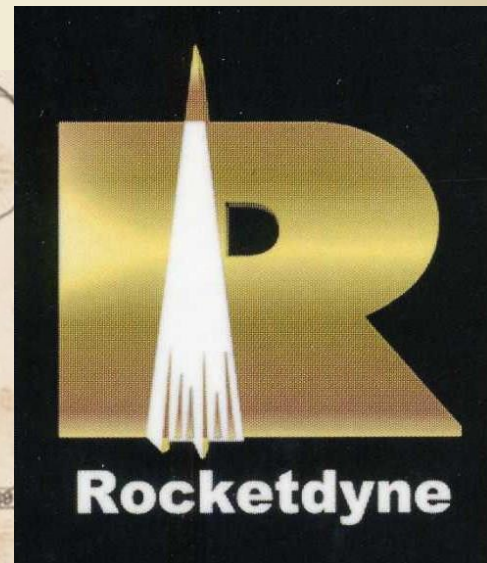
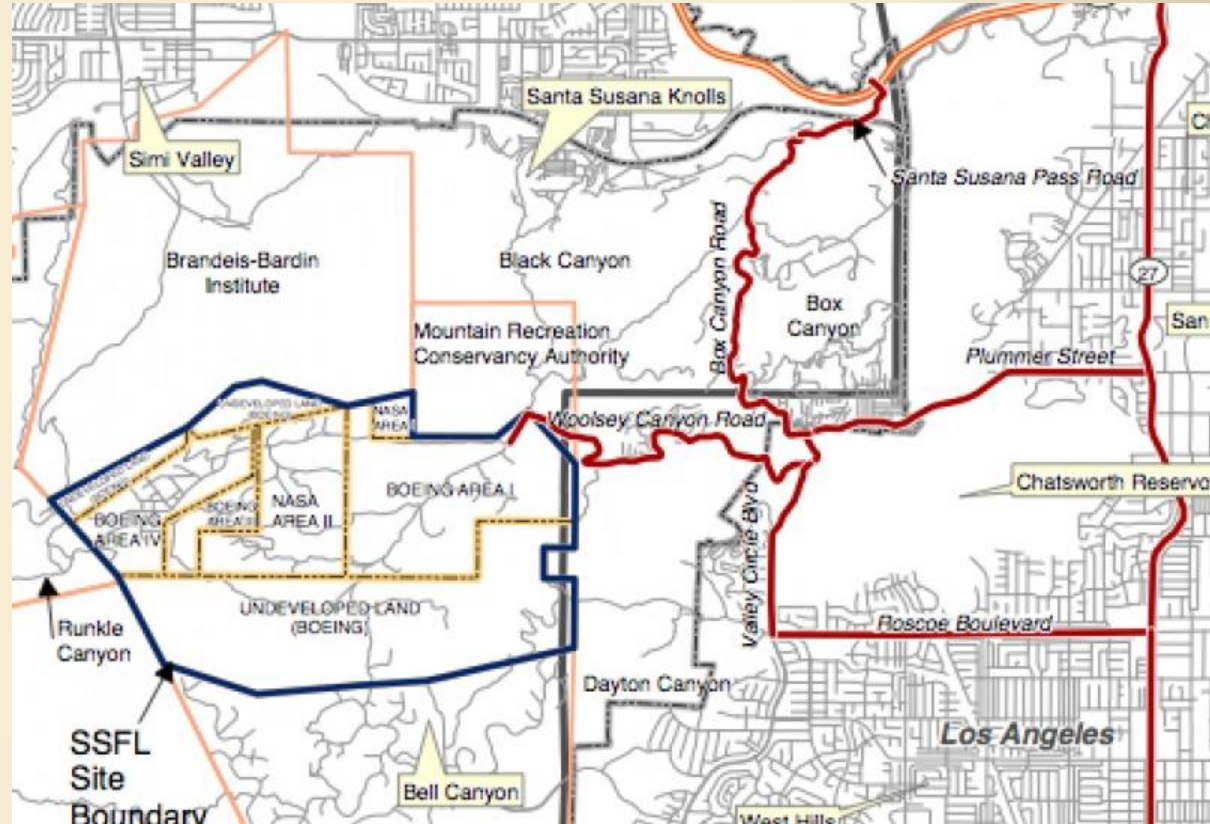


# The History of Burro Flats, Rocketdyne and the SSFL



# Overview and site background

- The 2,850 acre Santa Susana Field Lab (SSFL) is located in the Simi Hills in Ventura County on a plateau overlooking the San Fernando and Simi Valleys.
- Access from Chatsworth is from Woolsey Canyon Road, access from Simi Valley is from Black Canyon Road.
- The easternmost boundary of the SSFL is on the Los Angeles County Line.



# Topics to be covered

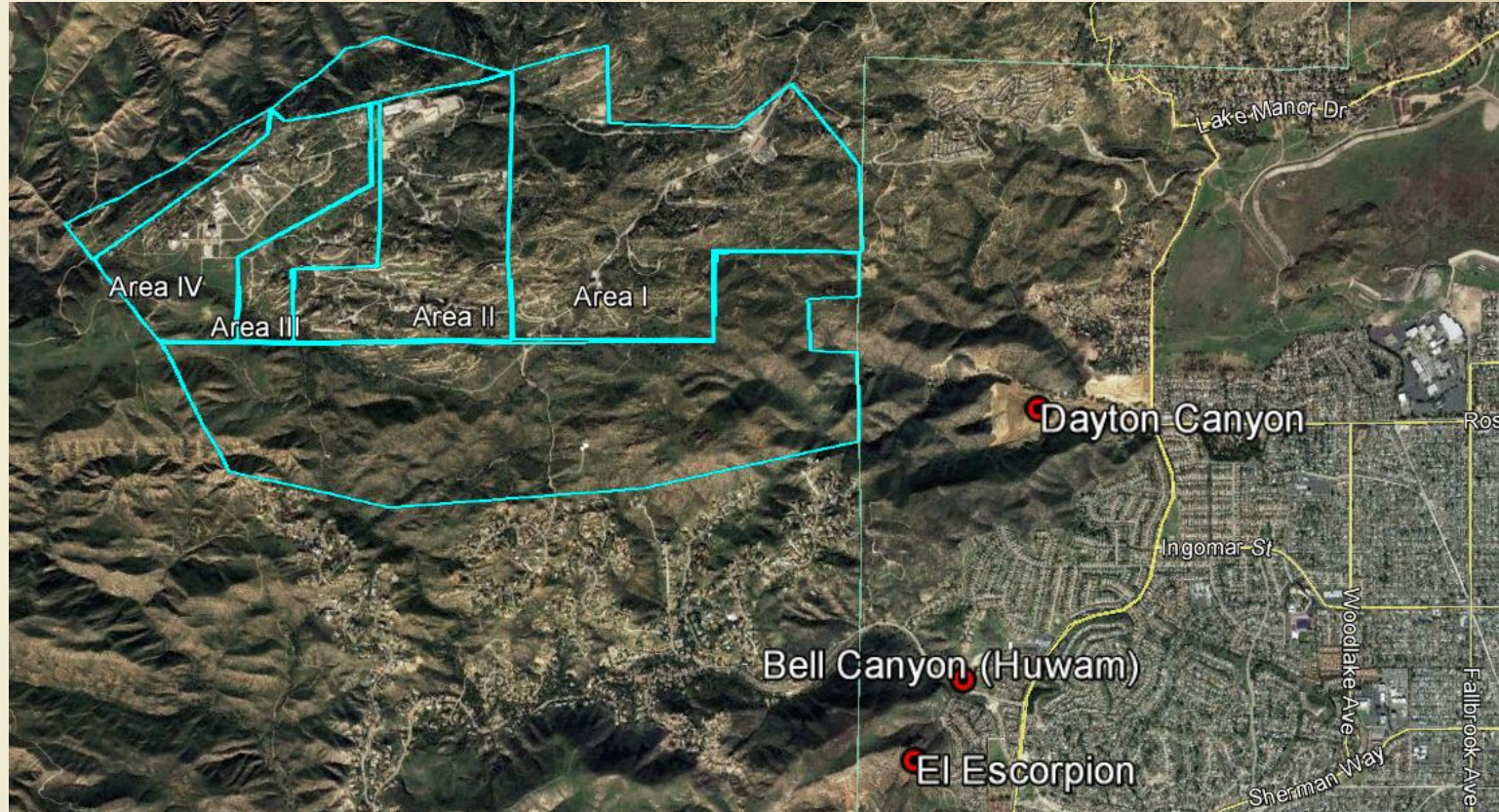
- Native American History – The Burro Flats Painted Cave
- Rancho Simi History
- Eddie Maier ownership in 1910
- Henry and Max Silvernale and Bill Hall ownership as partners 1939 to 1954
- Movie History 1937-1954
- Santa Susana Field Lab History 1947 to today
  - North American Aviation (NAA) History
  - NAA leases land in the Simi Hills 1947, the first test stand was completed in 1949 (Area I)
  - NAA purchased Burro Flats/Sky Valley in 1954. The Rocketdyne Division builds four test stand complexes (Area II). The Atomics International Division builds the Sodium Reactor Experiment (Area IV).
  - Nuclear research ends 1988; Rocket testing ends in 2006, cleanup continues



# Native American History

## Chumash living in the hills of Dayton Canyon

Some interesting discoveries have been recently revealed relating to the Native Americans that once lived in our local hills.





# Native American History

## Chumash living in the hills of Dayton Canyon

- In 2001, during the development of Dayton Canyon, over 30 Native American burials were discovered (The 2015 development project found no burials). DNA testing of 7 samples showed some interesting things:
  - One burial was over 5,000 years old.
  - Two of the burials were genetically related, 1,600 years apart. Which implies that one lineage had lived in the same area for 1,600 years.
  - There was a mixed population, which was Chumash in culture. There was no evidence of cremations; the types of burials were more similar to Chumash.
  - The remains were relocated and reinterred by the Native American community.

# Native American History

## Burro Flats Painted Cave

The pictographs at Burro Flats are a remarkable record of prehistoric Native American art, dating from at least 1200-1800 AD, probably much earlier.

“Based on the style of the pictographs and the multiple layers, the site could plausibly be three to four thousand years old.” - *Devlin Gandy*

The newest layer of paintings are only a few hundred years old.



Photo courtesy Albert Knight



The site also has a Late Period component, based on the presence of Spanish trade beads.

The site's 1976 inclusion on the National Register of Historic Places reflects its significance.



Photo courtesy Christina Walsh -- digitally enhanced by DStretch



# Native American History

## Burro Flats Painted Cave

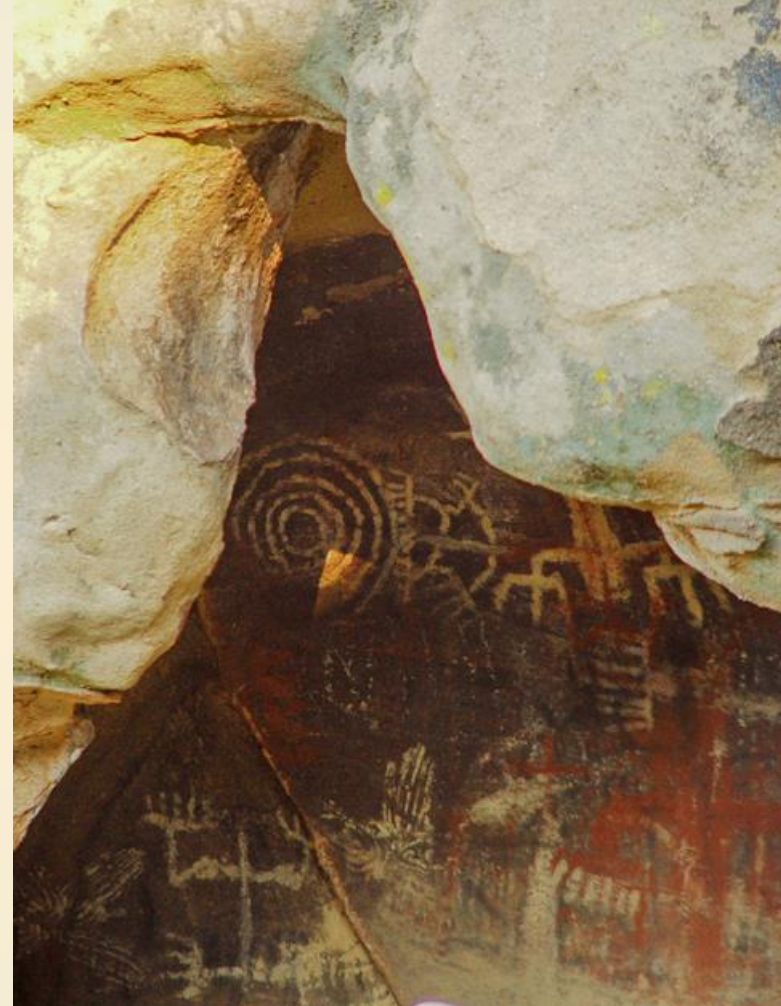
Dr. Edwin Krupp is an Astronomer and has been the Director of the Los Angeles Griffith Observatory since 1974.

