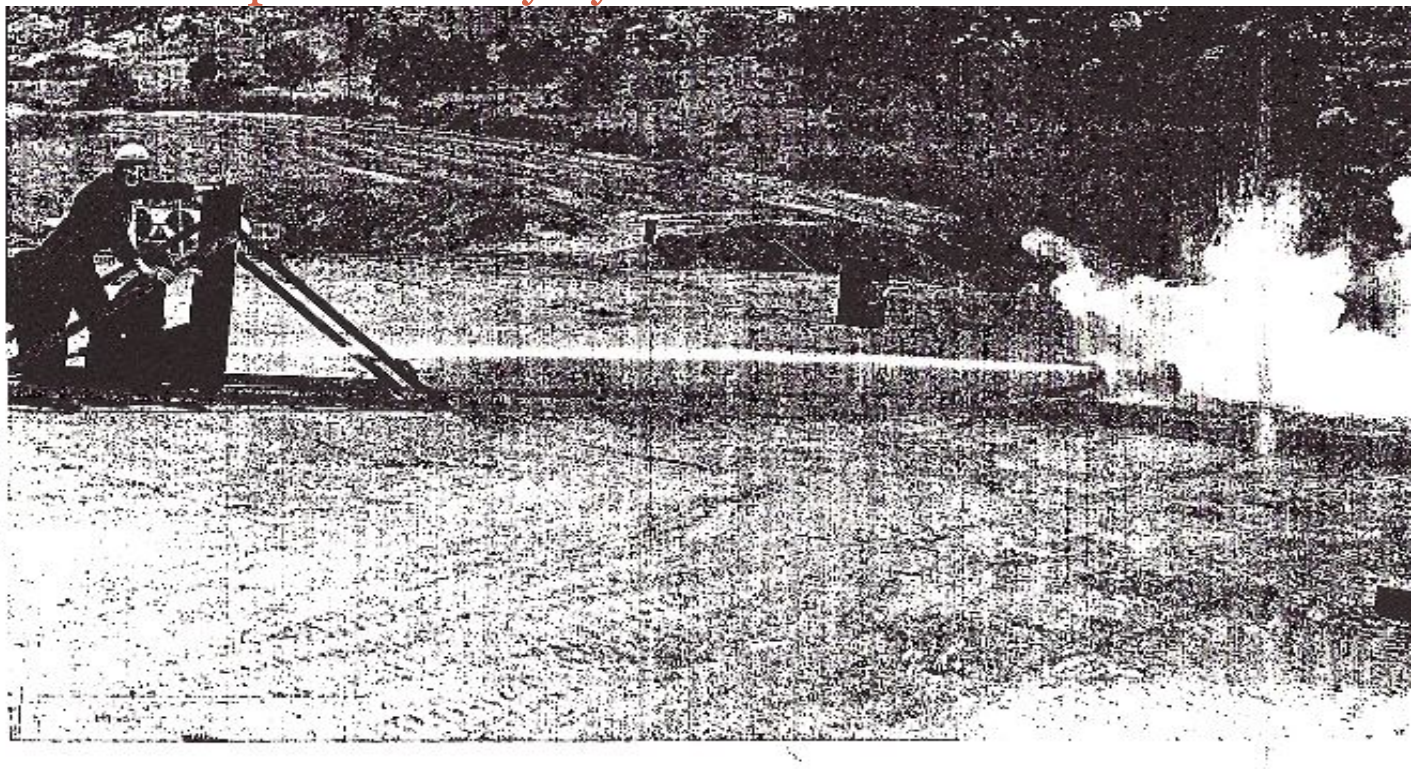
For example, 1 million gallons of TCE were used to flush rocket engines after tests, and then to percolate into the ground and groundwater. It is dangerous in parts per billion. The TCE plume has migrated offsite.

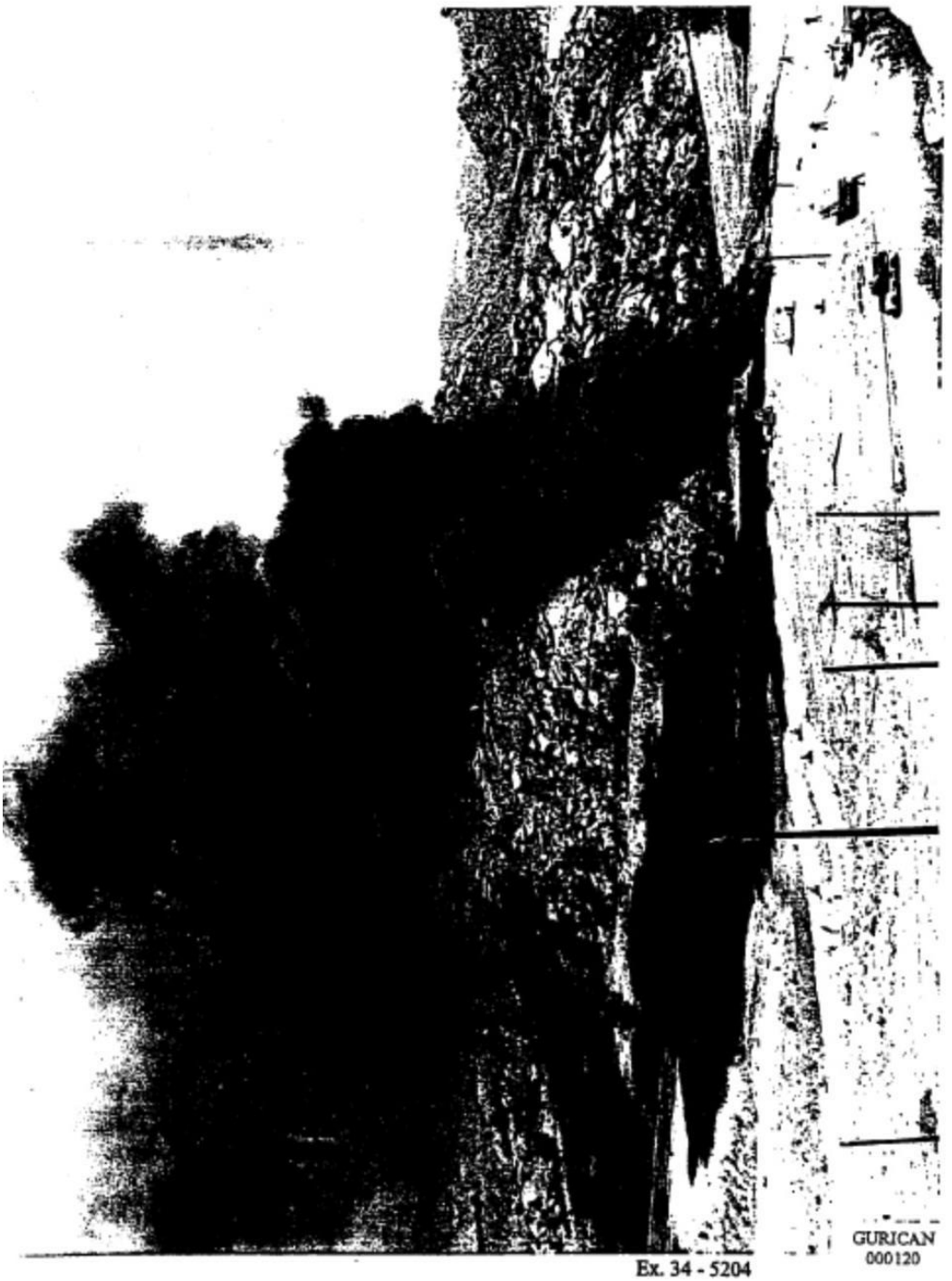
Tons of perchlorate, a component of solid rocket fuels, were used. A state-funded study by Dr. Ali Tabidian found it had apparently migrated offsite and into the Arroyo Simi, infiltrating into groundwater and contaminating numerous wells. Perchlorate's maximum level in water is also measured in parts per billion.

HISTORY OF IMPROPER DISPOSAL OF HAZARDOUS MATERIALS

- Radioactive and chemical materials burned in Area IV sodium burn pit against rules for decades
- Rocketdyne cited for unpermitted burning of hazardous materials in Area I
- In mid-1990s two workers were killed in an explosion caused by illegal disposal of hazardous materials. FBI raided SSFL and US Attorney charged Rocketdyne with 3 felonies, largest environmental fine at the time.

Workers “disposed” of highly toxic waste in barrels by shooting at them, causing them to explode and release contents into the environment, with the contaminants spread widely by toxic smoke.





GURICAN
000120

Ex. 34 - 5204

SSFL Contaminants of Concern

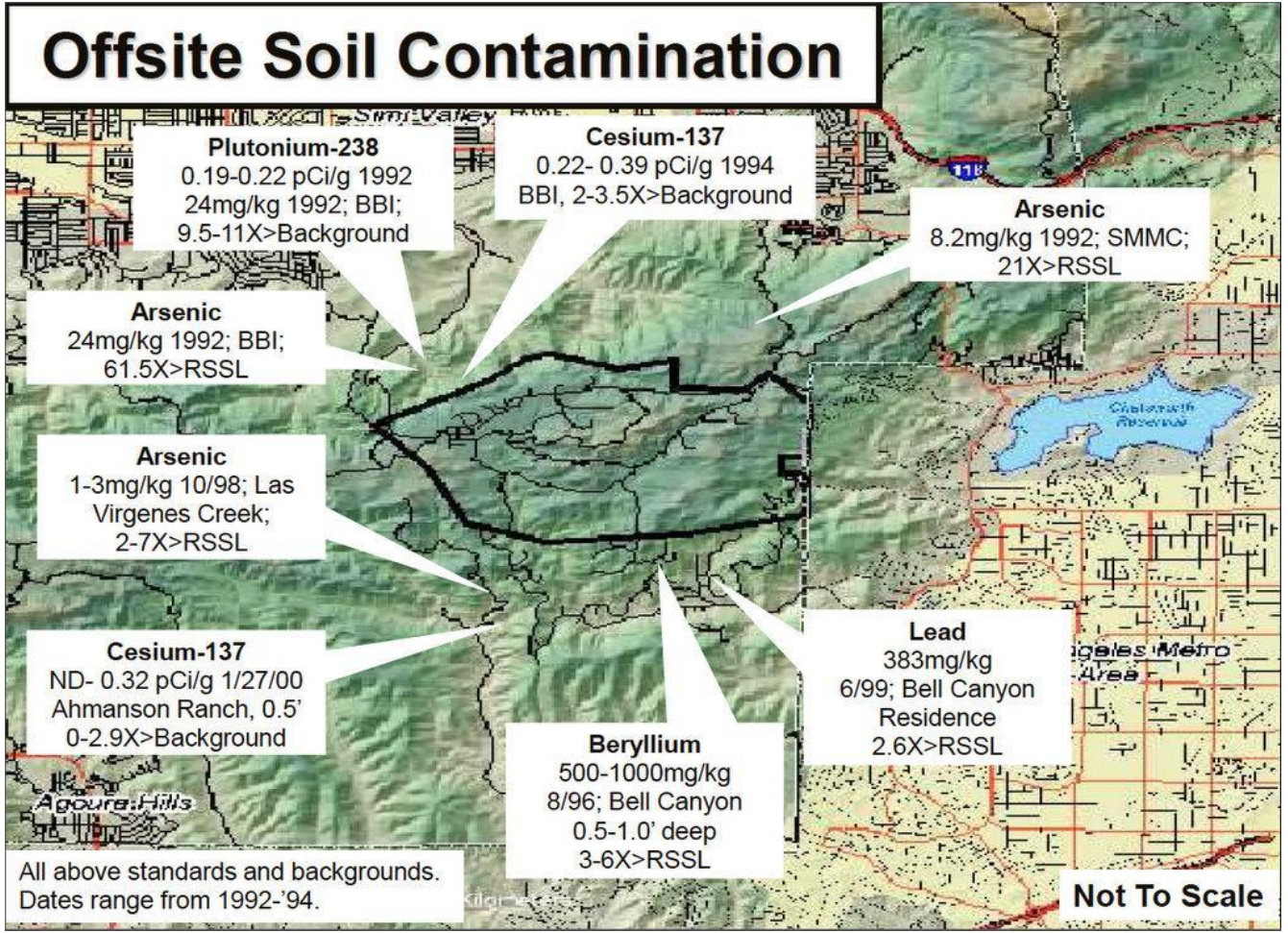
Radionuclides: cesium-137, strontium-90, plutonium-239, tritium, among other radioactive materials. In 2012, the EPA found radiation in hundreds of samples at SSFL, in some places over 1,000 times background. The National Academy of Scientists has concluded there is no safe level of exposure to radiation.