He is recognized internationally as an expert on ancient, prehistoric, and traditional astronomy, and has visited nearly 1,800 ancient and prehistoric sites throughout the world.

In his 1983 book, "Echoes of the Ancient Skies: the Astronomy of Lost Civilizations," he wrote:

*"An astronomical element in the paintings at Burro Flats was first noticed in early 1979 by John Romani, a graduate student in archaeology at California State University, Northridge. He thought a natural cut -- a kind of bottomless window -- in the overhang above the western end of the panel paintings looked like it might let sunlight pass through and strike a part of the otherwise shaded panel -- at about the time of the winter solstice."*

Photo courtesy Teena Takata  
2004 Winter Solstice arrow of light





# Native American History

## Burro Flats Painted Cave

Also from the 1983 book, "Echoes of the Ancient Skies: the Astronomy of Lost Civilizations," Dr. Krupp wrote:

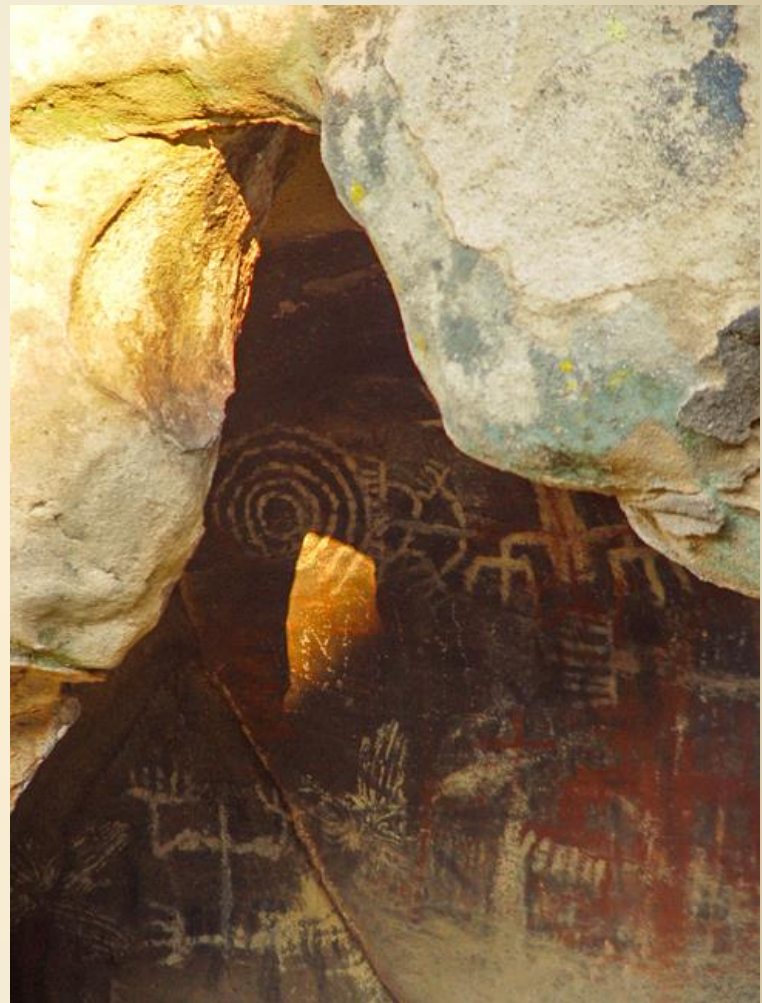
*"The paintings, which record the involvement of the Chumash with the sky, are on the same plateau where the stands on which the huge moon-rocket and Space Shuttle engines were test fired."*

In a 2014 letter to NASA, Dr. Krupp noted that *"the NASA test stands and the Burro Flats painted shelter comprise the only place on earth where our modern world heritage in space converges with the prehistoric reach for the sky."*

*"And for that reason, the place is irreplaceably significant in the history of space exploration, the history of NASA, the history of California and America, and the history of the world."*

Photo courtesy Teena Takata

2004 Winter Solstice arrow of light (18 seconds later)



# Native American History

## Burro Flats Painted Cave

Dr. Krupp excerpts from a 2014 letter to NASA:

*“For decades, on behalf of Rocketdyne and later Boeing, I systematically monitored the Burro Flats site, and facilitated respectful and revelatory visits for Native Americans, rock-art specialists, professional archaeologists, and professional astronomers.*

*My personal familiarity with the site is based on 35+ visits from 1979 to the present”.*



2004 Dr. Krupp with hand in the air.



# Native American History

## Burro Flats Painted Cave

On August 9, 2016, Dr. Krupp spoke at the SSFL. The title of the talk was *Uplifted and Transported: Encounters with Burro Flats*.

He was assisted by Albert Knight and John Luker, two of the founders of LAN-VEN, Los Angeles-Ventura Cultural Resource Alliance.

Guests included Chumash and Tongva representatives, Boeing, NASA, DOE, local government reps., members of regional parks, archaeologists, anthropologists, and historians.



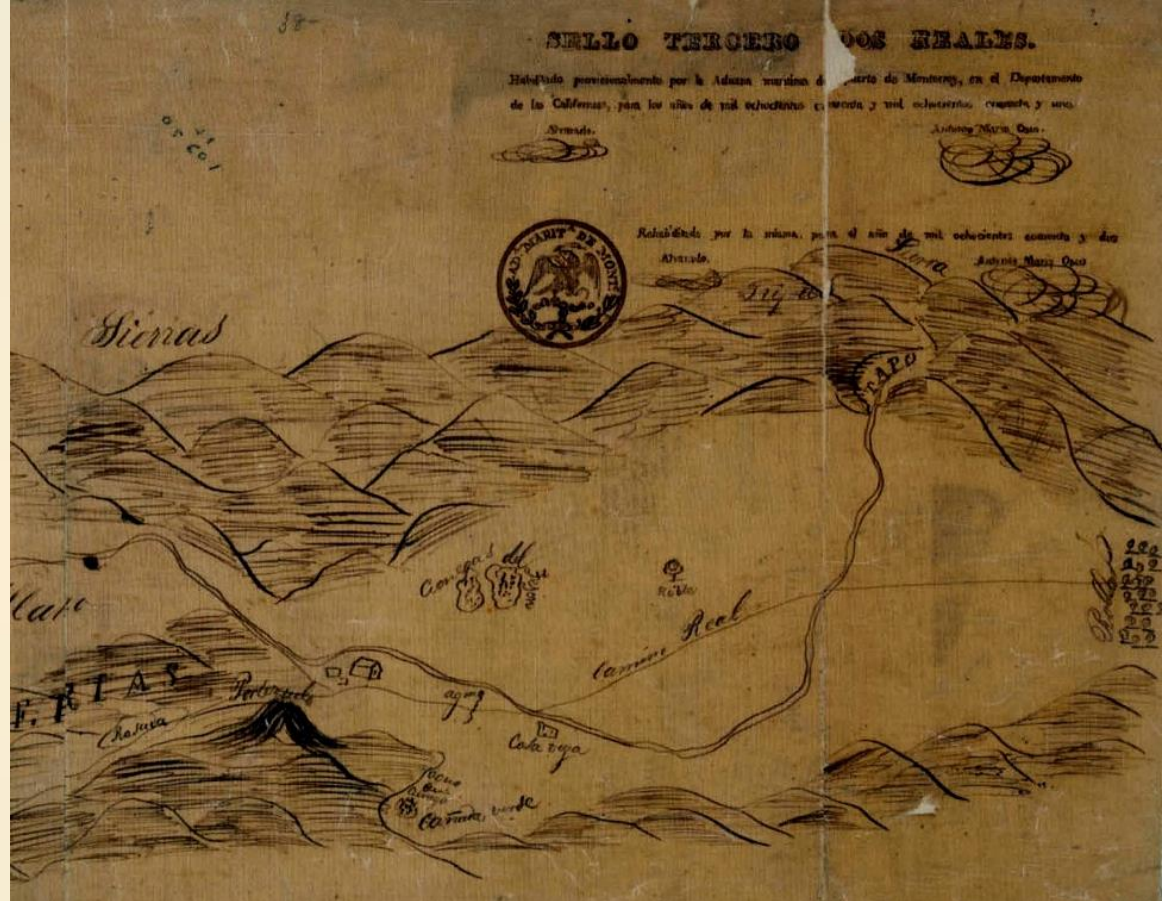
Researchers that have published professional papers on Burro Flats. From left, Albert Knight, Bob Edberg, Gwen Romani, Dan Larsen, Dr. Edwin Krupp.

# Rancho Simi History

In 1795, the 113,000 acre Rancho Simi was granted to 63 year old Santiago Pico, a soldier from the 1775 de Anza expedition.

Pio Pico (the last governor of Alta California under Mexican rule) and Andres Pico (California State Senator) were his grandsons.

The Simi Adobe was a stopover place between the 1797 San Fernando Mission and the 1782 Ventura Mission (The "Camino Real" is identified in the Spanish/Mexican map to the right)



1842 Diseño del Rancho Simi, UC Berkeley Bancroft Library



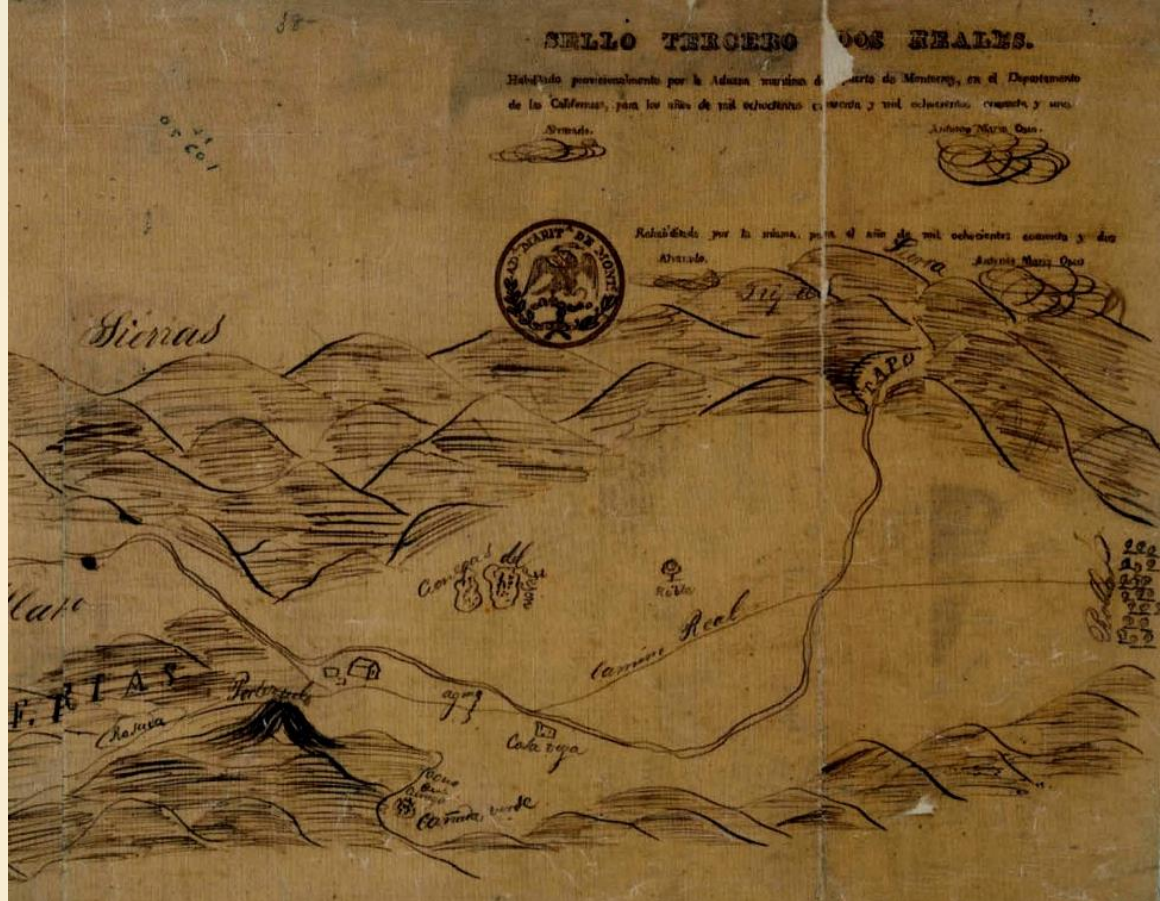
# Rancho Simi History

In 1821, Rancho Simi was re-granted to Santiago's three sons.

In 1832, José de la Guerra y Noriega purchased the Simi grant from the Pico family.

In 1858, the sons of José Guerra operated the Rancho.

By the mid-1860's, Simi belonged to the Philadelphia and California Petroleum Company, and the land was leased out to ranchers.

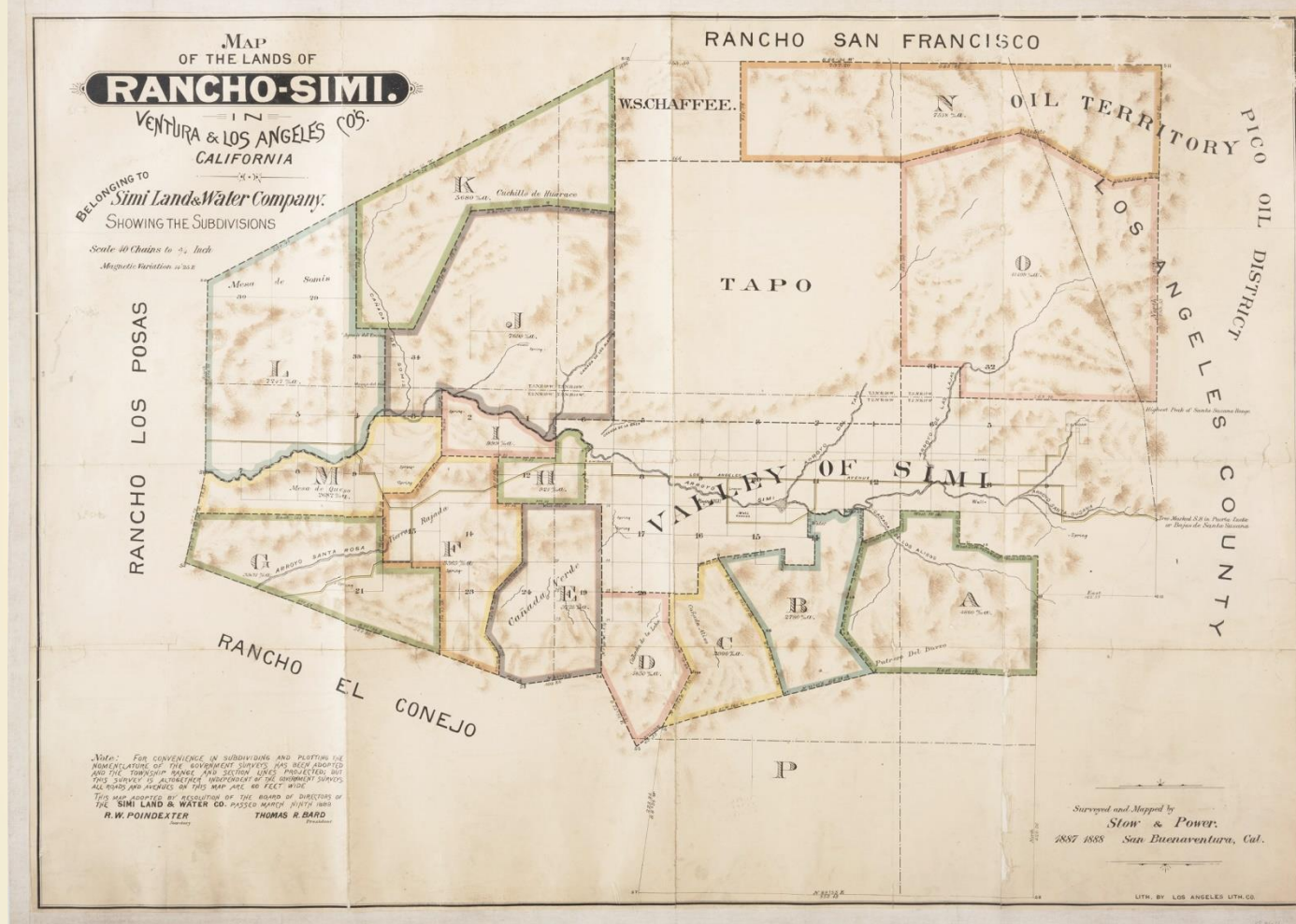


1842 Diseño del Rancho Simi, UC Berkeley Bancroft Library

# Rancho Simi History

By 1888, The Simi Land and Water Company owned Rancho Simi. They subdivided all of the land except for Tapo.

“Subdivision A” identifies Putrero del Burro, correct spelling Potrero del Burro, “Pasture of the Burro”.

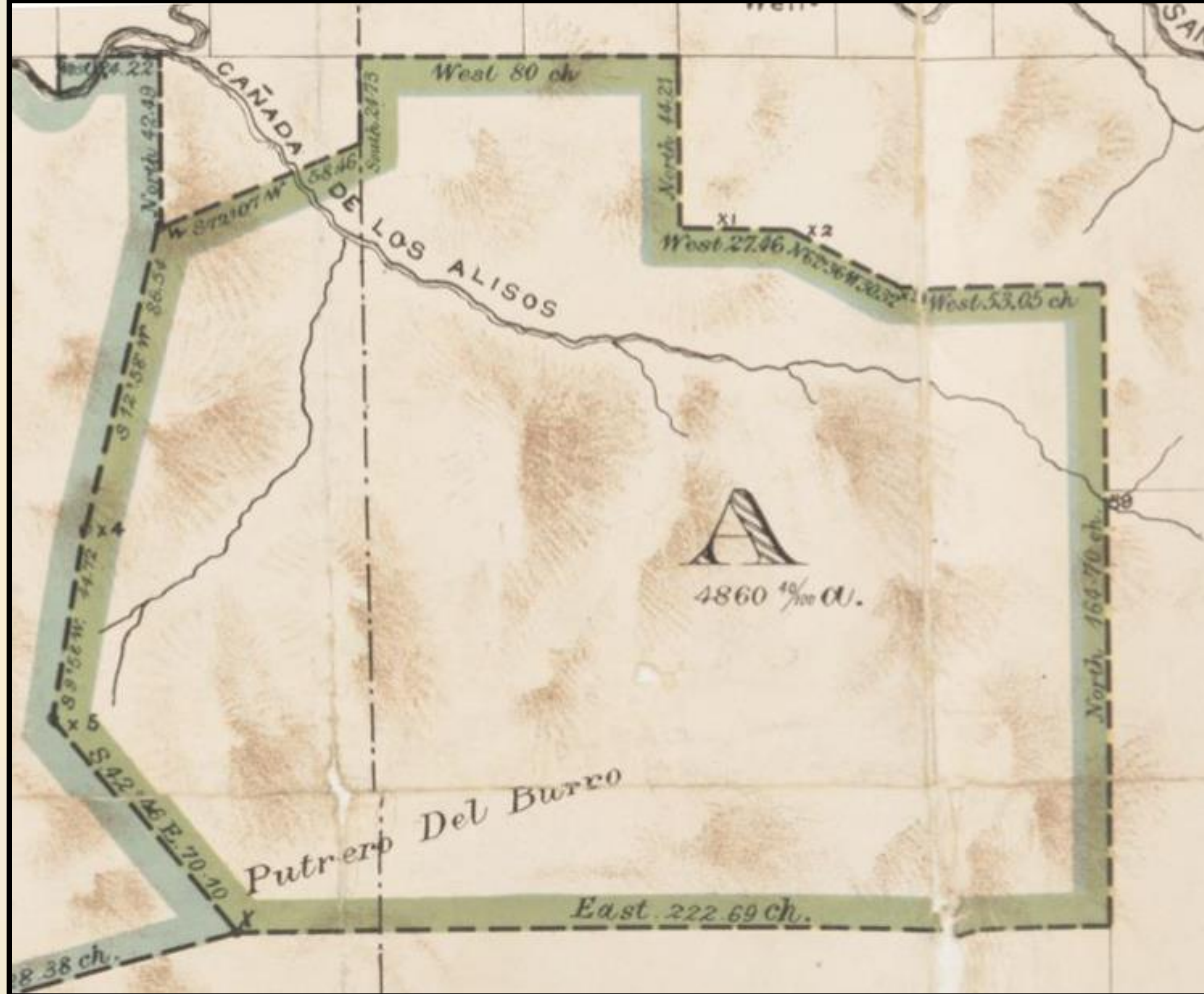




# Rancho Simi History

“Subdivision A” identifies Putrero del Burro, correct spelling Potrero del Burro, “Pasture of the Burro”.

Eddie Maier bought Subdivision A in 1910, and his ranch house was at the northwest corner, at Sycamore Canyon.





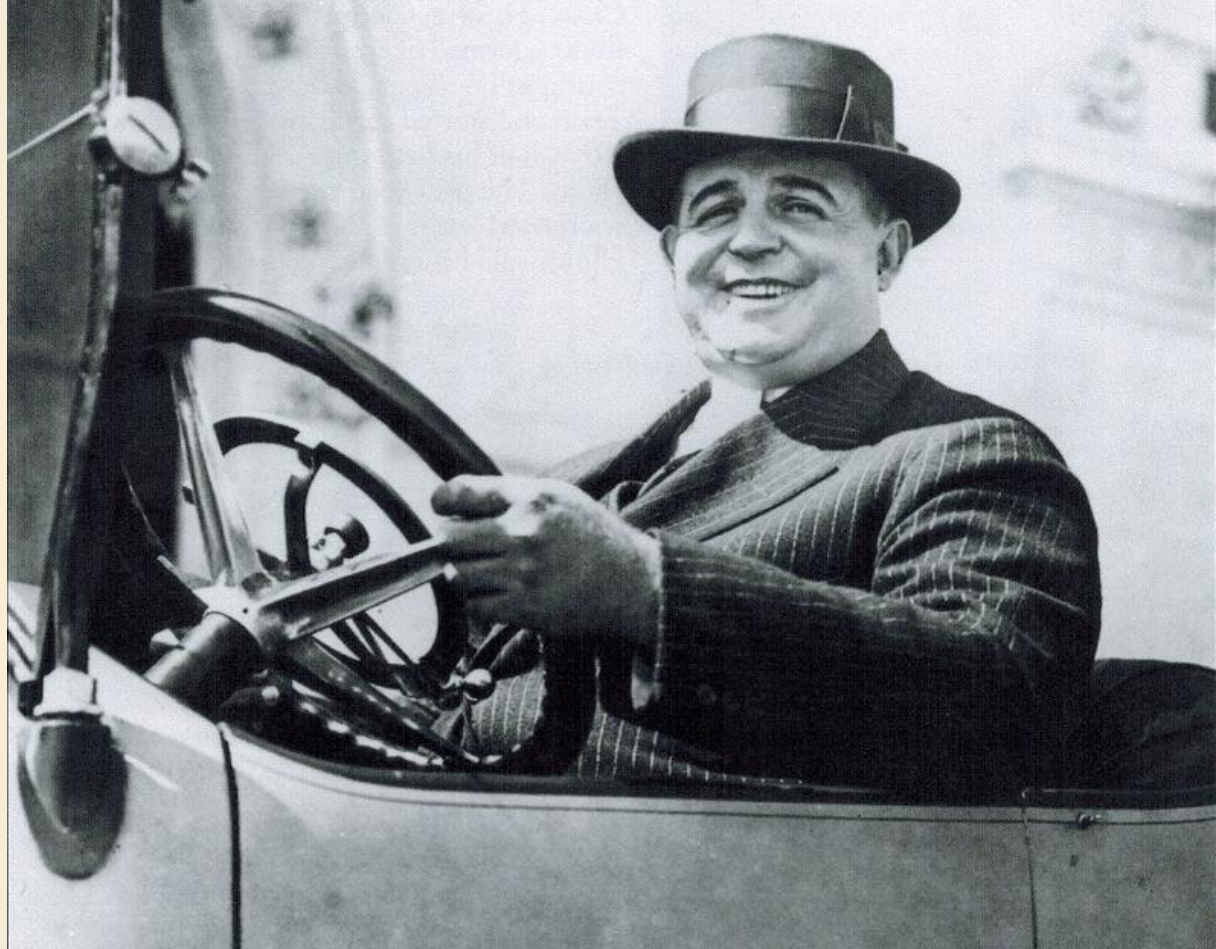
# Eddie Maier

## 1910-1930

In 1910, Eddie Maier, millionaire beer brewer in downtown Los Angeles, purchased Rancho Potrero del Burro and Cañada de los Alisos (Sycamore Canyon).

The Southern Pacific Railroad was just north of the entrance to his ranch on today's Tapo Canyon and Los Angeles St.

For 20 years, his Santa Susana ranch was the annual site of lavish barbecues that featured baseball games, band concerts, boxing matches, and keg-rolling contests.



# Eddie Maier 1910-1930

Maier hosted the annual Elk's Club Barbeque spring outing for Lodge 99 each year, and he invited every Elk Club member in Southern California to his Rancho Special in Santa Susana.

Maier was called "one of the greatest of all Elks" by the newspapers.





# Eddie Maier

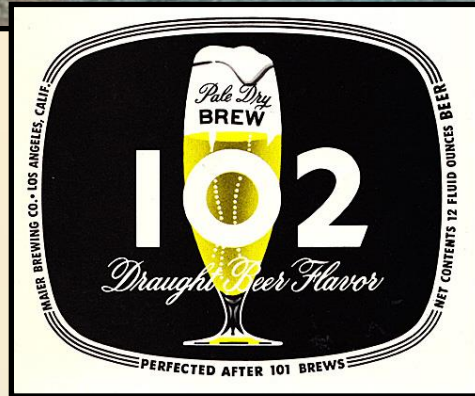
## 1910-1930

Ventura County Landmark #68 is the Eddie Maier House, which was demolished as a result of damage caused by the 1994 Northridge earthquake.