Chemicals: TCE, perchlorate, dioxins, heavy metals, PCBs, and various other volatile and semi-volatile organics. Many are regulated at a few parts per billion (ppb), yet there are very large quantities present in the soil at SSFL. SSFL disposed of tons of perchlorate in open-air burn pits which polluted soil, groundwater and surface water. At SSFL, 500,000 gallons of TCE are estimated to be in the soil column and aquifer.

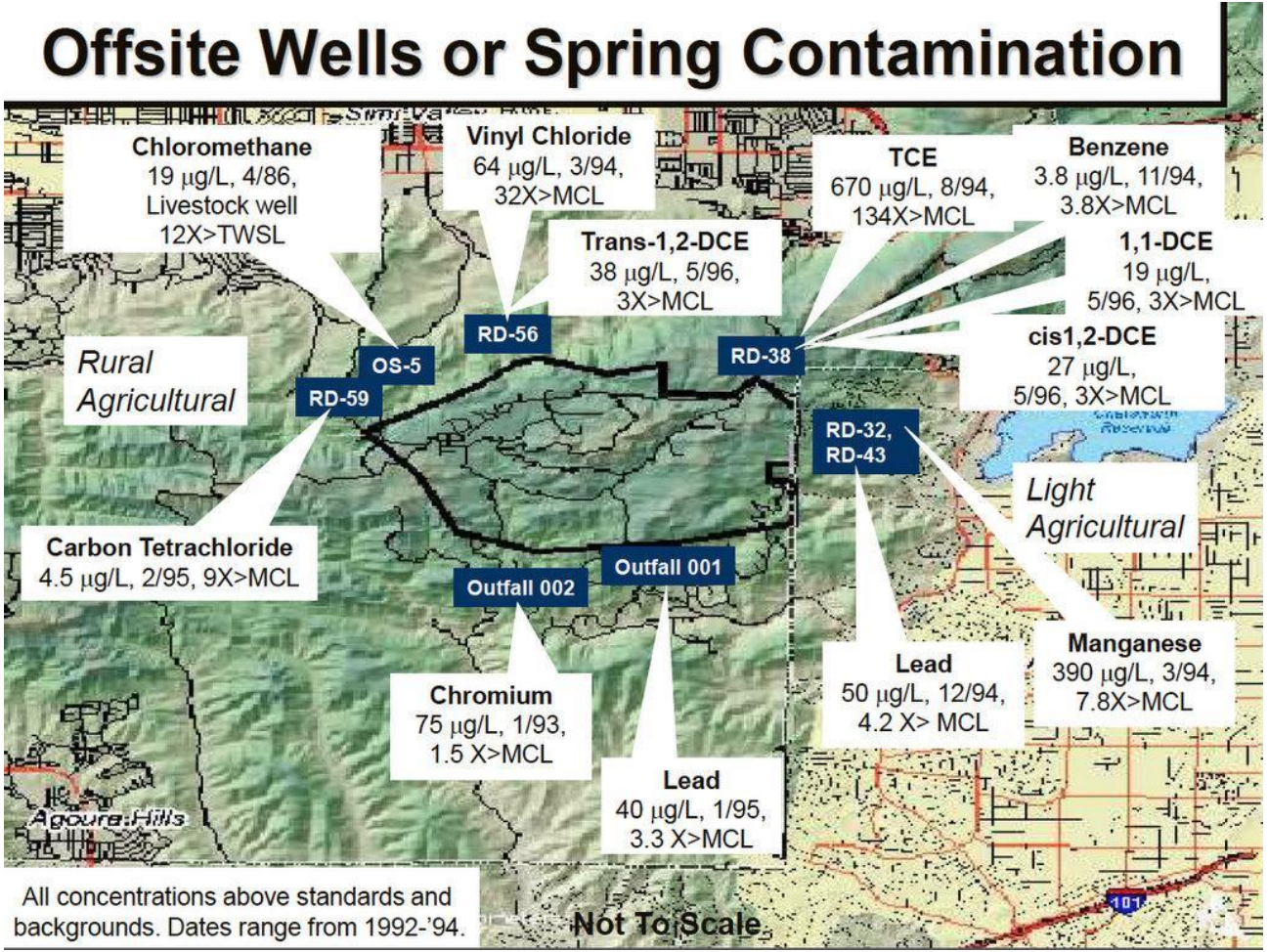
Radionuclide	Health/Environmental Effects
Tritium	Linked to developmental problems, reproductive problems, genetic abnormalities.
Radium	Lymphoma, bone cancer, leukemia, aplastsicanemia linked with inhalation. Other cancers with external exposure.
Technetium-99	Cancer linked to ingestion (contaminated food and water).
Iodine-131	Linked to thyroid malfunction/cancer. Combines with soil and organic materials easily.
Cesium-137	Can cause cancer 10 – 30 years after ingestion, inhalation, or absorption. Moves easily in environment, difficult to clean up.
Strontium-90	Chemically similar to calcium. Can cause bone cancer, cancer near bones, and leukemia.
Plutonium	Contaminant in dust. Extreme risk of cancers, kidney damage. Can stay in the body for decades.

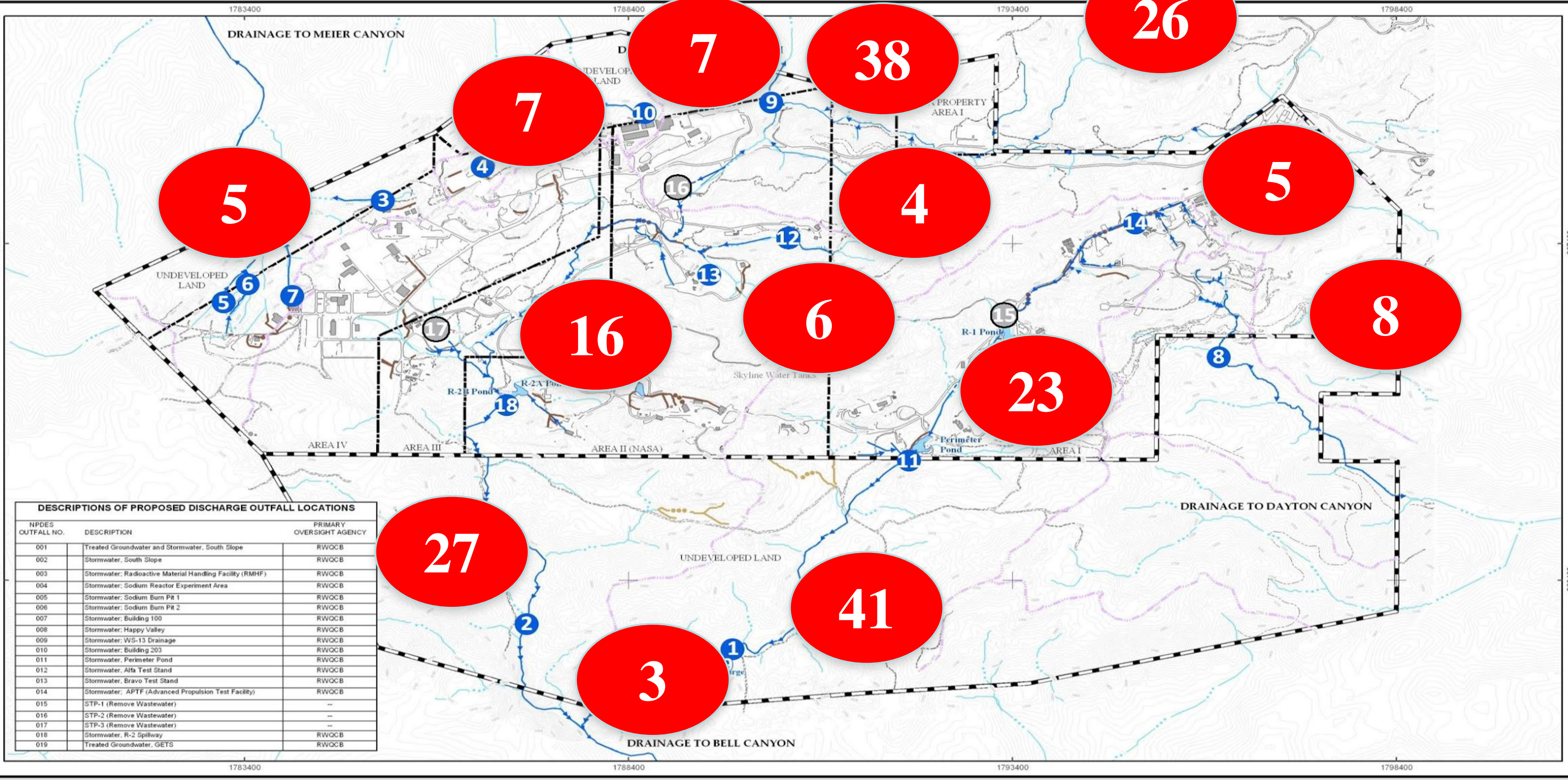
Chemical	Health/Environmental Effects
TCE	Impaired immune system function, damage liver and kidney, impaired fetal development. In larger amounts it may cause impaired heart function, unconsciousness and death
Perchlorate	Interferes with iodide uptake into the thyroid gland, causing hypothyroidism in mothers and negatively impacting proper childhood development such as decreased learning capability.
Dioxins	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
Lead	Linked with learning disabilities, infertility, cancer, and increased risk of heart attacks

Offsite Soil Contamination



Offsite Wells or Spring Contamination





DESCRIPTIONS OF PROPOSED DISCHARGE OUTFALL LOCATIONS

NPDES OUTFALL NO.	DESCRIPTION	PRIMARY OVERSIGHT AGENCY
001	Treated Groundwater and Stormwater, South Slope	RWQCB
002	Stormwater, South Slope	RWQCB
003	Stormwater; Radioactive Material Handling Facility (RMHF)	RWQCB
004	Stormwater; Sodium Reactor Experiment Area	RWQCB
005	Stormwater; Sodium Burn Pit 1	RWQCB
006	Stormwater; Sodium Burn Pit 2	RWQCB
007	Stormwater; Building 100	RWQCB
008	Stormwater; Happy Valley	RWQCB
009	Stormwater; WS-13 Drainage	RWQCB
010	Stormwater; Building 203	RWQCB
011	Stormwater, Perimeter Pond	RWQCB
012	Stormwater, Alfa Test Stand	RWQCB
013	Stormwater, Bravo Test Stand	RWQCB
014	Stormwater; APTF (Advanced Propulsion Test Facility)	RWQCB
015	STP-1 (Remove Wastewater)	--
016	STP-2 (Remove Wastewater)	--
017	STP-3 (Remove Wastewater)	--
018	Stormwater, R-2 Spillway	RWQCB
019	Treated Groundwater, GETS	RWQCB

0 500 1,000 2,000 Feet

MAP COORDINATES IN STATE PLANE, NAD 27, ZONE V

NPDES Outfalls
Historical NPDES Outfalls
Groundwater Extraction Treatment System (GETS)
Exceedances per outfall

Legend
Effluent Pathways
Surface Water Drainage Divide
Natural Drainage
Concrete Lined Drainage
Graded Drainage
Surface Water Reclamation Ponds