Built in 1911, it was at 1101 Peppertree Lane, at today's Brandeis-Bardin Campus of the American Jewish University.



Maier Brewing Co. is perhaps best known for “Brew 102”, which was made from the 1940’s to 1972 in downtown Los Angeles.



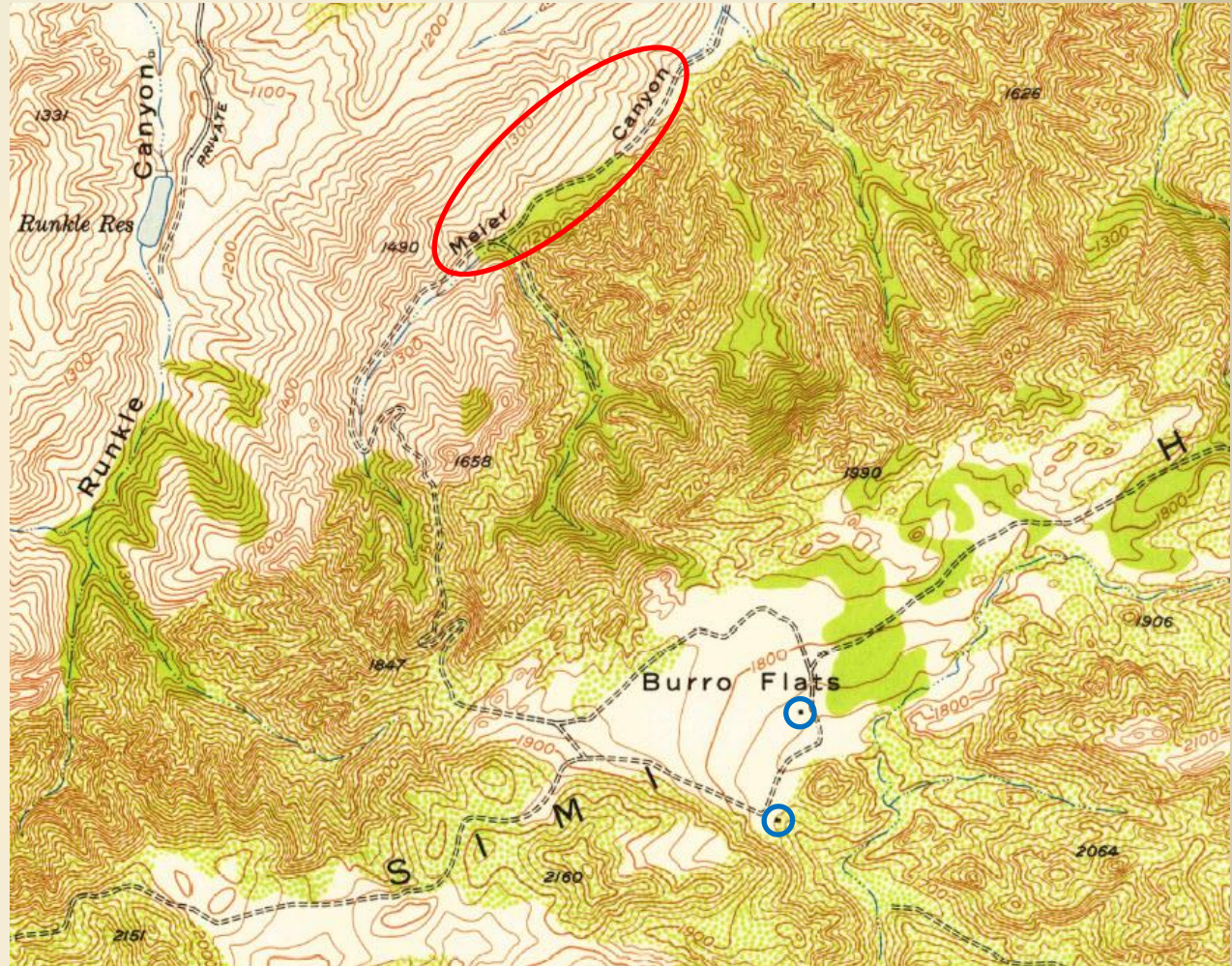


# Eddie Maier 1910-1930

This 1952 Calabasas topographic map identifies Maier Canyon (circled in red).

Each line in this map indicates an elevation change of 25 ft.

It also identifies the two homes (circled in blue) that existed in Burro Flats in 1952, the Silvernales ranch house and the Bill Hall rock-overhang house.





# Silvernales-Hall Ranch 1939 - 1954

- In 1939, Henry Silvernale, a 57 year old dentist in Santa Monica, his son Max and family friend Bill Hall purchased “Burro Flats” of Tract A.
- They purchased 1,060 acres for \$3 an acre.
- They owned Burro Flats for 15 years, until 1954. They called it “Sky Valley Ranch”.



Picture above from Rurik Kallis. The 3' wide sign was found by his father at Rocketdyne in 1955. Picture to the left is stationery from the Silvernale Family.



# Silvernales-Hall Ranch 1939 - 1954

This 1947 photo identifies the Silvernale ranch house in the blue circle, at the eastern edge of Burro Flats.

The Bill Hall rock-overhang house is identified in the red circle at the southeast edge of Burro Flats.

Planted crops are seen in the center of the photo.

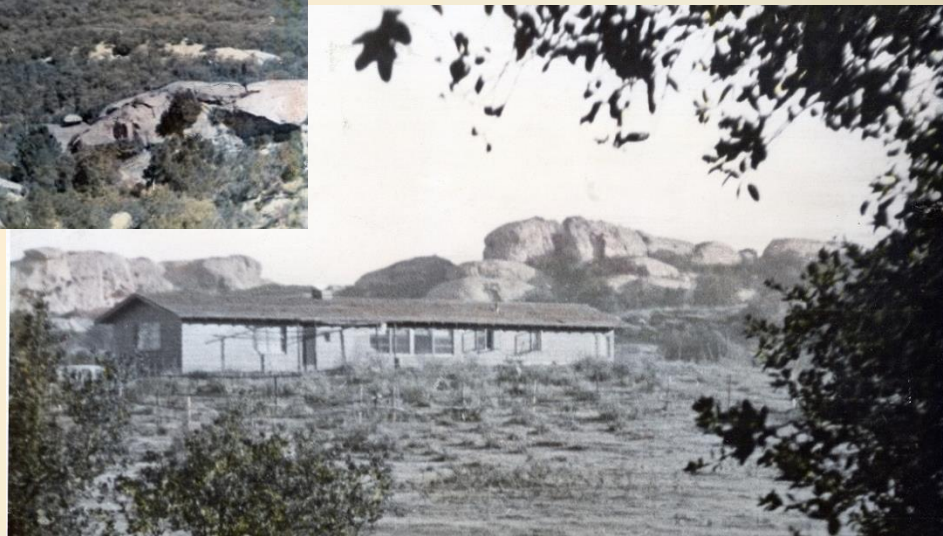


# Silvernales-Hall Ranch 1939 - 1954



The Silvernale granddaughters Marcia Silvernale McGillis and Sally Silvernale Ziegler shared these photos with us.

- The Silvernales ranch house was long and rectangular.
- Picture above looking west, Picture to the right looking south





# Silvernales-Hall Ranch 1939 – 1954

# Silvernale Ranch House



- The Silvernale granddaughters shared these photos with Rurik Kallis, Albert Knight and the Chatsworth Historical Society.
- Picture above the Great Room, Picture to the right is the long living room, with dining table at the end.

# Silvernales-Hall Ranch 1939 – 1954

# Silvernale Ranch House



Picture above left is the other end of the living room. Notice tile painted ceiling board above fireplace. An enlargement of a section of this photo is shown upper right.

Color board above donated to the CHS by Albert Knight in 2014. The board was given to Al by Pat Montoya Jr.'s son, who was working in the SSFL maintenance department, in 2012.



# Silvernales Ranch 1939 - 1954

Sally Silvernale Ziegler shared a story (15 years old at the time):

*“Another exciting event in the last few years was the addition of an orphaned female bobcat. We named her “Bobbie”. She was adorable.*

*Grandma Mom would set up the dining table for all of the movie people, and Bobbie would hop up and clean off the table. She was a real character.”*

Henry Silvernale with his bobcat  
“Bobbie”.

Bobbie also played with the dog.



# Silvernales Ranch 1939 - 1954

Marcia Silvernale McGillis shared another story:

*“My grandfather and Bee (Bill Hall) did everything on the ranch. We had a very large hay field and we helped with movies and baling.*

*We had several hundred head of Hereford cattle and horses. My grandfather raised pigs, chickens and had a large vegetable garden. They did a lot of deer hunting up there.”*

Pictures: Dehorning and branding above, cattle grazing below





# Silvernales-Hall Ranch 1939 – 1954

## Bill Hall rock-overhang house

Bill Hall helped Henry (Doc) Silvernale build his ranch house first, and then he built his own house into the rock overhang.

Picture: Doc, Bill Hall, and dog Blue. The following photos courtesy Ed Hall.



Burro Flats facing east, Silvernale ranch house in center of picture.





# Silvernales-Hall Ranch 1939–1954 Bill Hall rock- overhang house

Bill Hall rock-  
overhang house  
at Burro Flats



# Silvernales-Hall Ranch 1939–1954

## Bill Hall rock-overhang house

Bill Hall and Betty Knapp Hall raised two children at the house, Edwin and Lynne.

Betty (penname Bettye) was a children's author, and published books and school plays using the serene setting of Burro Flats as inspiration.

Bill started as sort of a warden while at UCLA, later worked in the LA County Fire Department, and then as Fire Captain at Calabasas.





# Silvernales-Hall Ranch 1939–1954

## Bill Hall rock-overhang house

Ed Hall shared some stories:

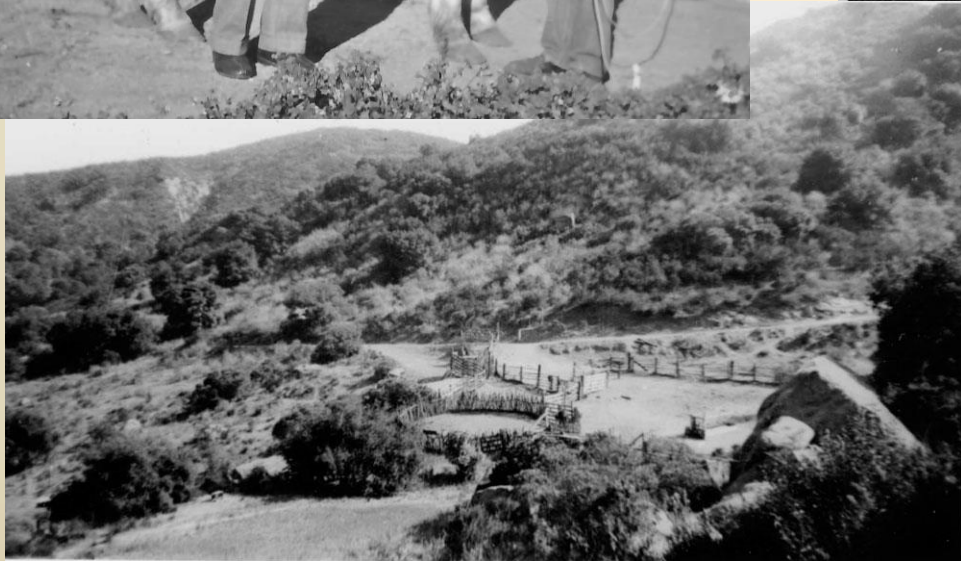
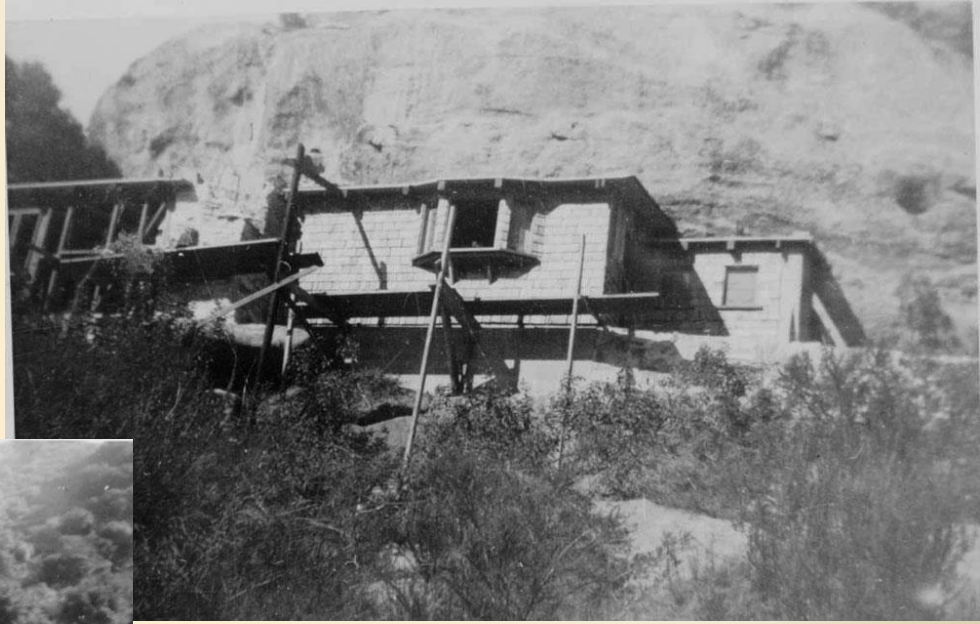
*“When dad was first courting my mom Blue got into Grandmother Knapp's chickens and killed one.*

*The following day my dad made Blue carry a paper bag in his mouth up to Grandmother with a live chicken therein. Cemented the relationship I suppose.”*

Ed Hall remembers an old magneto phone with hand crank and party line. I think our ring was two long and a short. Lights were either kerosene lantern type or gas (propane). The refrigerator was propane as was the cookstove.