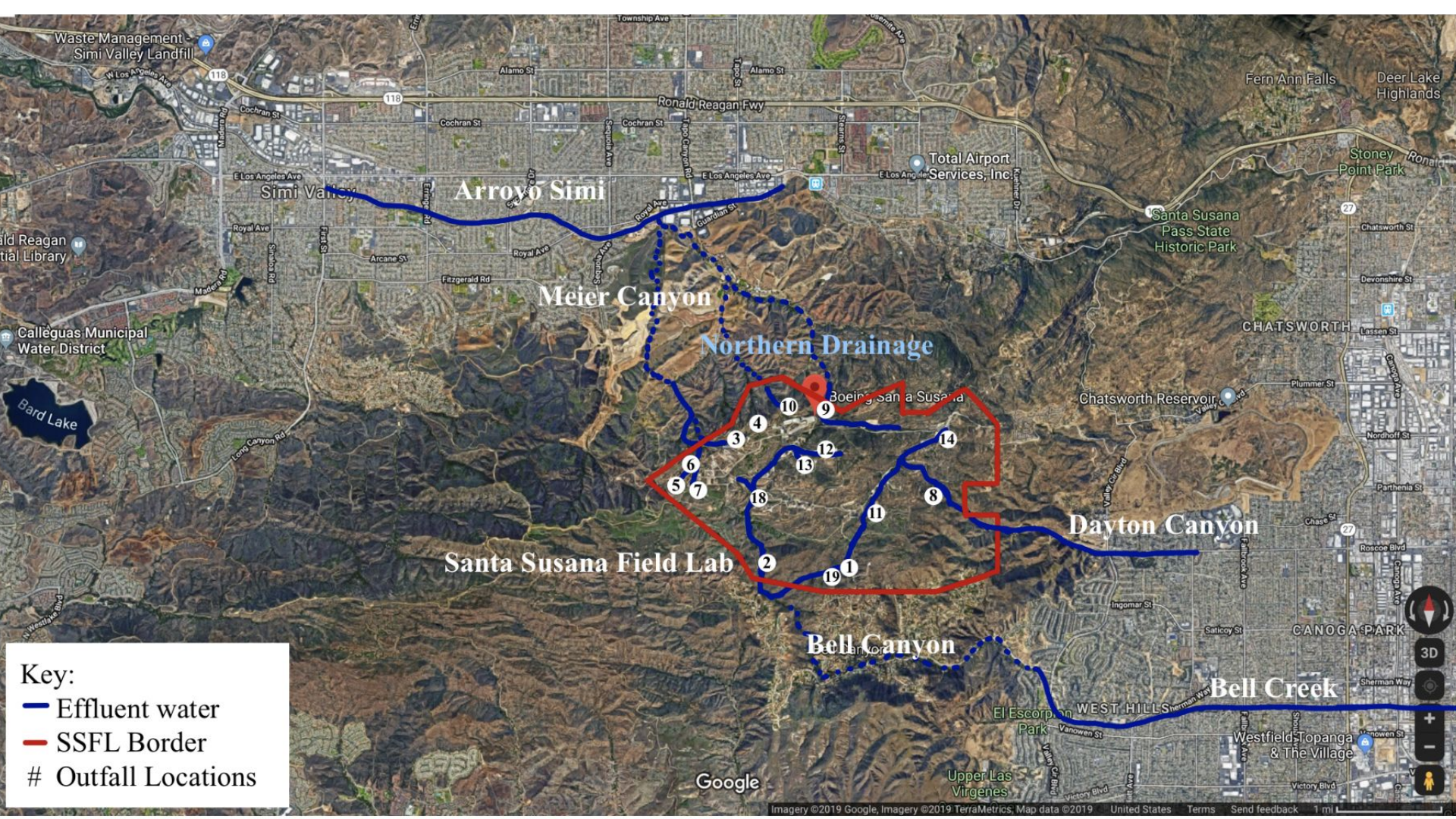
Base Map Legend
SSFL Property Boundary
Administrative Area Boundary
Ground Elevation Contours
Drainage Pathways
A/C Curbing
Dirt Road
Existing Building or Structure

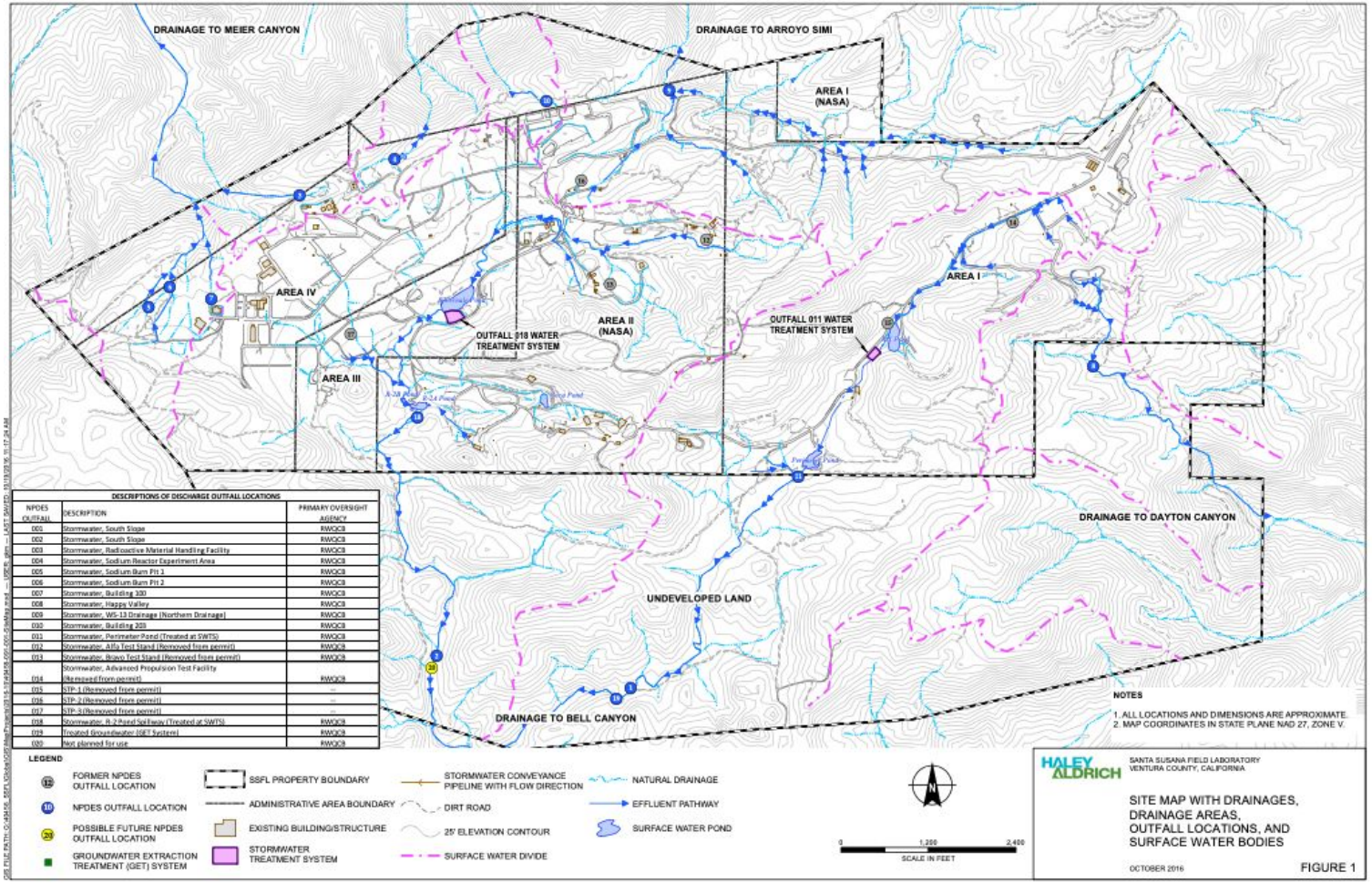
Site Map with Outfall Locations and Storm Water Drainage Systems

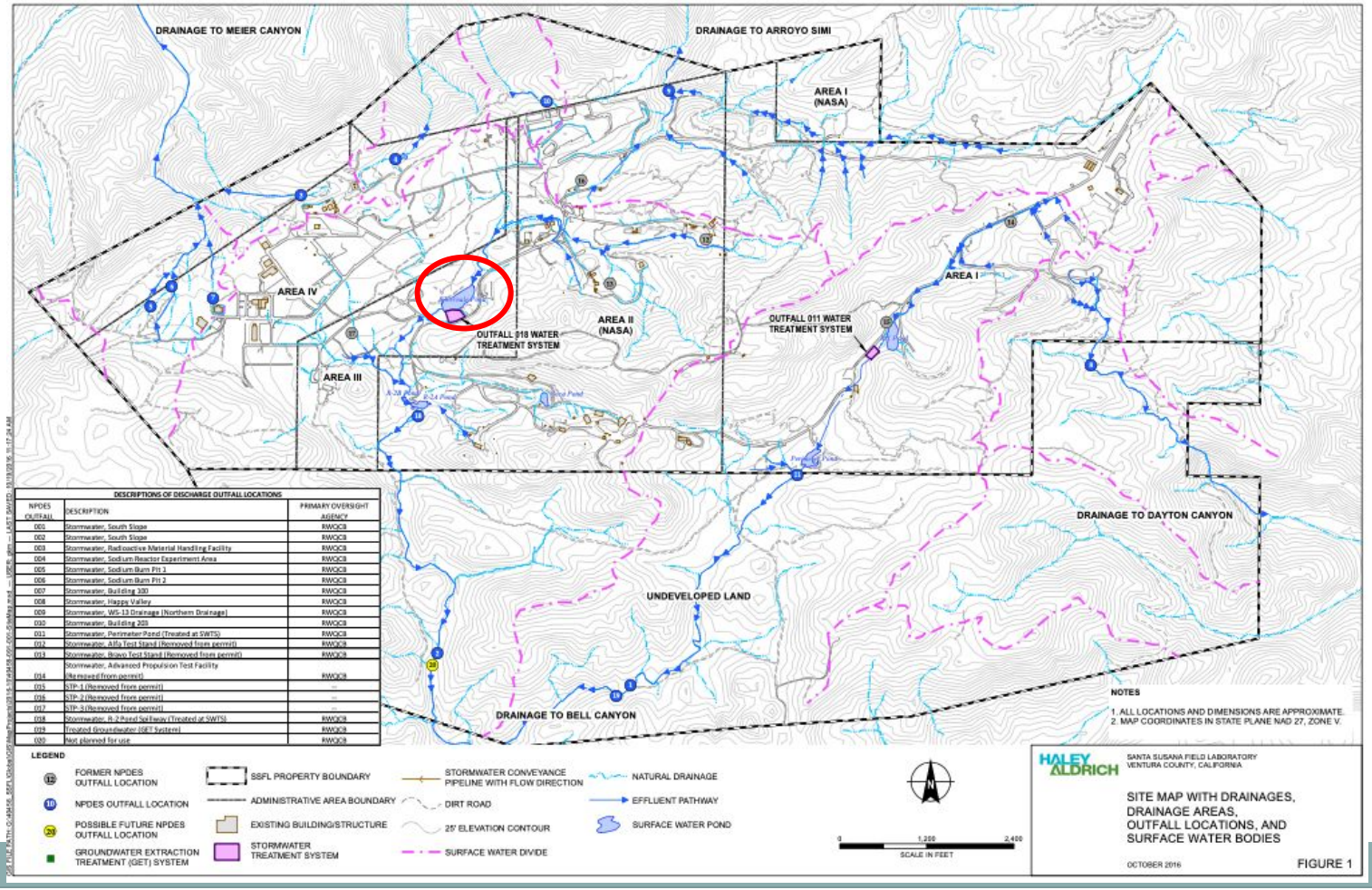
Date: April 12, 2010
File: \\Uspasfnetapp1\dei\rocketdyne gis\MasterGISFiles SiteWideProjects\NPDES\NPDES_StorageWaterDrainage.mxd