Bill, Betty, Edwin and Blue.



Upper left: Granddad Frank Knapp, Ed and Bill Hall at the flats.

Above: House under construction.

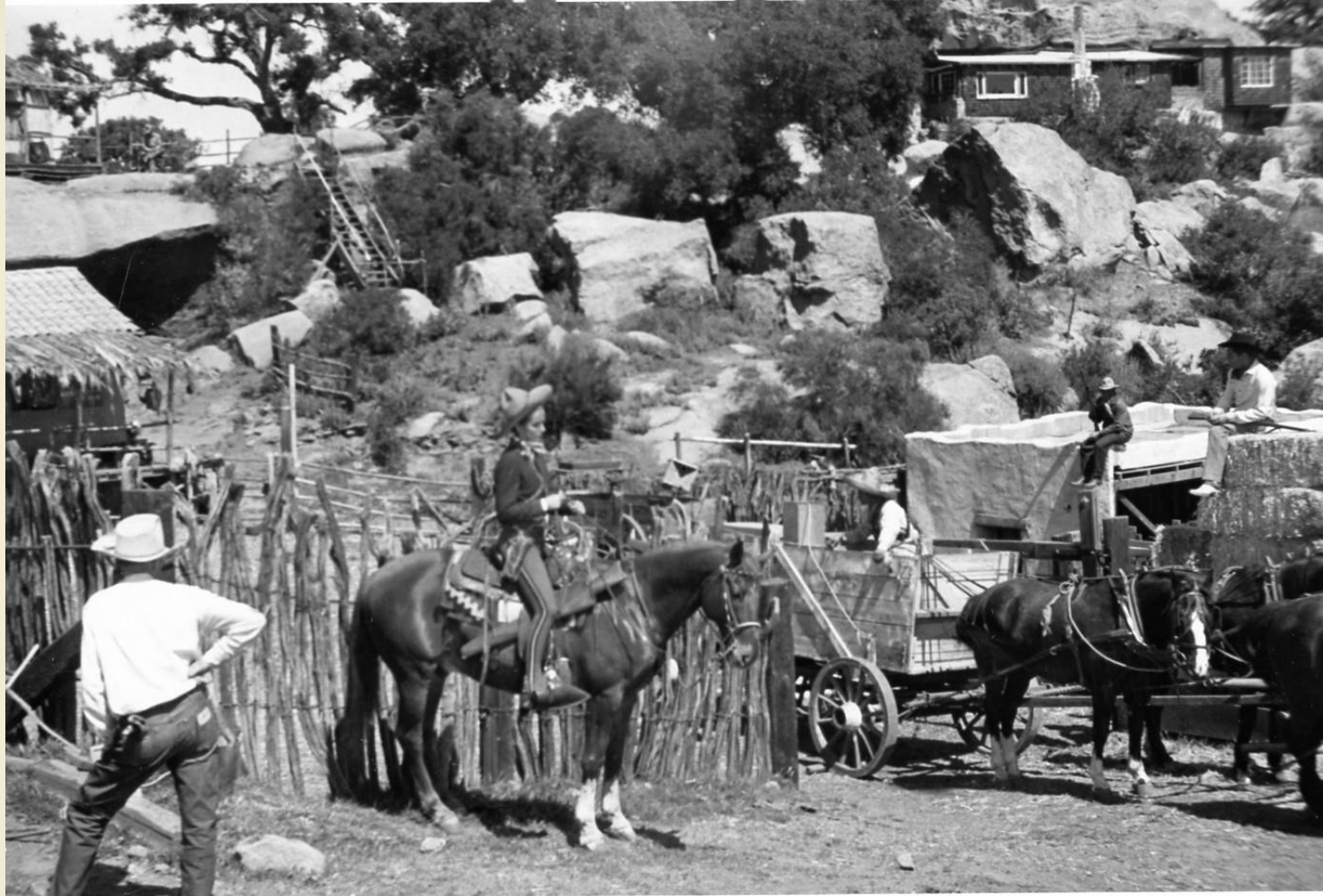
Left: Corrals below house.





Bill and Betty Hall rock-overhang house  
the Front Room

Picture of filming  
“1953 Wings of the  
Hawk”, Bill Hall rock-  
overhang house  
upper right corner





# Silvernales-Hall Ranch 1939–1954

## Bill Hall rock-overhang house



rock-overhang house  
remaining foundation  
in 2016.

# Movies at Burro Flats

## 1937–1954

- Because of its interesting rock formations and panoramic views, a total of 43 movies have been identified as being filmed at Burro Flats.
- Most of the filming occurred when the Silvernals and Hall's owned the ranch.
- Filming stopped when Burro Flats was sold to Rocketdyne in 1954.
- A listing of Burro Flats movies identified so far can be found in the appendix to this presentation.



Production photo of Ray Milland from 1947's "California"



# Movies at Burro Flats

## 1937–1954

- With a little help from photos provided by the Silvernale granddaughters and Ed Hall, we were able to identify a few movie scenes. The opening scene in **1952 Rose of Cimarron** featured the corral just outside the Hall rock-shelter house.

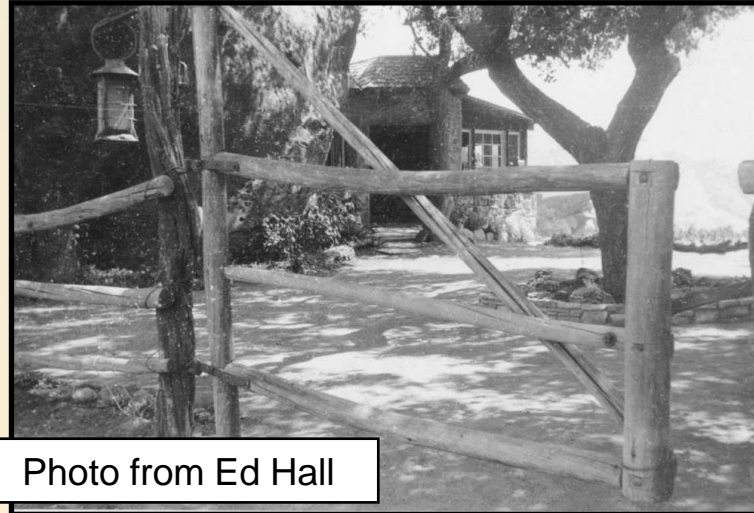
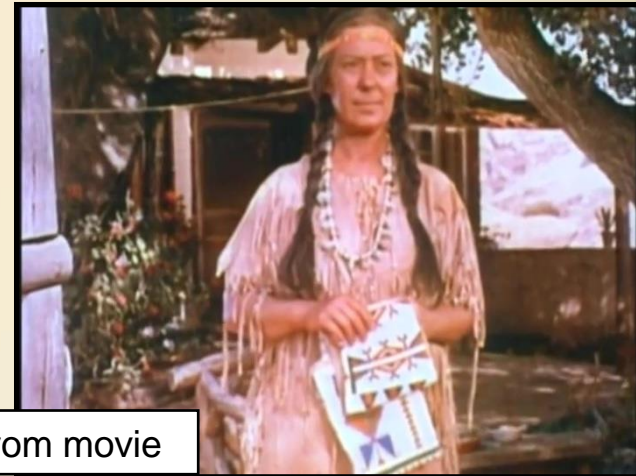


Photo from Ed Hall

- Notice that the gate cross strut is a match



Snapshots from movie

# Movies at Burro Flats

## 1937–1954

1953 **Wings of the Hawk**, notice the Bill Hall rock-overhang house in upper right corner of Marcia's photo.

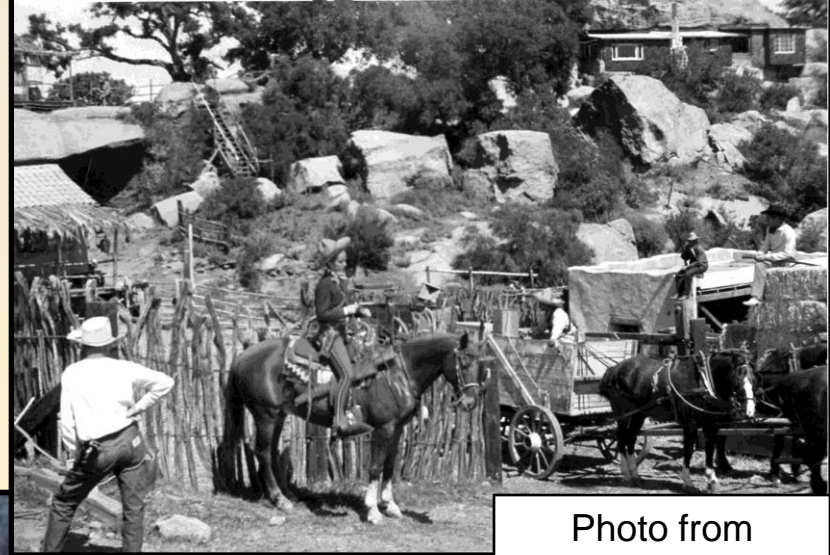


Photo from  
Marcia Silvernale  
McGillis



Snapshots from movie



# Movies at Burro Flats 1937–1954

- **1941 Robin Hood of the Pecos**, with Roy Rogers and Gabby Hayes

Photo of “movie set cabin” from Marcia Silvernale McGillis



Snapshots from movie

Next..... A four minute video of  
Burro Flats movie clips from 1941, 1947 and 1953

Available on YouTube as “Burro Flats Movie clips 1941 1947 1953”

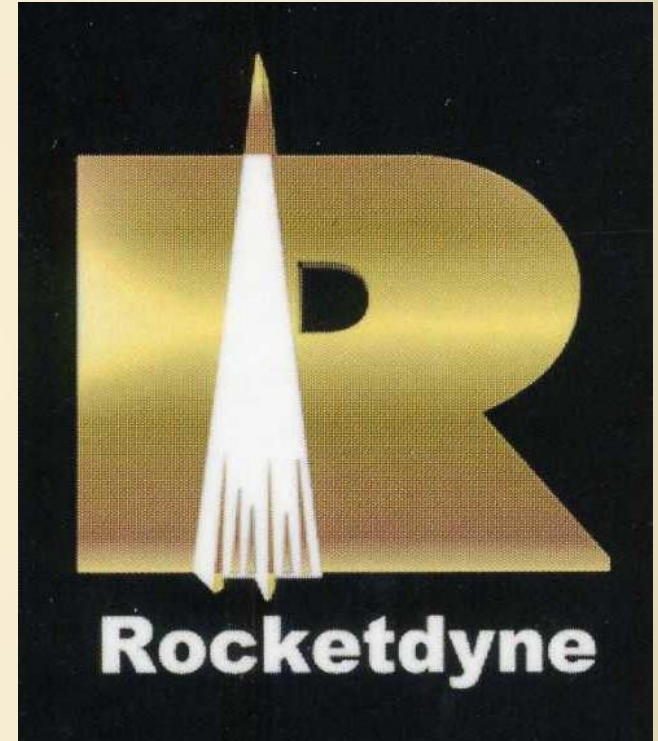
<https://www.youtube.com/watch?v=29QZKgpS4bQ&t=12s>



A four  
minute  
video of  
Burro Flats  
movie  
scenes  
from  
1941, 1947  
and 1953

# North American Aviation and Rocketdyne Overview

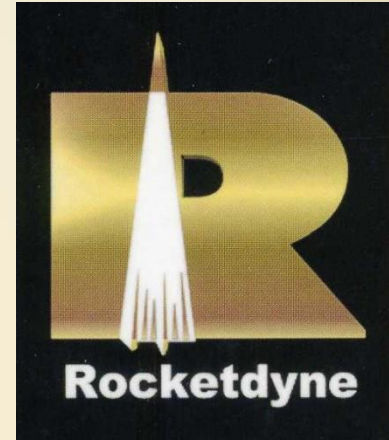
- The Rocketdyne Division was founded by North American Aviation (NAA) in 1955, and was later part of Rockwell International (1967-1996) and Boeing (1996-2005).
- In 1949 NAA began to use the Santa Susana Field Laboratory (SSFL) high in the Simi Hills for rocket engine testing. The site was called “The Hill” by Rocketdyne employees, and “Rocketdyne” by residents of the west San Fernando Valley.
- In 2005, Boeing sold the Rocketdyne Division to Pratt and Whitney, but kept the 2,850-acre SSFL site.
- Every so often on a quiet evening in the 50’s and 60’s you would hear the roar of a rocket engine and see the sky light up in the hills to the west.