MWH

FIGURE 2


Arroyo Simi
Meier Canyon
Northern Drainage
Santa Susana Field Lab
Dayton Canyon
Bell Canyon
Bell Creek
Key:
Effluent water
SSFL Border
Outfall Locations


DRAINAGE TO MEIER CANYON
DRAINAGE TO ARROYO SIMI
AREA I (NASA)
AREA IV
AREA II (NASA)
AREA III
AREA I
OUTFALL 018 WATER TREATMENT SYSTEM
OUTFALL 011 WATER TREATMENT SYSTEM
DRAINAGE TO DAYTON CANYON
UNDEVELOPED LAND
DRAINAGE TO BELL CANYON
DESCRIPTIONS OF DISCHARGE OUTFALL LOCATIONS
NPDES OUTFALL
DESCRIPTION
PRIMARY OVERSIGHT AGENCY
001 Stormwater, South Slope RWQCB
002 Stormwater, South Slope RWQCB
003 Stormwater, Radioactive Material Handling Facility RWQCB
004 Stormwater, Sodium Reactor Experiment Area RWQCB
005 Stormwater, Sodium Burn Pit 1 RWQCB
006 Stormwater, Sodium Burn Pit 2 RWQCB
007 Stormwater, Building 100 RWQCB
008 Stormwater, Happy Valley RWQCB
009 Stormwater, WS-13 Drainage (Northern Drainage) RWQCB
010 Stormwater, Building 203 RWQCB
011 Stormwater, Perimeter Pond (Treated at SWTS) RWQCB
012 Stormwater, Alfa Test Stand (Removed from permit) RWQCB
013 Stormwater, Bravo Test Stand (Removed from permit) RWQCB
014 Stormwater, Advanced Propulsion Test Facility (Removed from permit) RWQCB
015 STP-1 (Removed from permit) --
016 STP-2 (Removed from permit) --
017 STP-3 (Removed from permit) --
018 Stormwater, R-2 Pond Spillway (Treated at SWTS) RWQCB
019 Treated Groundwater (GET System) RWQCB
020 Not planned for use RWQCB
LEGEND
FORMER NPDES OUTFALL LOCATION
NPDES OUTFALL LOCATION
POSSIBLE FUTURE NPDES OUTFALL LOCATION
GROUNDWATER EXTRACTION TREATMENT (GET) SYSTEM
SSFL PROPERTY BOUNDARY
ADMINISTRATIVE AREA BOUNDARY
EXISTING BUILDING/STRUCTURE
STORMWATER TREATMENT SYSTEM
STORMWATER CONVEYANCE PIPELINE WITH FLOW DIRECTION
DIRT ROAD
25' ELEVATION CONTOUR
SURFACE WATER DIVIDE
NATURAL DRAINAGE
EFFLUENT PATHWAY
SURFACE WATER POND
0 1,200 2,400
SCALE IN FEET
NOTES
1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. MAP COORDINATES IN STATE PLANE NAD 27, ZONE V.
HALEY ALDRICH
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
SITE MAP WITH DRAINAGES, DRAINAGE AREAS, OUTFALL LOCATIONS, AND SURFACE WATER BODIES
OCTOBER 2016
FIGURE 1


DRAINAGE TO MEIER CANYON
DRAINAGE TO ARROYO SIMI
AREA I (NASA)
AREA I
AREA II (NASA)
AREA III
AREA IV
OUTFALL 018 WATER TREATMENT SYSTEM
OUTFALL 011 WATER TREATMENT SYSTEM
DRAINAGE TO DAYTON CANYON
UNDEVELOPED LAND
DRAINAGE TO BELL CANYON
DESCRIPTIONS OF DISCHARGE OUTFALL LOCATIONS
NPDES OUTFALL
DESCRIPTION
PRIMARY OVERSIGHT AGENCY
001 Stormwater, South Slope RWQCB
002 Stormwater, South Slope RWQCB
003 Stormwater, Radioactive Material Handling Facility RWQCB
004 Stormwater, Sodium Reactor Experiment Area RWQCB
005 Stormwater, Sodium Burn Pit 1 RWQCB
006 Stormwater, Sodium Burn Pit 2 RWQCB
007 Stormwater, Building 100 RWQCB
008 Stormwater, Happy Valley RWQCB
009 Stormwater, WS-13 Drainage (Northern Drainage) RWQCB
010 Stormwater, Building 205 RWQCB
011 Stormwater, Perimeter Pond (Treated at SWTS) RWQCB
012 Stormwater, Alfa Test Stand (Removed from permit) RWQCB
013 Stormwater, Bravo Test Stand (Removed from permit) RWQCB
014 Stormwater, Advanced Propulsion Test Facility (Removed from permit) RWQCB
015 STP-1 (Removed from permit) ---
016 STP-2 (Removed from permit) ---
017 STP-3 (Removed from permit) ---
018 Stormwater, R-2 Pond Spillway (Treated at SWTS) RWQCB
019 Treated Groundwater (GET System) RWQCB
020 Not planned for use RWQCB
NOTES
1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. MAP COORDINATES IN STATE PLANE NAD 27, ZONE V.
LEGEND
FORMER NPDES OUTFALL LOCATION
NPDES OUTFALL LOCATION
POSSIBLE FUTURE NPDES OUTFALL LOCATION
GROUNDWATER EXTRACTION TREATMENT (GET) SYSTEM
SSFL PROPERTY BOUNDARY
ADMINISTRATIVE AREA BOUNDARY
EXISTING BUILDING/STRUCTURE
STORMWATER TREATMENT SYSTEM
STORMWATER CONVEYANCE PIPELINE WITH FLOW DIRECTION
DIRT ROAD
25' ELEVATION CONTOUR
SURFACE WATER DIVIDE
NATURAL DRAINAGE
EFFLUENT PATHWAY
SURFACE WATER POND
0 1,200 2,400
SCALE IN FEET
HALEY ALDRICH
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
SITE MAP WITH DRAINAGES, DRAINAGE AREAS, OUTFALL LOCATIONS, AND SURFACE WATER BODIES
OCTOBER 2016
FIGURE 1

In 2015 Boeing released reports showing very high risk in some areas of the site and declaring that much of the property needed no further action. In one area, the report indicates 96 out of 100 people would get cancer (if they lived on the site), and after Boeing's proposed cleanup that number falls to only 5 in 10. Regardless of what becomes of SSFL, leaving that high of contamination on site presents a threat to nearby communities.

8.1.1.2 Garden Use

Another pathway evaluated for the hypothetical future suburban resident is the consumption of homegrown produce that has accumulated COPCs from soil. In accordance with the SRAM Rev. 2 Addendum, only the 0-to-2-foot-bgs soil interval is considered for this scenario. The site risk calculation results for the homegrown produce exposure pathway are provided in Table E1-5. The risk calculation table for background soil is provided in Table E1-6.

For the homegrown produce consumption pathway, the total site ELCR is >9 x 10^{-1} and the incremental risk is 9 x 10^{-1}, which is above the USEPA target risk range of 1 x 10^{-6} to 1 x 10^{-4} and exceeds the DTSC point of departure of 1 x 10^{-6}. The main contributors to the site soil ELCR are MMH (92 percent contribution; 9 x 10^{-1} risk); arsenic (7 percent contribution; 7 x 10^{-2} risk); and carcinogenic polycyclic aromatic hydrocarbons (1 percent contribution; 7 x 10^{-3} risk). Risks also exceeded 1 x 10^{-6} for n-Nitrosodimethylamine (2 x 10^{-3} risk); 2,3,7,8-TCDD TEQ (6 x 10^{-4} risk); hexavalent chromium (5 x 10^{-4} risk); Aroclor-1254 (3 x 10^{-4} risk); Aroclor-

Boeing's Own Risk Estimates

Source: RCRA Facility Investigation Data Summary and Findings Report Systems Test Laboratory IV RFI Site Boeing RFI Subarea 5/9 South, Santa Susana Field Laboratory, Ventura County, California

BOEING'S OWN RISK ESTIMATES IF A PERSON LIVED AT SSFL

- An astonishing 96 people out of a 100 exposed, at the Systems Test Lab IV, would get a cancer from the contamination on site.
- Every third person exposed at the Environmental Effects Lab would get a cancer from the contamination on site.
- Every fifth person exposed at Happy Valley North would get a cancer from the contamination on site.
- Every tenth person exposed at Compound A site would get a cancer from the contamination on site.

PEDIATRIC CANCERS NEAR SSFL

Children show map of pediatric cancers near SSFL at Feb. 21, 2017 Dept. of Energy meeting

SSFL HEALTH STUDIES

- 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.

- Independent federally-funded studies found increased incidence of key cancers in the offsite population associated with proximity to SSFL, and that SSFL contamination has migrated offsite at concentrations above EPA levels of concern.

"For the period 1988 through 1995, we found that the incidence of cancer was more than 60% greater among residents living with 2 miles of SSFL than among residents living more than 5 miles for the following types of cancer: thyroid, upper aerodigestive tract, bladder, and blood and lymph tissue."

Professor Hal Morgenstern

BREAKTHROUGH: 2010 SSFL Cleanup Agreements

In 2010, administrative orders on consent (AOCs) were signed between the state department of toxic substances control (DTSC) and the department of energy (DOE) and NASA to clean up their respective portions of the property to background--i.E. Restore it to the condition it was in before being contaminated.

DTSC said that it would also require a comparable level of cleanup for boeing, based on local government's land use designations.

SSFL CLEANUP AGREEMENTS

It was Dr. Steven Chu, the Nobel Prize-winning physicist Secretary of Energy and the Assistant Secretary, Inez Triay, who proposed the agreement to clean up SSFL to background levels.

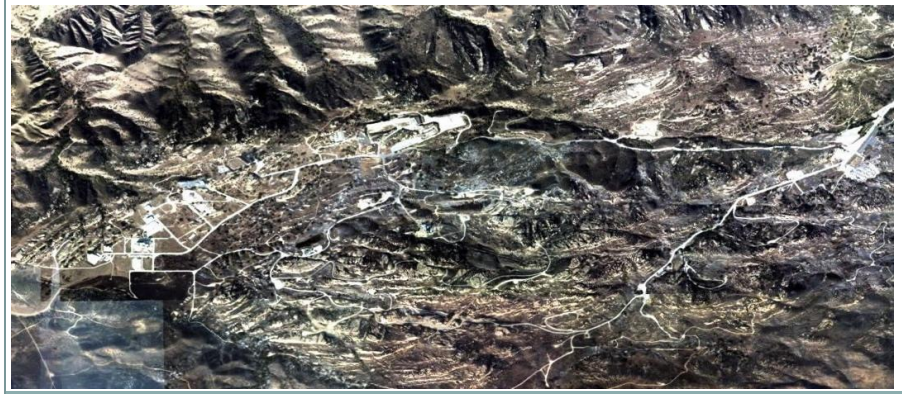
KEY ASPECTS OF THE 2010 CLEANUP AGREEMENTS

- Requires Soil Cleanup to Local Background
- Soil Defined as Including Dirt, Structures, Debris, and Anthropogenic Materials
- No “Leave in Place” Alternatives Allowed
- All Waste With Radioactivity Above Background Must Be Disposed of in Licensed LLRW Disposal Sites
- Narrowly limited exceptions to cleanup requirements
- CLEANUP TO BE COMPLETED BY 2017