# Rocketdyne and Atomics International

- In 1955, two separate divisions at North American Aviation were created, Rocketdyne and Atomics International.
- The two divisions had separate operations, goals, and accomplishments.
- Rocketdyne tested rocket engines, and was affiliated with the Air Force and then NASA.
- Atomics International was involved in non-military nuclear research and development, and was affiliated with the Atomic Energy Commission and then the Department of Energy.
- In the following slides, we will first discuss Rocketdyne, and then Atomics International.



# North American Aviation History

- During WWII, North American Aviation (NAA) built more than 42,000 aircraft, the most of any American company, with a plane coming off the production line every 15 minutes. It was headquartered at the Los Angeles municipal airport in Inglewood, California.



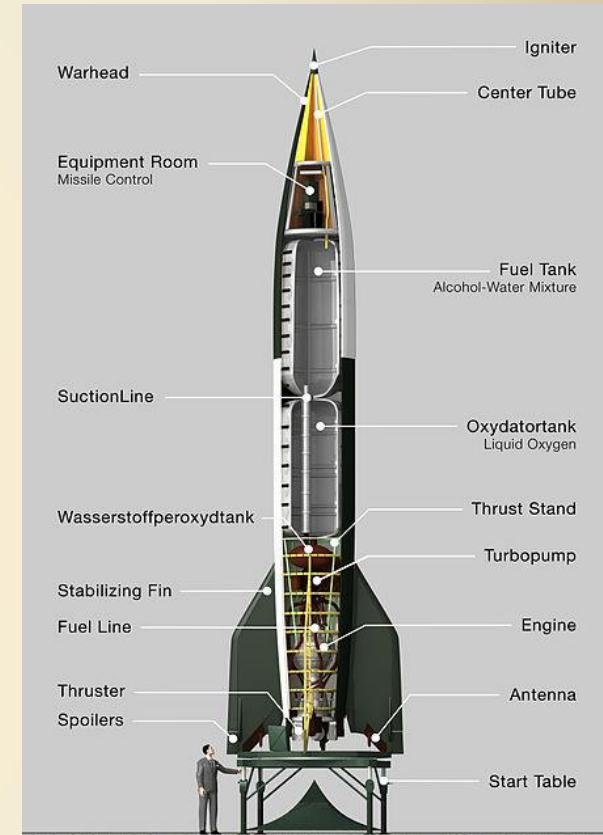
The North American Aviation **P-51 Mustang** was an American long-range, single-seat fighter and fighter-bomber during WWII.

Hermann Göring, commander of the German Luftwaffe during the war, was quoted as saying, "When I saw Mustangs over Berlin, I knew the jig was up."



# North American Aviation History

- At war's end in 1945, **Wernher von Braun** and his key people were waiting in southern Germany for the US troops to arrive. Von Braun and his team were the creators of the V2 rocket seen in the photo at the right.
- The team was determined to avoid capture by the Russians and thought that America rather than Great Britain was the future of space travel.
- von Braun and his select team of 118 specialists were escorted as guests of the Army to Fort Bliss in Texas to supervise the assembly and launch of captured V-2s.
- “The V2 was the first vehicle to penetrate out of Earth’s atmosphere, and one could well argue that the space age started right then.” (*Rocketdyne: Powering Humans into Space*)
- **It was the V2 that would soon lead to the formation of Rocketdyne.**



Layout of V2 Rocket

# North American Aviation History

- As the war ended, 1945 also had a dramatic impact on company employment, which dropped abruptly from 91,000 to 5,000.
- At that point the company wanted to continue to pursue challenging engineering work, and decided to meet future military requirements as opposed to focusing on commercial aviation.
- They chose the field of rocket propulsion, and began assembling their Rocket Team.



Employees enter the North American Aviation manufacturing plant in El Segundo, circa 1942. Photo credit: Library of Congress.



# North American Aviation History

- Rocket engine testing began in the east parking lot in Inglewood. One research crew explored performance properties of various propellant combinations using **small** engines.
- As an example, one test included liquid fluorine and hydrazine. Hydrazine is very unstable; fluorine will burn water and is highly toxic to breathe. But in 1946 the LA Fire Department gave a green light to the test requests.
- The major contribution of the research group in the early days was to **eliminate** some of the more exotic propellants being considered.
- There were no reported injuries throughout the testing in the east parking lot. However, it was probably the day when some shrapnel from a blown motor damaged a nearby car in the parking lot, plus the need to go to much higher thrust levels, that it was determined to **find a better remote test area**. *“Rocketdyne: Powering Humans into Space, pg. 26”*

# North American Aviation History

- One year later, in 1947, North American leased land in the Simi Hills from the Dundas family.
- The first test stand was completed in 1949. It was located within a natural, bowl-shaped depression of the rocky topography in what is today referred to as Area I.
- A bowl-shaped depression below the vertical test stand allowed the exhaust from the rocket test to flow away from the test stand and be redirected up into the atmosphere.
- The design of the first test stand was based on the German facilities on the Baltic, in WW2 (Peenemünde).
- In 1950, the first American-made large liquid propellant rocket engine was tested at Vertical Test Stand 1. That first engine test of the American version of the V2 was rated at 75,000-lb thrust compared to the 56,000-lb thrust of the German V-2 missile.

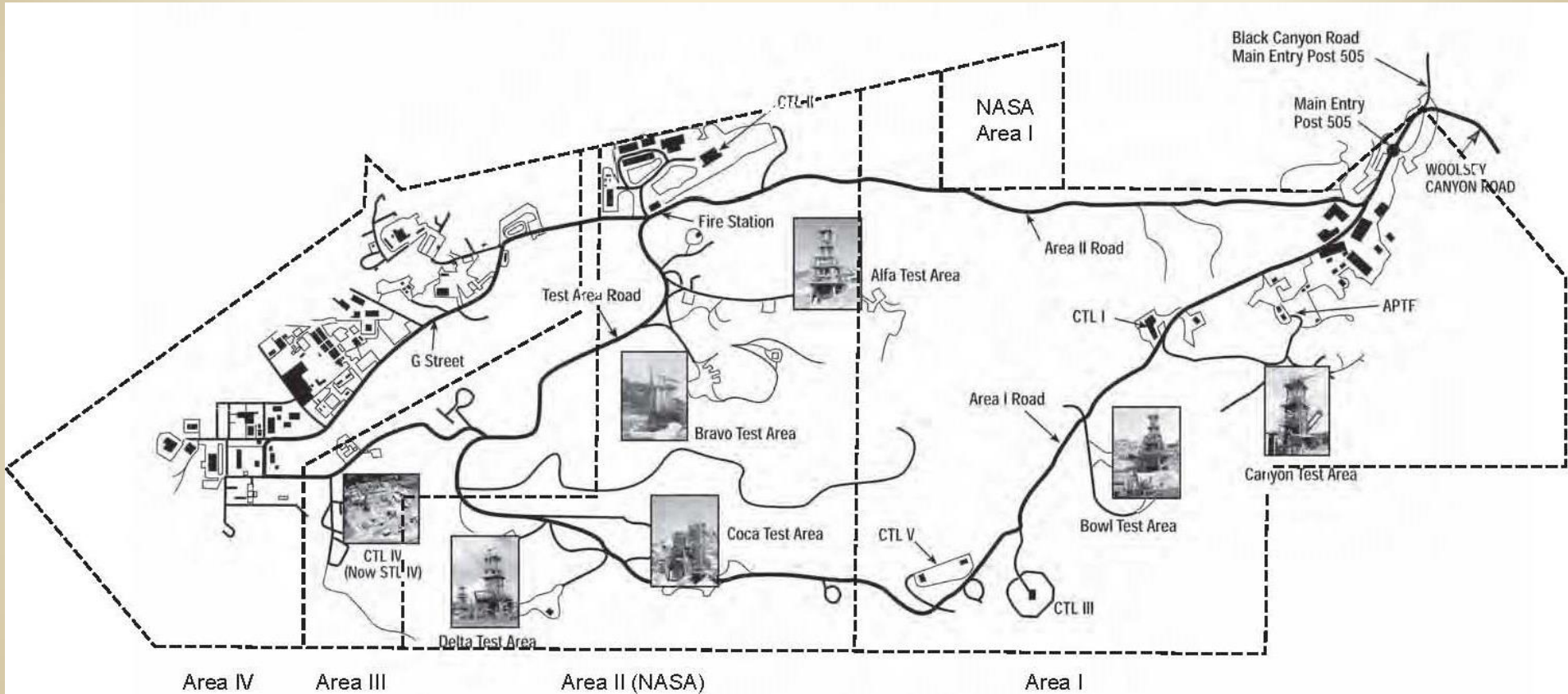
# SSFL Rocket Testing History



Left, Aerial View of Bowl Area 1950; Right Vertical Test Stand-1 in Bowl Area, 1954  
source "NASA Historic Resources Survey", SSFL, 2009



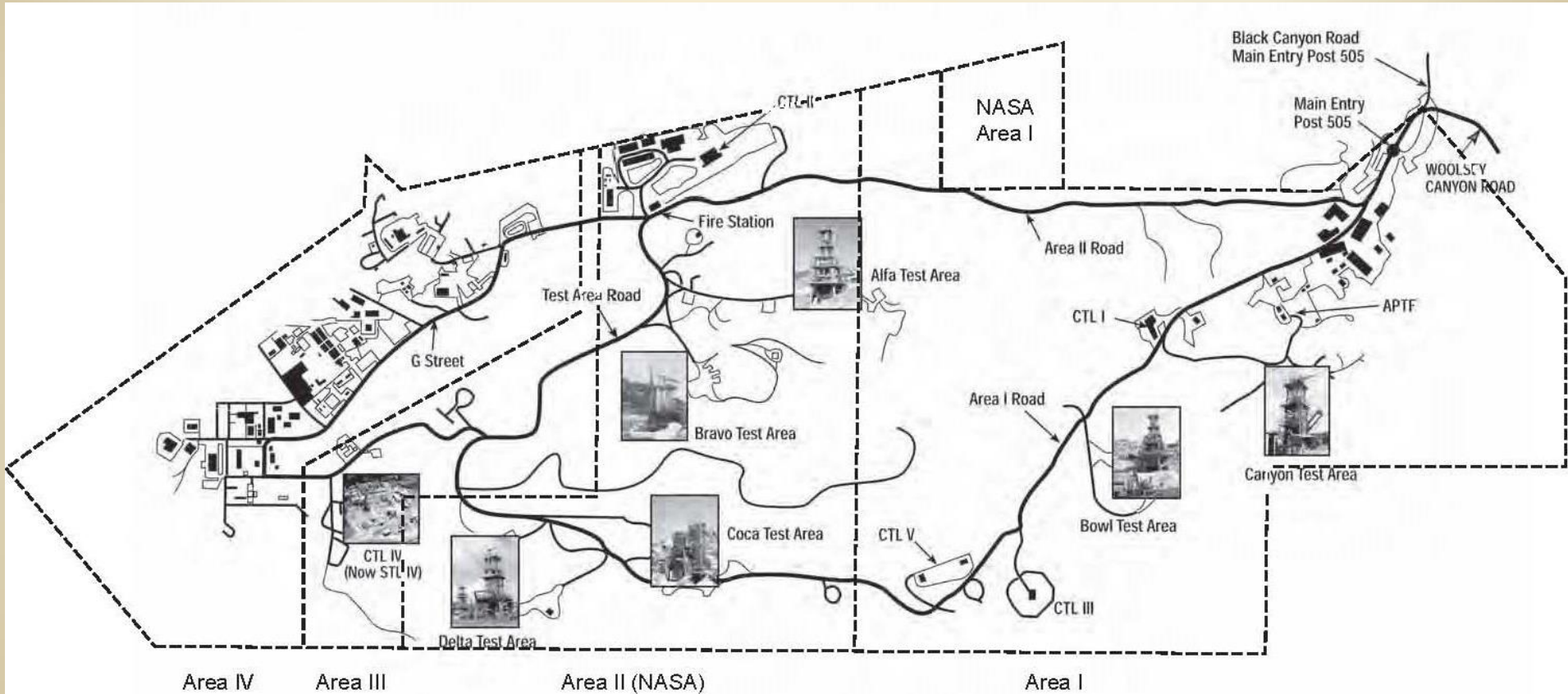
# Santa Susana Field Lab Areas



# SSFL Rocketdyne Facility History

- In 1949, the first vertical test stand was completed in the Bowl Test Area, followed by two additional test stands.
- By 1953 three additional test stands were completed in the Canyon Area.
- In March 1954, NAA purchased the 838 acre Silvernale/Hall ranch (to later become Areas II, III and IV)
- In April 1954, NAA purchased the Dundas leased parcel (to become Area I).
- In 1955, the Canoga Park Manufacturing Plant on Canoga and Vanowen opened.
- From 1954-58, a new complex in Area II included four clusters of three Vertical Test Stands—twelve in all—each with accompanying blockhouses for observation and a workshop facility, or Component Test Laboratory, as well as associated utilities. These sites were given the sequential names Alfa, Bravo, Coca, and Delta.
- In 1958, the United States Air Force purchased Area II and the Canoga Plant, with Rocketdyne contracted to run both as GOCO's (Government-Owned, Contractor-Operated) for the Air Force (later to be owned by NASA).