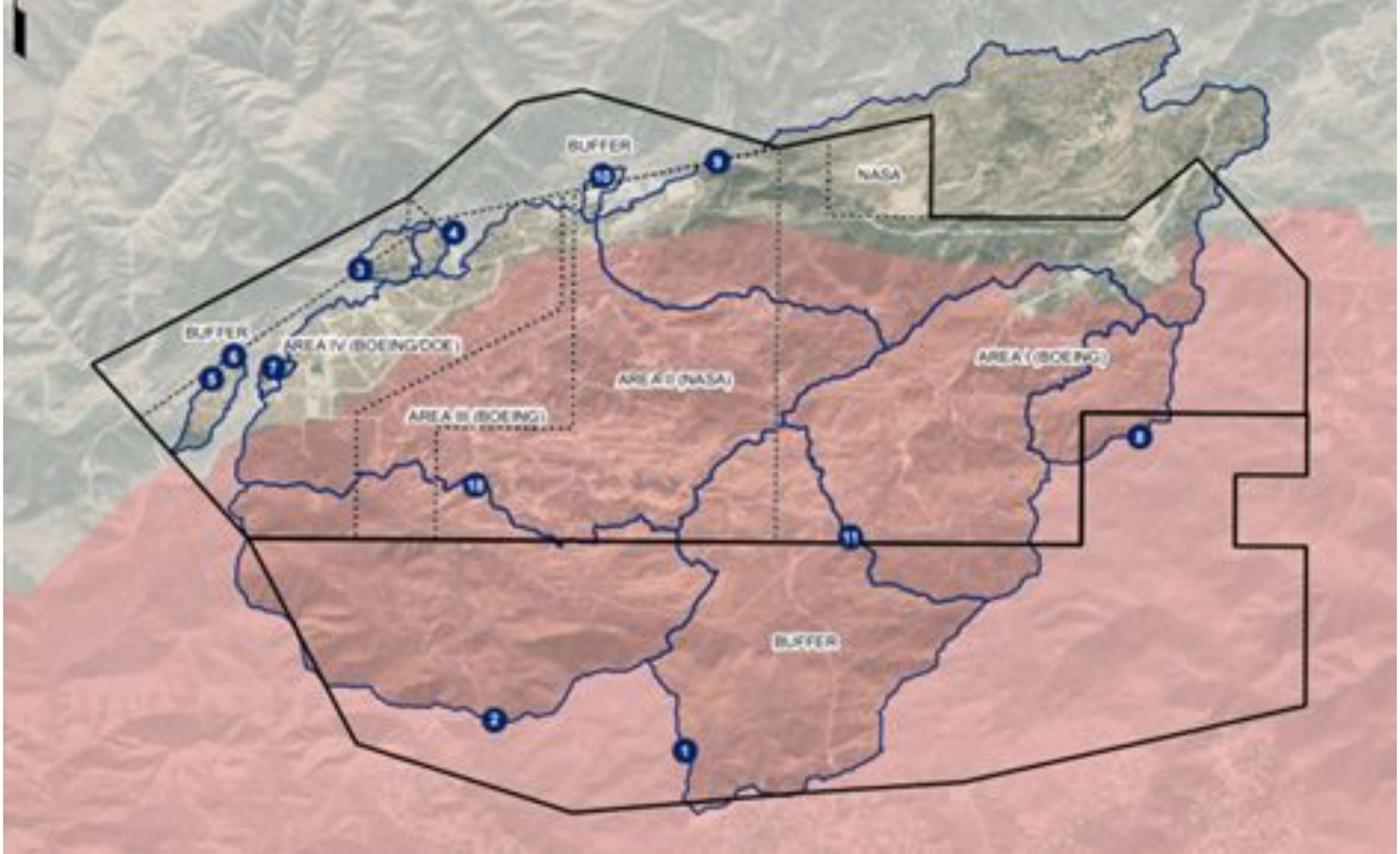
Despite the requirement for full cleanup by 2017, it is 2020 and the promised soil cleanup hasn’t even begun.

This is consistent with Boeing's conduct that led to the hundreds of deaths from its 737 Max airplanes: putting its profits above public safety, and fighting against regulation by agencies that would require it to act to protect public safety.

WOOLSEY FIRE AT SSFL NOV. 8 2018



If the SSFL Contamination Had Been Cleaned Up As Promised by 2017, There Wouldn't Have Been Concern that the 2018 Woolsey Fire That Began at SSFL Could Have Spread Contamination.


BUFFER
NASA
BUFFER
AREA IV (BOEING/DOE)
AREA I (NASA)
AREA III (BOEING)
AREA II (BOEING)
BUFFER

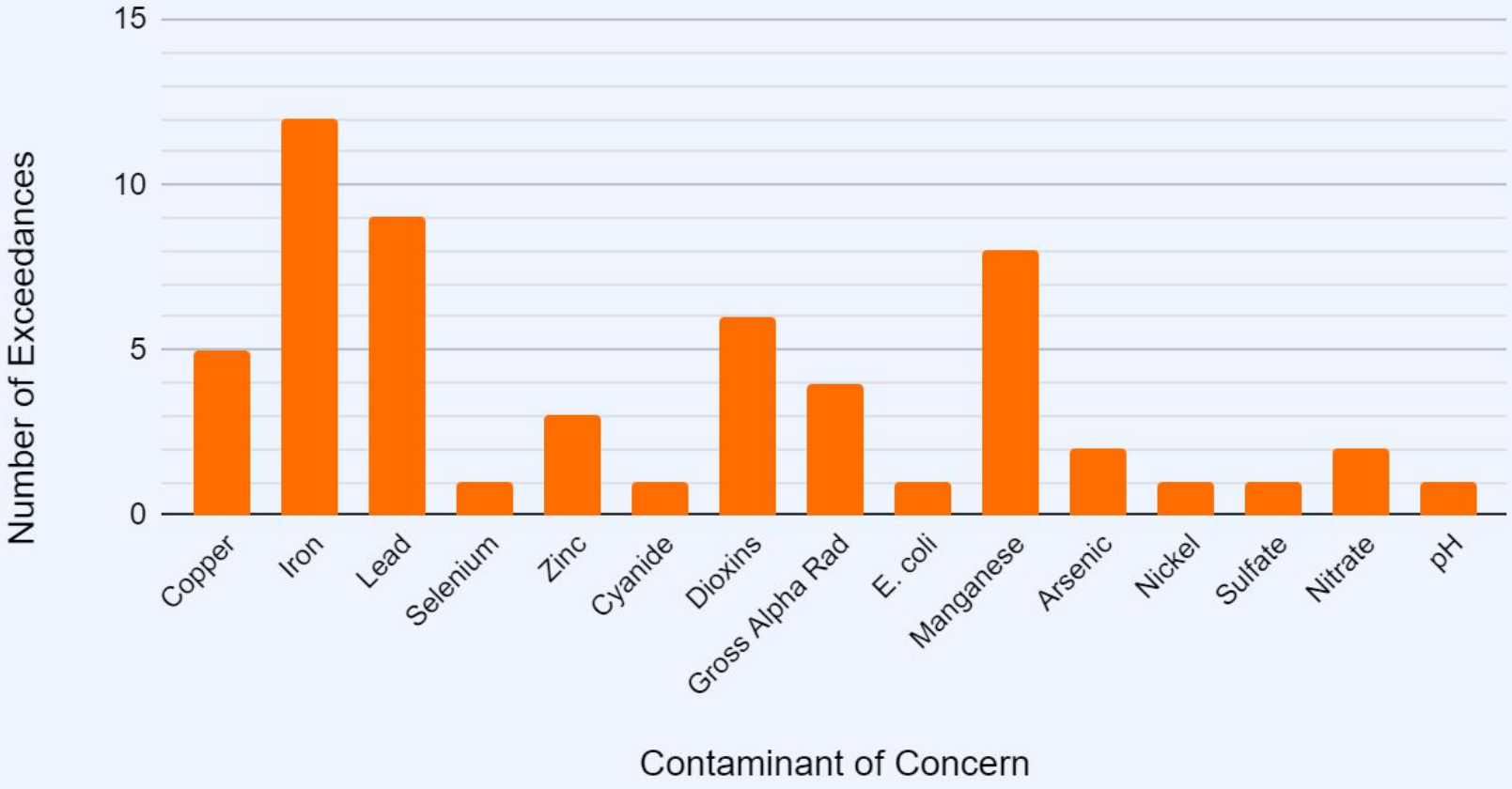

Woolsey Fire Damage Assessment
Ventura County Sheriff - Office of Emergency Services
0
2
4mi


Simon

There were, however, **57 exceedances** of pollution limits in surface water leaving SSFL in the period after and attributed to the Woolsey Fire

Number of Reported Exceedances per Contaminant

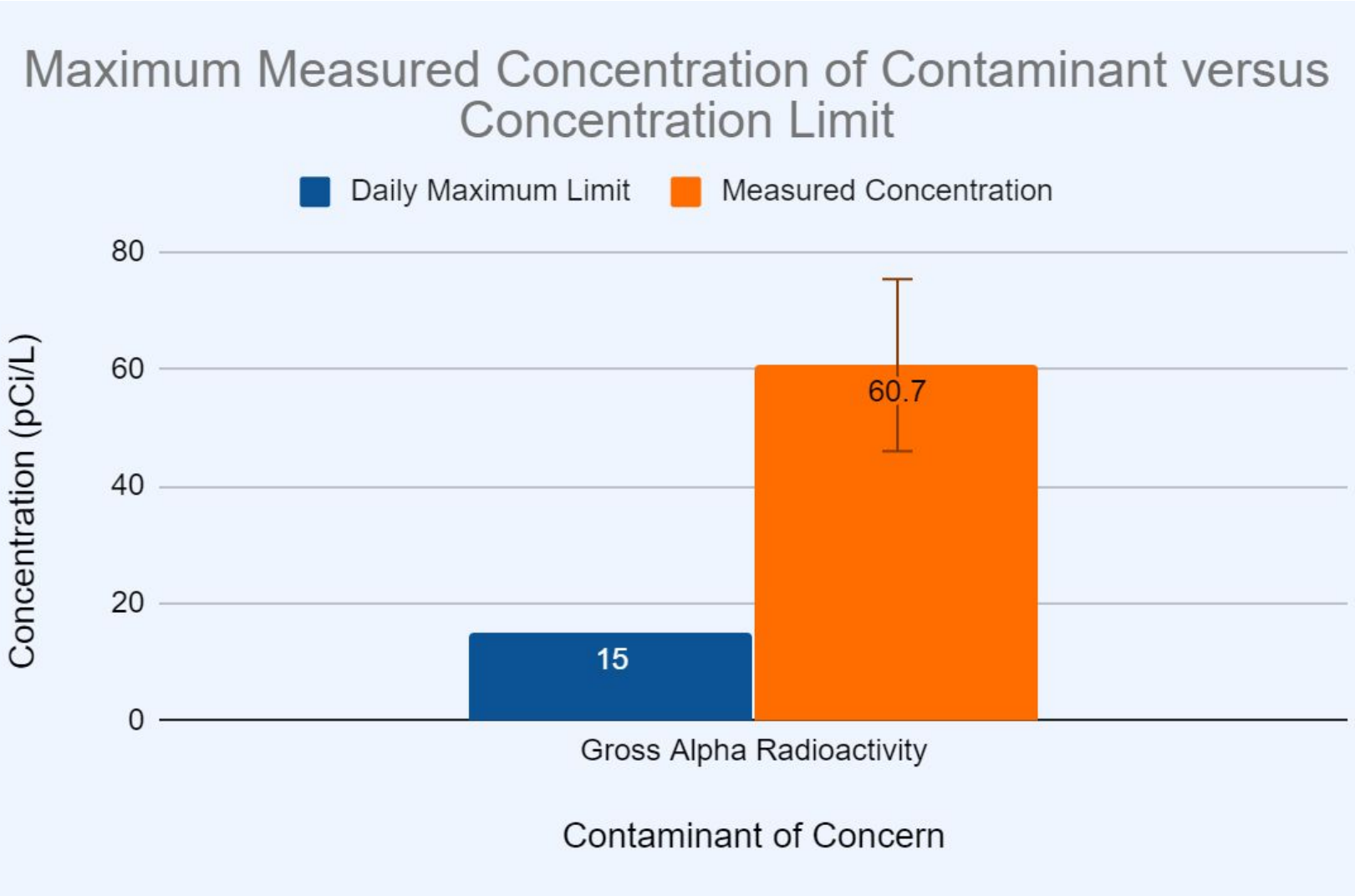
Data collection period: December 2018 - March 2019