# Santa Susana Field Lab Areas - Again





# SSFL Rocketdyne History and Milestones

- In 1950, the first American-made large liquid propellant rocket engine was tested at Vertical Test Stand 1, the first of several towering stands erected at Santa Susana.
- Other milestones soon followed as the site supported virtually every major space program in U.S. history, including:
- Redstone, which launched the first American satellite in 1958 and the first American-manned flight in 1961.
- Saturn Apollo, which had 33 missions and **landed a man on the moon in 1969.**
- Space Shuttle, the first reusable liquid booster engine for space flight (1981-2011), 133 successful flights (2 failures).
- Delta/Atlas, America's workhorse satellite-launch engine, the last of which was tested at Santa Susana in 2006.
- Over the course of nearly 60 years, 17,000 rocket engine tests were conducted at Santa Susana.



# Some Rocketdyne Photos

“Nearly 10,000 cars fill lots at Rocketdyne's Canoga Park facility which provides engines to be tested by field laboratory in Santa Susana Mountains, visible in background.”

Canoga and Vanowen

*Courtesy LA Public Library Valley Times Collection, 1960*



# Some Rocketdyne Photos

“North American Aviation officials move a huge 33-foot-in-diameter thrust ring for a rocket engine test stand through the Valley early today.”

*Courtesy LA Public Library Valley Times Collection, 1963*





# Some Rocketdyne Photos

"Huge 24-wheel trailer moves slowly up Woolsey Canyon to test site where Rocketdyne's Saturn S-II missile will eventually be loaded for a trip later this year out of mountains to Cape Kennedy Fla. Today's trip was a test run to see if the huge carrier could maneuver the twisting road."

*Courtesy LA Public Library  
Valley Times Collection, 1965*



# Some Rocketdyne Photos

“Sikorsky Helicopters airlifting concrete for tower footings from mixer trucks to electric transmission tower sites.”

Editors note: The towers lead west from today’s Santa Susana Pass State Historic Park at Larwin Avenue to Rocketdyne.

*1958, Courtesy Huntington Library Digital Collections.*



# Some Rocketdyne Photos

“Electric transmission towers are assembled on site.”

Editors note: The towers were assembled in the vacant field south of Minnie Hill Palmer’s house.

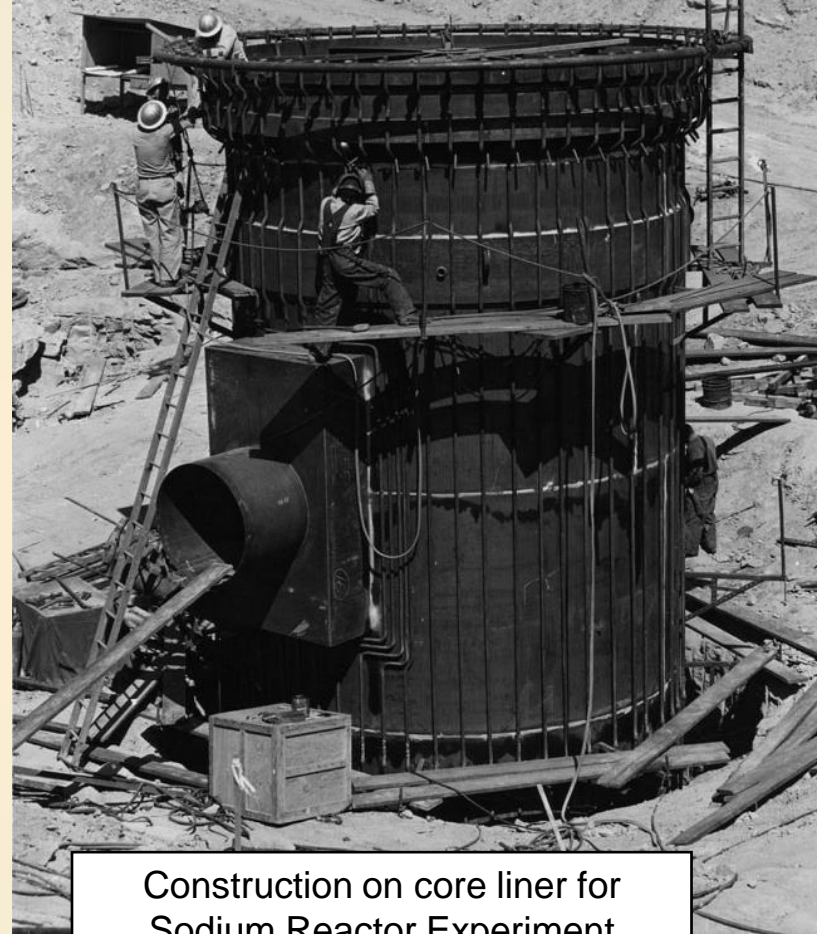
*1958, Courtesy Huntington Library Digital Collections.*





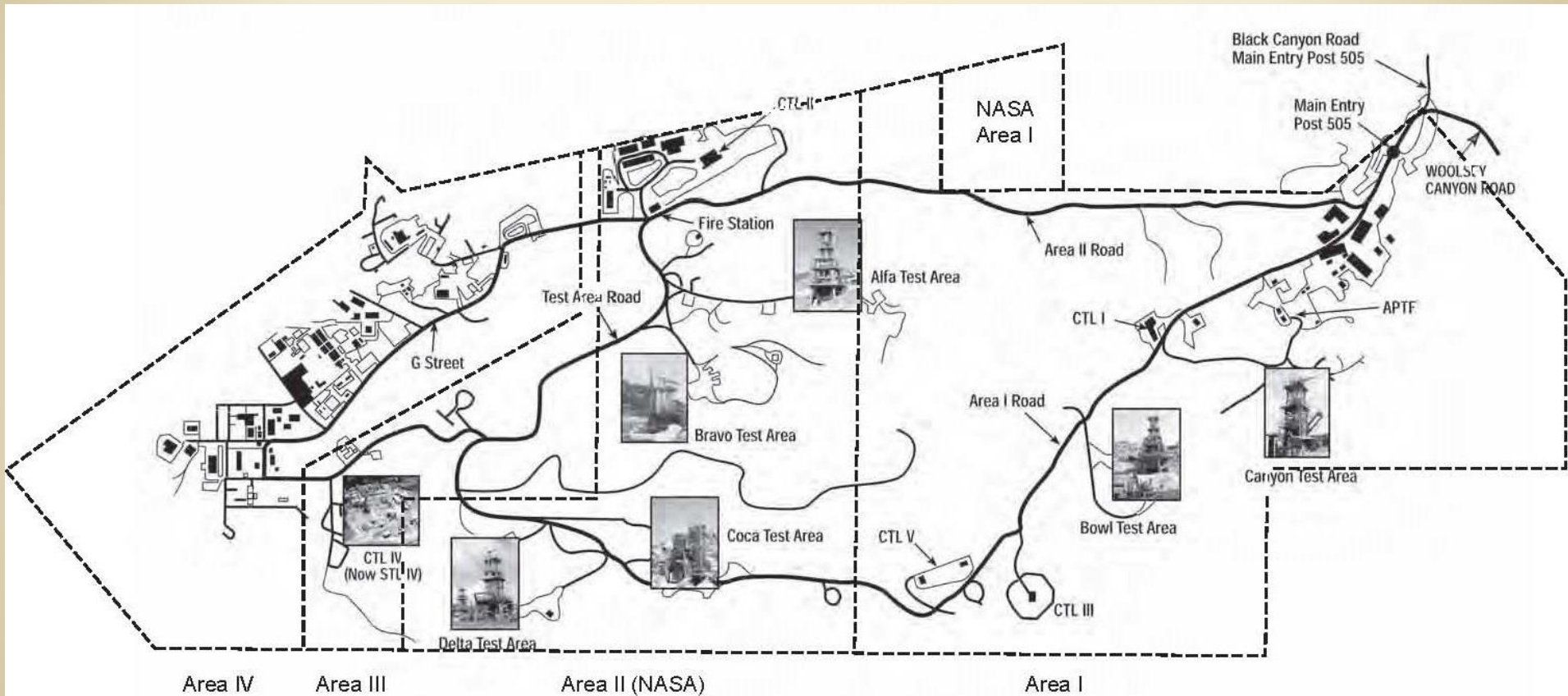
# The Atomics International Division of North American Aviation

- 1946 - The United States Atomic Energy Commission (AEC) was an agency of the United States government established after World War II by Congress to foster and control the peacetime development of atomic science and technology.
- 1954 – North American won a contract from the AEC to design and build a nuclear reactor for electric power generation.
- 1955 – North American created the Atomics International Division, leased 290 acres at the western edge of the SSFL (Area IV) to the AEC, and began construction on the sodium-cooled, graphite-moderated nuclear reactor, known as the Sodium Reactor Experiment (SRE).



Construction on core liner for  
Sodium Reactor Experiment  
*LAPL Valley Times Collection, 1956*

# Santa Susana Field Lab Areas - Again



**"Fission housing lowered into place.** Container to house core, or component in which nuclear fission takes place to produce 20,000 kilowatts of heat, is lowered into position at Sodium Reactor Experiment site in Santa Susana Mountains near Canoga Park. Reactor is part of program to develop commercial power from atomic energy."

*LAPL Valley Times Collection, 1956*



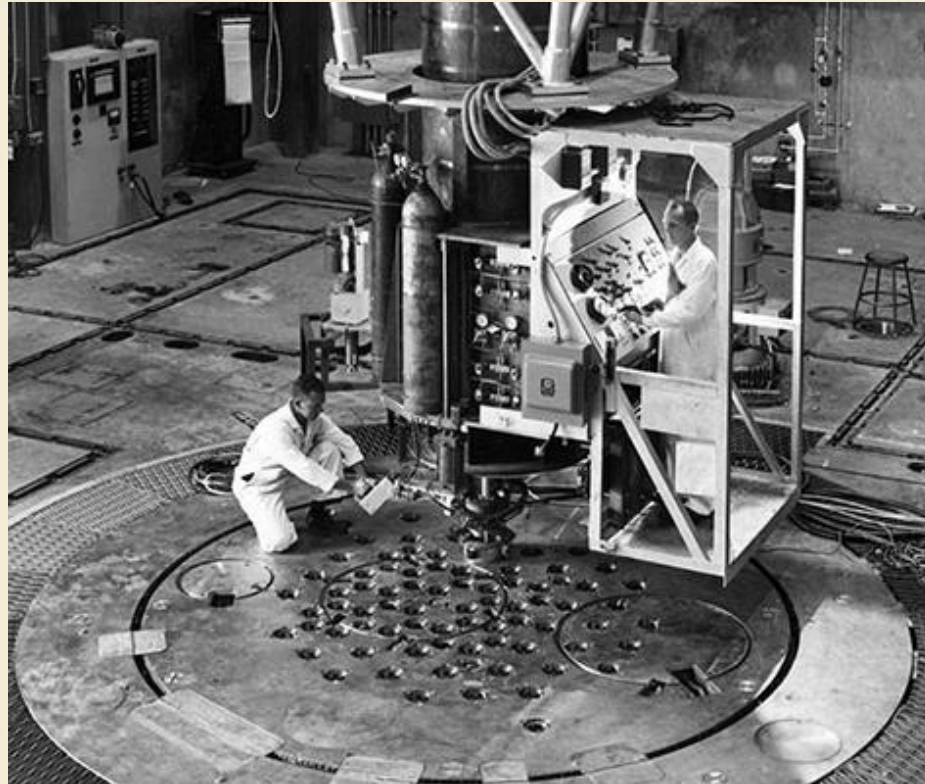
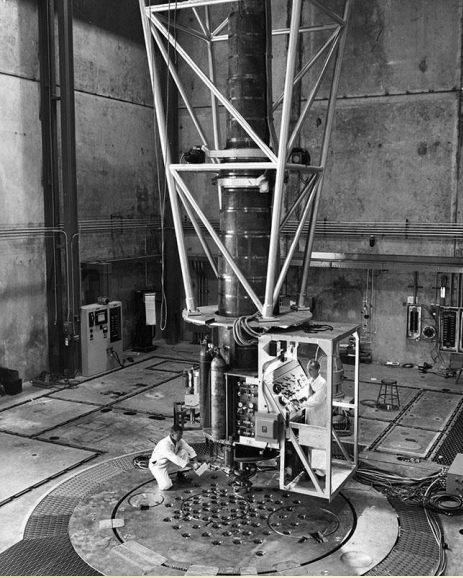


**Installation of 75-ton shield,**  
shield being lowered, for Sodium  
Reactor Experiment  
*LAPL Valley Times Collection, 1957*



**Installation of 75-ton shield for  
Sodium Reactor Experiment**  
*LAPL Valley Times Collection, 1957*





**“Huge, lead-shielded chamber for loading uranium fuel into atomic energy reactor built by Atomics International, division of North American Aviation Inc., hovers over heart of reactor sunk deep beneath ground. Heat produced is used to generate electricity for Southern California Edison Co. power station.”**

*LAPL Valley Times Collection,  
1957*



“New plant opened by Atomics International, division of North American Aviation, Inc., for Atomic Energy Commission, rests in Santa Susana Mountains. Plant is combination of **atomic reactor building at right, and Southern California Edison Co. power station, left.** Project is attempting to develop economical power from nuclear energy.”