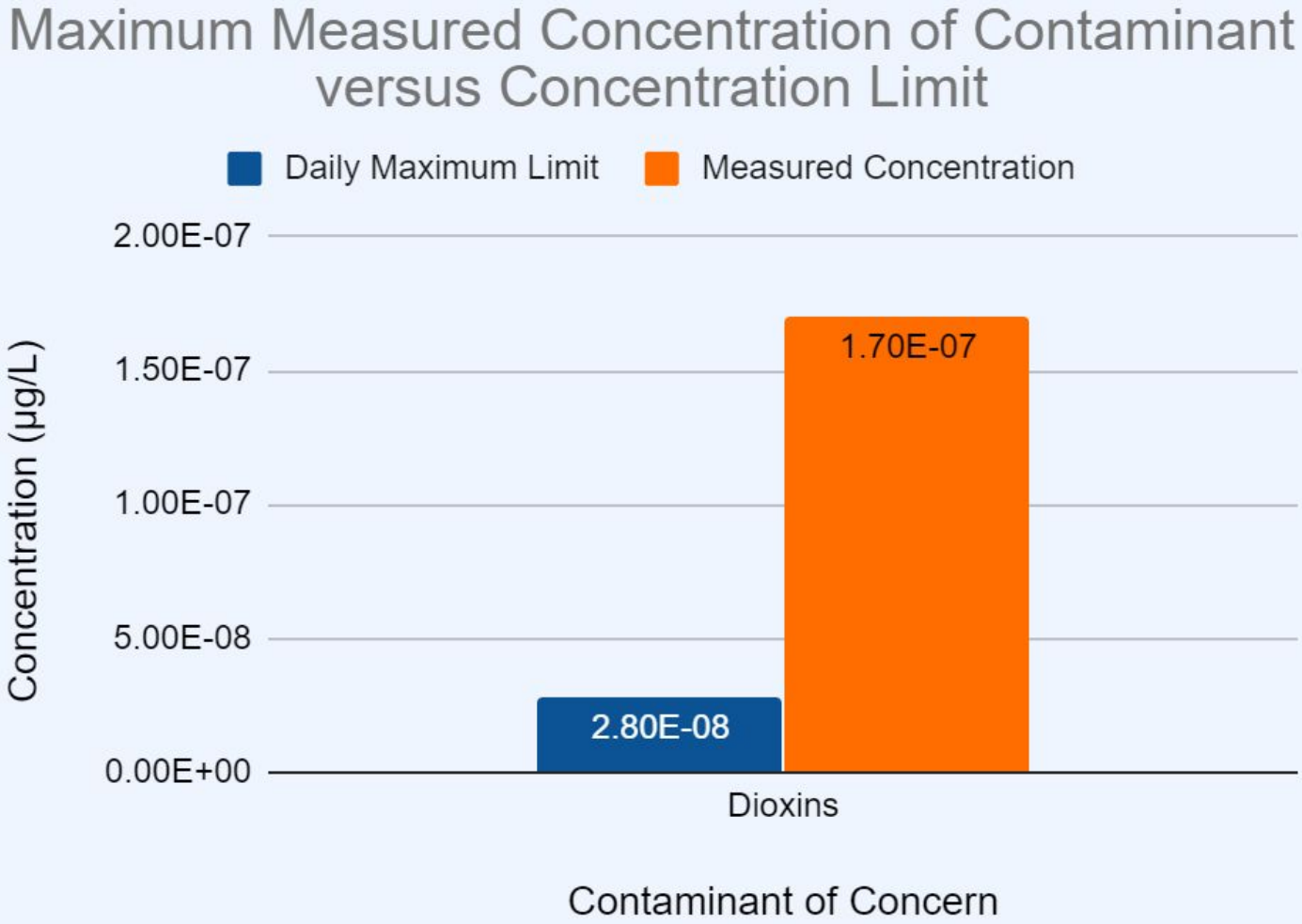


The Contaminants Detected Above Permit Limits/Benchmarks Were:

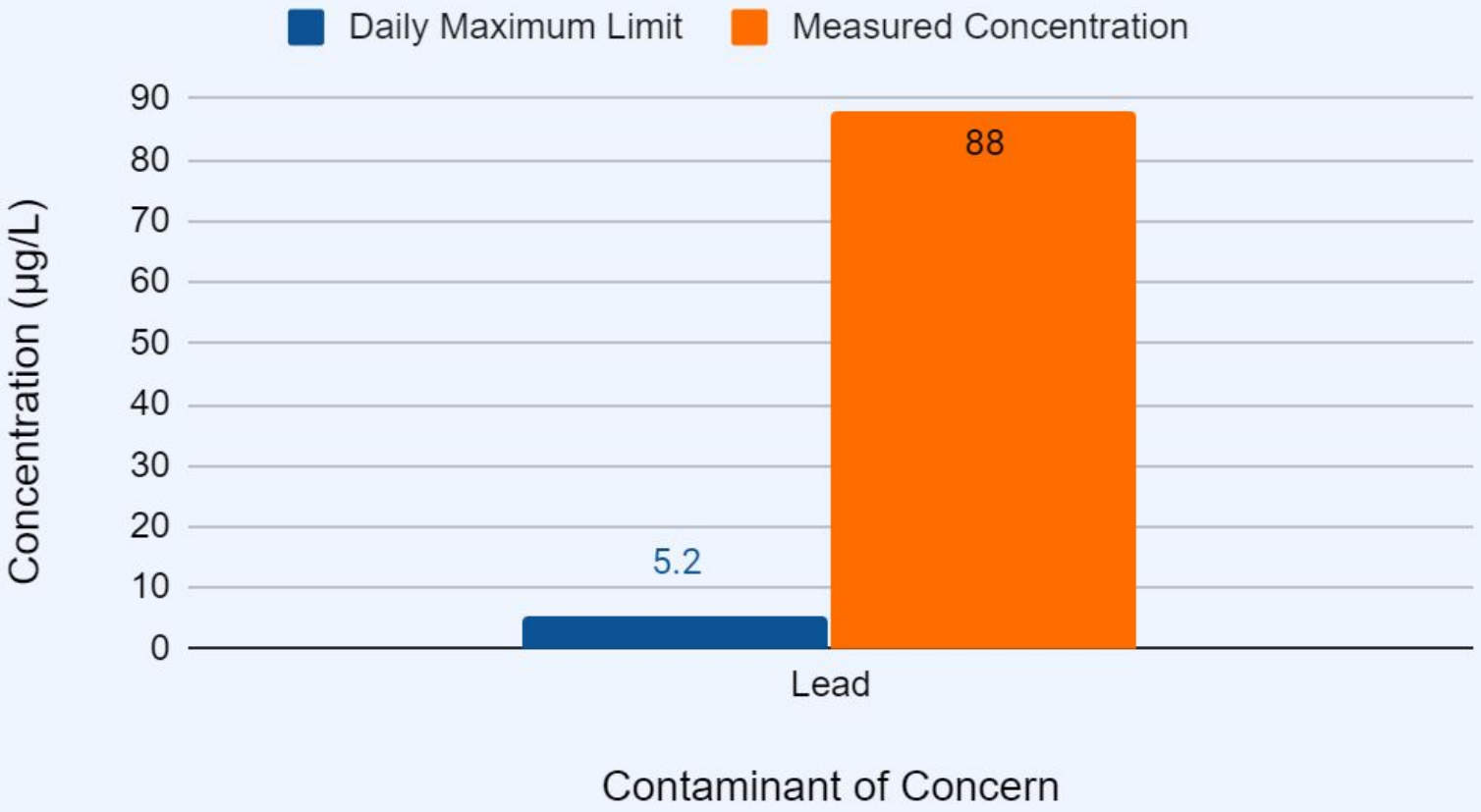
- Copper
- Iron
- Lead
- Selenium
- Zinc
- Cyanide
- Dioxins (TCDD TEQ)
- Gross Alpha Radioactivity
- E. Coli
- Manganese
- Arsenic
- Nickel
- Sulfate
- Nitrate

Contaminant	Regional Water Quality Control Board Limit	Reported Exceedance Value	How much larger was the exceedance than the limit?
Copper	14 µg/L	52 µg/L	**4 times the limit**
Iron	0.3 mg/L	98 mg/L	**327 times the limit**
Lead	5.2 mg/L	88 mg/L	**17 times the limit**
Selenium	8.2 µg/L	11 µg/L	**1.3 times the limit**
Zinc	119 µg/L	430 µg/L	**4 times the limit**
Cyanide	9.5 µg/L	15 µg/L	**1.6 times the limit**
Dioxins	2.8E-08 µg/L	1.7E-07 µg/L	**6 times the limit**
Gross Alpha	15 pCi/L	60.7±14.7 pCi/L	**4 times the limit**
E. Coli	235 MPN/100mL	5,300 MPN/100mL	**23 times the limit**
Manganese	50 µg/L	920 µg/L	**18 times the limit**
Arsenic	10.0 µg/L	17 µg/L	**1.7 times the limit**
Nickel	86 µg/L	170 µg/L	**2 times the limit**


Maximum Measured Concentration of Contaminant versus Concentration Limit
Daily Maximum Limit
Measured Concentration
80
60
40
20
0
Concentration (pCi/L)
60.7
15
Gross Alpha Radioactivity
Contaminant of Concern


Maximum Measured Concentration of Contaminant versus Concentration Limit
Daily Maximum Limit
Measured Concentration
2.00E-07
1.50E-07
1.00E-07
5.00E-08
0.00E+00
Concentration (µg/L)
2.80E-08
1.70E-07
Dioxins
Contaminant of Concern

Maximum Measured Concentration of Contaminants versus Concentration Limits



SSFL CONTAMINATION LEAKS OFFSITE AND WILL CONTINUE TO DO SO UNTIL CLEANED UP

Although exceedances of pollution limits increased markedly after the Woolsey Fire, SSFL contamination has migrated offsite for years--approximately 350 exceedances over the previous decade.

Until SSFL is fully cleaned up, as required by the cleanup agreements executed by the parties responsible for the contamination, there there will be continuing risk of contaminants migrating offsite.

Conclusions

There are two alternative versions of the Golden Rule. We must choose by which one we live our professional and personal lives.

One protects those with the gold.

The other protects the Graces and Hazels of this world.

May we choose well.


Team Grace Ellen
#ninjaprincess
55109


Hope for Hazel


H
Hazel Hammersley
January 25, 2011 - March 30, 2018
"Nothing can stick us apart, 'cause we always stick together" - Our Little Hazelnut

Source:

Comment 3

(as numbered by Staff Response to Comments; refers to Comment 1 as numbered in our comment letter)

90% of the contaminants that Boeing and DTSC have identified as detected at SSFL are exempt from any limits whatsoever in the Tentative Permit. Boeing and DTSC identified ~314 contaminants at SSFL;[1] the permit provides limits for only 33 of these distinct chemicals. The other 280 (~90%) are allowed to be released at unlimited levels, which is wholly unacceptable from a public health and environmental perspective.

1 See SRAM 2 Addendum, prepared by Boeing and approved by DTSC in August 2014; see "List of Chemicals Historically Detected at the SSFL - by Media" (PDF pp. 1408-1412), included as an attachment to these comments. We have highlighted (yellow) those constituents that are included as limits in the Tentative Permit compared to the great majority for which there are no limits included. [See also the similar number of toxic chemicals for which Risk Based Screening Levels (RBSLs) for soil contamination have been put forward for human health, SRAM, PDF pp. 1071-1073, and ecological receptors, SRAM, PDF pp. 1589-1597.]

Staff does not dispute that 90% of the contaminants detected at SSFL are allowed unlimited concentrations in surface water discharges in the proposed permit. Staff claims that some–VOCs–are unlikely to be in surface water. However, that accounts for a minority of the SSFL contaminants, and numerous VOCs have been detected in SSFL surface water.

Staff also claims that some of the unlimited pollutants have not been detected in surface water, but **70% of the 300+ contaminants detected at SSFL have in fact *been* detected in surface water**, and there is no evidence that surface water has even been tested for most of the rest.

Comment 4

Of the limits that are in the existing permit, nearly one quarter are proposed to be changed in the new permit.[2] **Of those proposed changes, 95% either weaken or fully eliminate the limits in the existing permit.**[3]

2 Final Limits Comparison Table, released by Board staff in early January 2022 upon request by Melissa Bumstead for identification of changes proposed in the Tentative Permit. (This is based on counting the same chemical multiple times if there is a limit for it at different groups of outfalls and/or if there is a limit both for concentration and for lbs/day.)

3 ibid.

Staff does not dispute our numbers–that the tentative permit proposed changing 25% of the permit limits and that 95% of the proposed changes weakened or eliminated limits. Staff, nonetheless denies that the proposed permit made "extensive" changes and remarkably asserts that none of the changes "weaken the permit," despite the proposed higher concentrations allowed for various pollutants.

Implicitly conceding the correctness of the criticism, Staff has now proposed walking back some of the changes in the revised tentative permit. Had we not called attention to the huge increase in the first draft, for example, lead would have been skyrocketed from a limit of 5.2 µg/L to 94 µg/L. **However, approximately three dozen limits in the current permit would *still* be weakened or eliminated entirely in the revised tentative permit.**

Comment 5

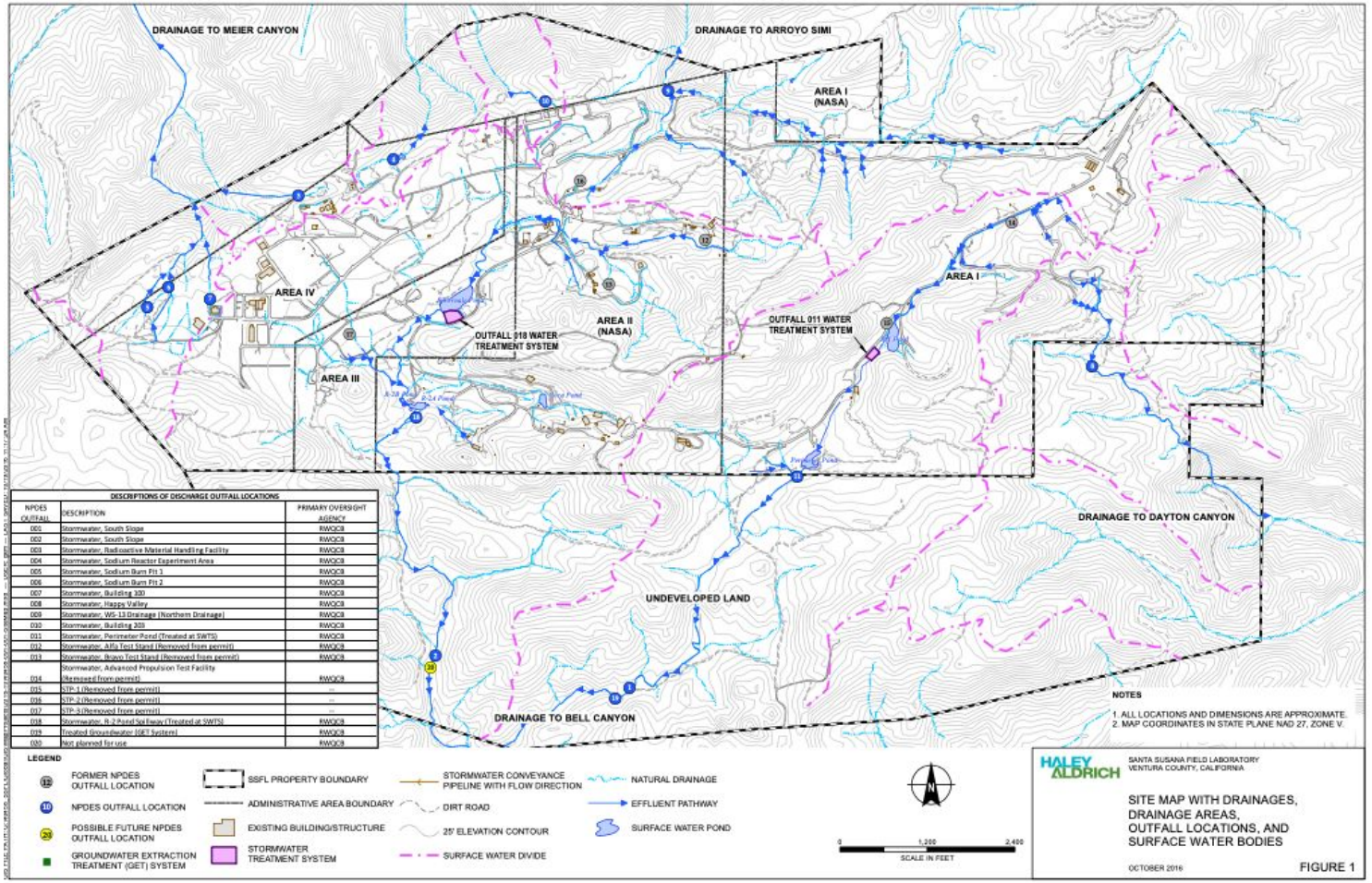
Two of the primary outfalls (001 and 002) have no enforceable numeric limits whatsoever. Instead, “benchmarks” apply, the breach of which does not constitute a violation and for which no fines can be issued. One of these outfalls (002) with no enforceable limits is the location of the largest number of exceedances in the last several years. (The benchmarks are identical numerically to the enforceable limits, but don’t trigger violations or fines.)

Reply to Staff Response 5

Staff says Boeing asked the State Board to block enforceable limits at Outfalls 1 and 2 in the 2004 permit, and the State Board in 2006 remanded the matter for reconsideration by the Regional Board with direction "to ensure that numeric effluent limitations for different outfalls do not count the same violation twice in such a manner as to treat a single violation as multiple violations." That was 16 years and several permits ago, and the actual measured data show that there isn't duplication, so there is no basis for allowing large numbers of exceedances at these critical Outfalls without penalty or enforcement.

60% of the surface water leaving the 2850 acre SSFL site goes through Outfalls 1 and 2. They are half a mile downgradient from Outfalls 11 and 18, and are thus fed by vast watersheds that are potentially contaminated below 11 and 18, and thus failure to regulate them is a serious risk.

The actual data demonstrate that regulating them would not result in duplication. For example, during the six months after the Woolsey Fire, there was only 1 exceedance at Outfall 18, whereas there were 27 at Outfall 2 below it.



DESCRIPTIONS OF DISCHARGE OUTFALL LOCATIONS

NPDES OUTFALL	DESCRIPTION	PRIMARY OVERSIGHT AGENCY
001	Stormwater, South Slope	RWQCB
002	Stormwater, South Slope	RWQCB
003	Stormwater, Radioactive Material Handling Facility	RWQCB
004	Stormwater, Sodium Reactor Experiment Area	RWQCB
005	Stormwater, Sodium Burn Pit 1	RWQCB
006	Stormwater, Sodium Burn Pit 2	RWQCB
007	Stormwater, Building 320	RWQCB
008	Stormwater, Happy Valley	RWQCB
009	Stormwater, WS-13 Drainage (Northern Drainage)	RWQCB
010	Stormwater, Building 203	RWQCB
011	Stormwater, Perimeter Pond (Treated at SWTS)	RWQCB
012	Stormwater, Alfa Test Stand (Removed from permit)	RWQCB
013	Stormwater, Bravo Test Stand (Removed from permit)	RWQCB
014	Stormwater, Advanced Propulsion Test Facility (Removed from permit)	RWQCB
015	STP-1 (Removed from permit)	--
016	STP-2 (Removed from permit)	--
017	STP-3 (Removed from permit)	--
018	Stormwater, R-2 Pond Spillway (Treated at SWTS)	RWQCB
019	Treated Groundwater (GET System)	RWQCB
020	Not planned for use	RWQCB

Comment 6

Even though the Reasonable Potential Analysis (RPA) identified seven unique chemicals that should be added to the permit (for a total of ten new limits given their presence at multiple groups of outfalls), the Tentative Permit fails to add them. [Although the Tentative Permit (F-34) claims that the reasons for refusing to add the new toxic constituents found by the RPA is detailed in Section 4.4, there is no such discussion found therein.]

Reply to Staff Response 6

Staff concedes we were right. It has now added in limits for almost all of the contaminants we identified as Staff having failed to include in the permit despite its own Reasonable Potential Analysis showing they should be.

It is troubling to think what would have occurred had there not been public review, and raises questions about the short time allowed for public review of the Revised Tentative Permit, released with less than the 10 day period promised by the Board and prohibiting written comments thereon.

Comment 7

The Board staff, without opportunity for public comment, waived virtually all of Boeing's fines for its violations of permit limits after the 2018 Woolsey Fire, arguing that it was an act of God and Boeing and the other SSFL RPs had no responsibility for the violations. However, had Boeing lived up to its obligations under the cleanup agreement to complete soil cleanup by 2017 (which it hasn't even begun), there would have been no violations in 2018. Furthermore, had the fire station that had long been located within a few hundred feet of the starting place for the fire not been torn down and nearby fire hydrants and piping not removed before the fire, and had Boeing's remaining ancient fire engine at the site entrance not broken down before getting to the fire, the fire may never have spread beyond an acre.[4]

4 See Hirsch, Caine, and Ford, "The Santa Susana Field Laboratory and the Woolsey Fire: Migration of Contaminants" and Hirsch, Pomerantz, and Caine, "The Santa Susana Field Laboratory and the Woolsey Fire: Could the Fire Spread Have Been Prevented?", both January 8, 2020, attached hereto.

Reply to Staff Response 7

Staff provides no substantive response to, nor any denial of, the facts we cited that the waiver of the fines was improper. California Water Code §13385(j)(1)(B) cited allows fine waivers only in the case of **"An unanticipated, grave natural disaster or other natural phenomenon of an exceptional, inevitable, and irresistible character, the effects of which could not have been prevented or avoided by the exercise of due care or foresight."**

We demonstrated that, contrary to the staff claim that the releases were an act of God and that nothing Boeing could have done could have prevented them, **Boeing's failure to meet the 2017 deadline for soil cleanup (or even begin it) resulted in the releases in 2018 of contaminants that should no longer have been there.**

Code §13385(h) and (i) requires mandatory minimum penalties, with no discretion, if there were indeed steps Boeing failed to take that could have prevented or mitigated the releases.

Furthermore, the SSFL Responsible Parties may have contributed to the spread of the fire itself. The staff, in waiving the fines, claims "Boeing has a fire station onsite that immediately responded when the Woolsey Fire began." In fact, there *had* long been a modern, well-equipped fire station a few hundred yards from where the fire started– but it had been torn down a couple of years before the fire. Furthermore, the one ancient Boeing fire engine that remained was stationed far away, at the entrance to the site, and the LA Times reports it broke down before even reaching the fire. Had the modern fire station not been torn down and had the old fire truck at the entrance been properly maintained so it could reach the fire.

As to the complaint that the waiver of fines was approved without any opportunity for public comment or vote of the Board, staff asserts that the public could have commented on the Consent Judgment–in 2017. But that, of course, is one year *before* the fire and 2 years *before* the fine was waived. The Consent Judgment didn't waive the fines, the Board did, subsequently. And the issue isn't whether California Water Code §13385(j)(1)(B) allows fines to be waived if the releases were due to matters "the effects of which could not have been prevented or avoided by the exercise of due care or foresight." The issue is whether Boeing could have prevented or avoided the releases if it exercised due care or foresight–and that both the public and the majority of the Board were prohibited from weighing in on. Only then-Chair Muñoz and the then-Vice Chair were consulted before the fine was waived, and they chose not to oppose it or to bring it to a public Board meeting for public comment and debate by the Board.

Woolsey Fire Began at SSFL

Twitter Post by Stu Mundel, KCBS-KCAL, November 8, 2018

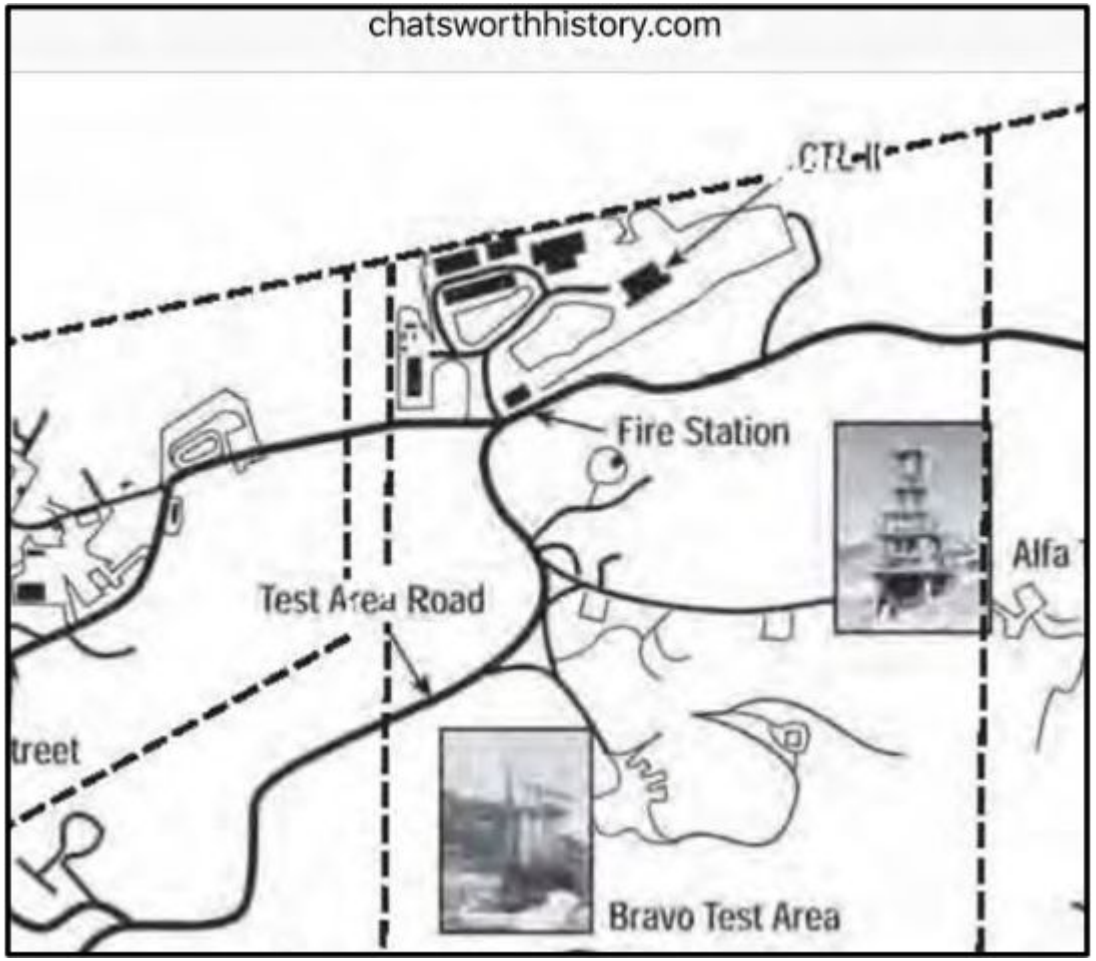
The fire began just South of NASA's ELV Complex and near Southern Cal. Edison's substation and the nuclear meltdown site


5/2015
Former Fire Station
Approximate starting location of the Woolsey Fire 2018
Google Earth
Imagery Date: 5/1/2015 34°14'00.55" N 118°41'51.64" W elev 1854 ft eye alt 2444 ft

Fire Station (lower left) in 2015

Fire Station Gone (lower left) in 2016


Former Fire
Station
SW OF EXPENDABLE LAUNCH VEHICLE FACILITY
Expendable Launch Vehicle T
Next
NASA SSFL Virtual Tour
Created by HDP


chatsworthhistory.com
CTL-II
Fire Station
Test Area Road
Alfa
treet
Bravo Test Area

THE LA TIMES HAS REVEALED THAT

the Boeing fire engine broke down before it could even reach the fire.

Comment 8

The Tentative Permit fails to disclose a scandalous aspect of a major action by Boeing, allowed by Board staff, that re-routes much of the contaminated surface water flow at the site to unlined ponds such as the Silvernale Reservoir, where contaminated water infiltrates into the groundwater, contaminating it further. While some of the polluted water in the unlined ponds is removed to prevent overflow and partially treated for release down surface drainages, much of the contaminated water remains in the unlined ponds and pollutants thus seep into the aquifer. [Also of concern is that the partial treatment for what water is taken out of the pond(s) appears not capable of removing most of the toxic chemicals that have been detected at SSFL.] Trying to reduce Boeing fines for surface water contamination discharges by instead allowing it to discharge into and further pollute groundwater is deeply troubling.

Reply to Staff Response 8

Staff does not dispute that it has allowed Boeing to re-route contaminated surface water to unlined ponds, nor does it dispute that contaminated water can infiltrate into the groundwater, further contaminating it. All staff does is repeat a claim by Boeing consultants that infiltration was "minimal." No one is talking about the entire water in the unlined ponds percolating into the groundwater–this isn't a bathtub with the plug removed. Years and years of contaminated water piped to and sitting in unlined ponds will result in contamination seeping into groundwater. Indeed, there is very large contamination of groundwater at SSFL that the Responsible Parties are responsible for (and are in secret negotiations with DTSC and Board staff to walk away from remediating). It got contaminated through precisely the same mechanism–contaminated surface water migrating into the aquifer below.

Furthermore, staff suggests there is treatment of Silvernale water, implying treatment before the contaminated water reaches the reservoir or treatment of water in it. That is not the case; the treatment is for some water that is removed from the reservoir to prevent it overflowing, and the treatment cannot remove many of the SSFL contaminants, and that water then flows down to Bell Creek and the LA River.

Comment 9

The Tentative Permit removes a series of "dry weather" limits, asserting that dry weather discharges will now be prohibited because Boeing intends to reinject water from the Groundwater Extraction Treatment System (GETS) rather than release it into drainages. However, the Tentative Permit (pp. 10, 17) defines "wet weather" as "days when the maximum daily flow in the Los Angeles River is equal to or greater than 500 cubic feet per second (cfs)." As best as can be determined from the permit, however, Boeing, during periods that don't meet that definition, removes some of the water from the unlined Silvernale Reservoir (and perhaps other ponds as well) and releases it into surface drainages leading to outfalls so as to keep the ponds having a capacity to receive additional water during subsequent times when there may be heavy rains. **The removal of the dry weather limits is thus inappropriate.**

Reply to Staff Response 9

Staff essentially admits we were right with this comment, and then, rather than fix the problem, they throw out the “dry weather” definition and restriction. In the process, they propose to allow larger contamination levels than the current permit allows.

In the original tentative permit, the staff declared that since the Groundwater Extraction Treatment System (for contaminated groundwater) would no longer release water to surface pathways, dry weather releases were now prohibited. We pointed out that Boeing was releasing contaminated surface water from the ponds during dry periods and so there was no prohibition on dry weather releases. Furthermore, the original tentative permit and the existing permit defined dry weather releases as those when the flow in the LA River was below 500 cfs, which is much of the time. So Boeing is releasing contaminated surface water during dry weather; dry weather releases are not prohibited.

So staff has simply removed the prohibition against dry weather releases, and removed dry weather limits at the same time. It appears that this results in a further weakening of the permit.

Comment 10

Filtering samples is apparently allowed for many constituents, which can artificially reduce the measured values. A great many of the potential pollutants are not required to be measured at all, and the monitoring frequency for many pollutants is a single sample per year, grossly inadequate.

Reply to Staff Response 10

Staff appears to admit that, with the exception of some metals, it is allowing Boeing to first filter the sample before measuring it, which has the potential to dramatically understate the actual amount of contamination in the sample. The late Gregg Dempsey, who oversaw EPA's $40 million radiation survey of SSFL, repeatedly warned that Boeing's use of filtering was inappropriate. If filtering were done, he said, one should then add the contaminant found on the filter to the amount found in the filtrate.

Comment 11

The Tentative Permit does not disclose that Regional Board staff have been engaged in secret negotiations with Boeing and DTSC over Boeing's desire to walk away from much of its obligations to clean up the contaminated soil and its objections to restoring the contaminated groundwater. Those entities with an interest in and long history of trying to assure the cleanup agreements are carried out, such as the Counties of Ventura and Los Angeles, the City of Los Angeles, and groups such as ours are frozen out of these secret negotiations aimed at gutting cleanup requirements.

Reply to Staff Response 11

Staff admits it has been in secret negotiations with Boeing and DTSC for over a year. It claims the negotiations aren't secret because it placed a note on its website that it was having the confidential mediation; but the issue is that the negotiations themselves are being conducted in secret, with interested parties such as Ventura and LA Counties and LA City and impacted community groups frozen out. No one ever said the negotiations were about the pending NPDES permit–they are about Boeing's demand to walk away from from its obligations to clean up the soil and groundwater at SSFL. We strongly recommend that the Board get fully briefed about the matters related to the confidential mediation and not allow Board staff to sign off on any deal for weakening of the cleanup obligations.

Staff conflates concern about the above secret negotiations and separate community concerns that the staff met secretly with Boeing over the last two years to sign off on Boeing's proposals for weakening the NPDES permit. Because of the lack of transparency and genuine opportunity for public input, we urge the Board to send the proposed permit back to the staff with direction to strengthen rather than weaken it and to come up with a revised proposed permit in a public fashion with genuine consultation with non-Boeing stakeholders and real input from the impacted community.

Comment 12

At the core of all of this is that there are legally binding cleanup agreements that require a full cleanup of the contaminated soil and a permanent remedy in place to restore the contaminated aquifer, and the Responsible Parties (RPs) have failed to carry out their obligations. The entire issue of pollution discharge limits being violated would not be occurring if the source of the contamination had been cleaned up by 2017 as promised. The Board should make clear it strongly supports those clean up agreements, will not tolerate any action that further delays or weakens those obligations, and will vigorously use its authority to issue fines and take other actions to enforce pollution limits. Further weakening the permit, as proposed here, can only remove incentives for Boeing to comply with the cleanup agreements, and the public and environment will remain perpetually at risk. The Regional Board should pass a resolution directly calling on DTSC to rigorously and completely enforce the 2007 and 2010 agreements, end the long delays, and for the RPs to stop resisting their cleanup commitments.

Reply to Staff Response 12

Staff says it agrees that the cleanup agreements should be expeditiously carried out and that so long as there is failure to carry out the promised cleanup results in potential for contaminants to be carried offsite in stormwater runoff.

For these reasons, however, this is the last moment one should be considering weakening the stormwater pollution limits, thus rewarding Boeing for failure to clean up the source of contamination and further reducing its incentive to live up to its cleanup obligations. Staff notes that the cleanup is largely DTSC's responsibility. But that is why the community is so concerned that Board staff are participating in secret negotiations with DTSC and Boeing over letting Boeing walk away from its obligations to clean up the source of the contamination.

We recommend that the Board write DTSC, express concern that the promised cleanup that was supposed to be completed by 2019 hasn't even begun, and urge that it take prompt action to rigorously enforce the 2007 and 2010 cleanup agreements and take no action to further weaken or delay the cleanup.

Recommendations to the Board

#1: The Board should reject the proposals to weaken the existing permit.

#2: The Board should instead direct Staff to come back with a markedly strengthened permit, along the lines identified in these comments.

#3: This should be done in a transparent fashion that allows for genuine and meaningful input from the community.

#4: The Board should send a letter to DTSC and the Responsible Parties calling for full compliance with the 2007 and 2010 cleanup agreements and an end to further delays, so as, in part, to finally address the source of the continuing violations of pollution limits in water migrating offsite.