*LAPL Valley Times Collection, 1957*



- In 1957, the Sodium Reactor Experiment became the first nuclear reactor in the United States to produce electrical power for a commercial power grid by powering the nearby city of Moorpark.
- The reactor reached full power in May 1958 and over 7 years provided a total of 37 GWh to the Southern California Edison Company grid before it was shut down in 1964. [*Source: SRE Decommissioning Final Report pdf pgs. 16-17*]

A 33 second video follows:

In 1957, **Edward R. Murrow** televised the Sodium Reactor Experiment's start on his program, "**See It Now**"

Available on YouTube as "SSFL Movie Edward Murrow See it Now TV"

<https://www.youtube.com/watch?v=dd1v4UeIETw>

A 33 second  
video

November 1957

Edward R.  
Murrow televised  
the Sodium  
Reactor  
Experiment's  
start on his  
program, "See It  
Now", as it  
powered the  
nearby city of  
Moorpark.





1959 – the SRE was the first civilian reactor to suffer a serious accident when more than a third of its fuel rods overheated and melted through their protective cladding. During the accident, coolant continued to circulate throughout the reactor core and the reactor vessel remained intact, preventing a meltdown. Following the accident, (nine months later), the SRE was repaired and operations continued, without incident, until the end of the project in 1964.

*[Source Boeing and DOE website]*



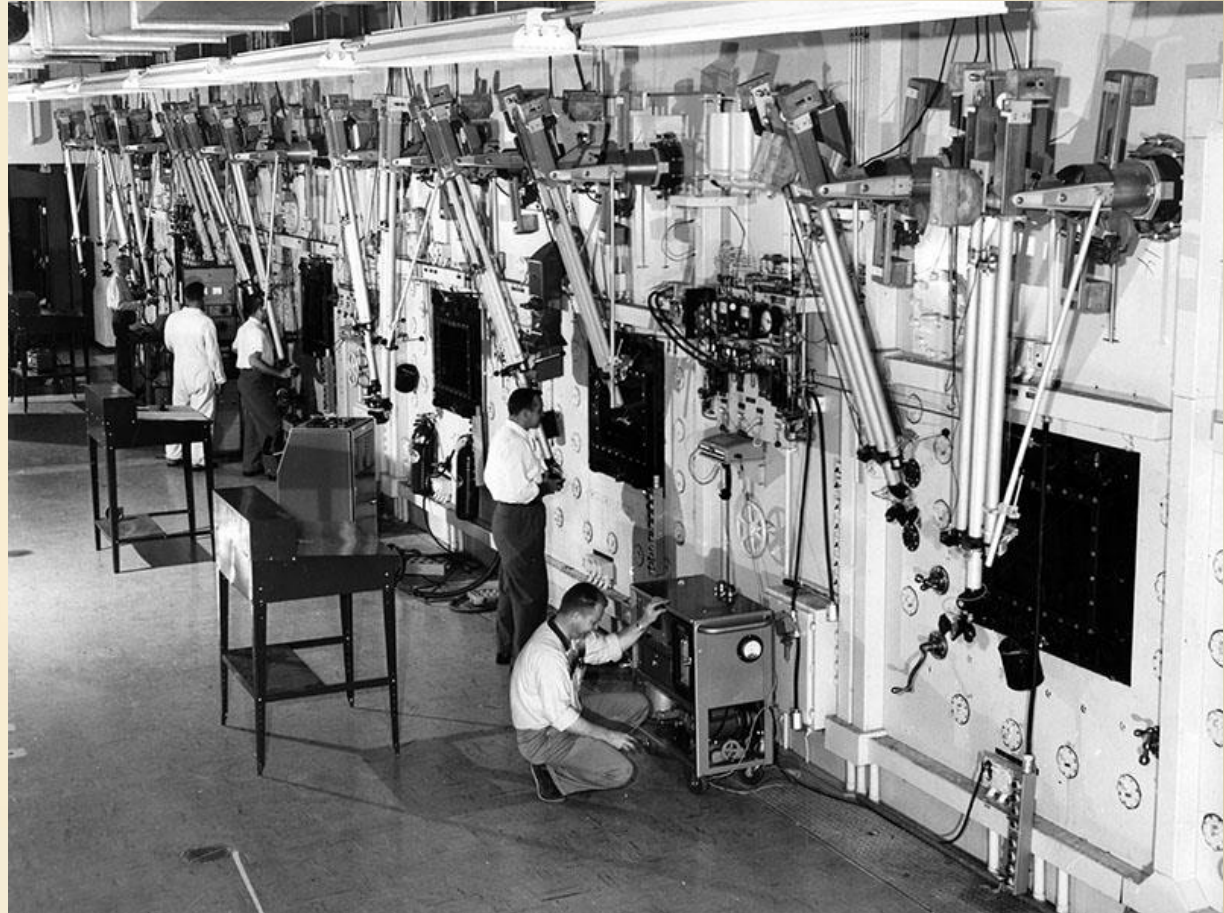
"The first atomic power reactor in the Los Angeles area is operated by Mayor Samuel W. Yorty during a visit to the Atomics International field laboratories in the mountains above Canoga Park while company officials watch. Called the sodium reactor experiment, the sodium-cooled nuclear plant first generated electricity in 1957. It was built for the Atomic Energy Commission by Atomics International, a division of North American Aviation." *LAPL Valley Times Collection, 1963*

# The Atomics International Division

"Huge 'hot cell' - Scientists use manipulators, or mechanical 'arms,' to conduct experiments on radioactive materials at largest privately owned 'hot cell' in world.

Built by Atomics International, a division of North American Aviation, Inc., it is part of the 290-acre nuclear field laboratory in Santa Susana Mountains. Manipulators permit remote examination of materials."

*LAPL Valley Times Collection, 1959*



# The Atomics International Division SNAP Program

- 1960's - the government-sponsored **System for Nuclear Auxiliary Power (SNAP)** program was established to develop compact, lightweight reliable atomic electric devices for use in space, sea and land.
- Many of the facilities constructed within SSFL Area IV in the early 1960's supported the development and testing of the reactors and the associated hardware. The last reactor operated in 1971.

“SNAP Nuclear core tests  
successful”

*LAPL Valley Times Collection, 1956*





# The last 20 years.....History and contamination issues

- In 1996, Rocketdyne sold their aerospace entities to Boeing, which included the SSFL.
  - In 1988, nuclear research ended. In 2006, rocket testing ended.
- In 2007, Boeing, NASA and the Department of Energy signed a cleanup agreement with the California Department of Toxic Substances Control (DTSC).
- Contamination was created from two primary sources:
  - Rocket Engine Testing - Trichloroethylene (TCE) is an industrial solvent and degreaser, and was used to clean rocket fuel vapors and hydrocarbon deposits in rocket engines. Many of those 17,000 rocket tests were cleaned with TCE before and after each test fire. Containment systems were used, but TCE is able to penetrate through concrete. So yes, TCE is in the sandstone boulders, soils, and groundwater.
  - Non-military Nuclear Research – Nuclear reactors and associated fuel facilities and laboratories resulted in some contamination of buildings and soils.

# The last 20 years.....Cleanup continues

- Cleanup efforts to date:
  - Over 300 buildings have been demolished and removed from the site.
  - The building that housed the Sodium Nuclear Reactor Experiment (SRE) was demolished, completely excavated, and removed in 1981.
  - Stormwater treatment systems are in place.
  - There are 260 groundwater monitoring wells and a groundwater treatment system.
  - 900 acres have been restored with native plants to reinstate the watershed and habitat.

# Today..... Boeing's efforts and position

- Today, Boeing offers site tours of the Field Lab to explain the history of the site, and the progress of their continuing cleanup efforts. The tours are free to the public.
- Twelve years ago, Boeing announced it would preserve the former Santa Susana Field Laboratory site as open space to protect wildlife habitat and the site's rich cultural heritage.
- In April 2017, Boeing established a conservation easement, held by North American Land Trust, that permanently preserves as open space habitat nearly 2,400 acres Boeing owns at Santa Susana. The conservation easement is a legally enforceable document that, among other restrictions, forever prohibits residential or agricultural development on-site. It permanently binds the property, regardless of who owns the land.



# Today..... Community preservation efforts

Concurrently, local community efforts are being pursued to preserve the 2,850 acre SSFL as a natural area. Efforts include:

1. The area has been included in the Rim of the Valley Corridor Project.
2. Nomination of the area as a National Monument.
3. The Santa Ynez Chumash have established Sacred Site status to the area.
4. Discussions are underway at NASA to consider keeping a few of the test stands as a part of the historic resources of the site. As a part of the 2007 agreement all test stands were to be removed.
5. The Santa Susana Field Lab no longer exists. It is proposed that the site in the future be renamed "Sky Valley".

# The future cleanup: two viewpoints.....

- Some people have pushed for a “cleanup to background”. Cleanup to background may be defined as eliminating all traces of potential contaminants from the soil. This approach would entail excavation and hauling-away of great volumes of soil, resulting in significant disturbance of the landscape; in high truck traffic through surrounding neighborhoods; in the possibility of unintentional redistribution of contaminants through wind, leakage, or truck accidents; and in high cleanup costs. Many people consider this solution to be more harmful than to leave acceptable levels of residual contamination at the site.
- Many community members have pushed for a “risk-based cleanup”. This means clean up the bad stuff to the point of conventional EPA human health assurance standards, but, don’t reshape the landscape in this wildlife corridor, don’t remove oak woodlands, and don’t destroy historic Native American sacred sites and artifacts. Some people believe this approach may not fully protect human health surrounding the site.
- As it stands today, Boeing is committed and cleaning to a standard of “risk-based cleanup”. NASA and DOE are currently obligated to “clean up to background”. The Burro Flats Painted Cave site is on NASA property. Negotiations continue.....

To conclude this presentation, and as a tribute to all Rocketdyne and Atomics International employees, we will show a six minute video highlighting their accomplishments ....

A six minute video:

“To the Stars and Beyond” by Aleli Kelton, Rocketdyne Photographer

As seen on the SSFL National Monument Facebook page

Available on YouTube,

“SSFL Movie To the Stars and Beyond Aleli Kelton widescreen”

<https://www.youtube.com/watch?v=5IDR7eFB33c>





**Rocketdyne Division**  
**Rockwell International**

Congratulations  
on 10 Years of  
Shuttle Missions

A small graphic of a shuttle launch is visible on the right side of the banner, showing a shuttle ascending from a launch pad with a plume of fire and smoke.

# Sources/Acknowledgements

Personal thanks to special contributors to this presentation, including Marcia Silvernale McGillis, Sally Silvernale Ziegler, Ed Hall, Albert Knight, Rurik Kallis, Orrin Sage, Jerry England, Dennis Liff.

“Simi Valley A Journey Through Time”, Patricia Havens, 1997

“Santa Susana (Images of America)”, Bill Appleton, 2009

“Rocketdyne: Powering Humans into Space”, 2006, Robert S. Kraemer

“NASA Historic Resources Survey”, SSFL, 2009 \*\*\*recommended reading\*\*\*

“DOE\_2008\_Site\_Environmental\_Report\_for\_the\_ETEC”, Boeing

“SSFL Site Operations /Ownership History” Techlaw, 1990

Boeing website <http://www.boeing.com/principles/environment/santa-susana/index.page>

DTSC website [http://www.dtsc.ca.gov/SiteCleanup/Santa\\_Susana\\_Field\\_Lab/](http://www.dtsc.ca.gov/SiteCleanup/Santa_Susana_Field_Lab/)

SSFL Community Advisory Group – website [ssflcag.net](http://ssflcag.net)

Prepared by Ann & Ray Vincent, Chatsworth Historical Society, Nov 2016, updated Jan 2019 & Jun 2020 –

**Please note** additional pages to the presentation after this slide.....

# Movies at Burro Flats

## 1937–1978

Below is a listing of movies filmed at Burro Flats, per the IMDB Database, as of November 2016

Come on, Cowboys (1937)	The Bandit Trail (1941)	Iron Mountain Trail (1953)
Ranger Courage (1937)	Robin Hood of the Pecos (1941)	Bandits of the West (1953)
Reckless Ranger (1937)	Six-Gun Gold (1941)	Jack Slade (1953)
Call the Mesquiteers (1938)	Sergeant York (1941)	Wings of the Hawk (1953)
Code of the Cactus (1939)	Land of the Open Range (1942)	The Nebraskan (1953)
Arizona Legion (1939)	Arizona Terrors (1942)	Massacre Canyon (1954)
Rovin' Tumbleweeds (1939)	Calling Wild Bill Elliott (1943)	Overland Pacific (1954)
The Kansas Terrors (1939)	California (1947)	The Black Dakotas (1954)
Zorro's Fighting Legion (1939)	Bandit King of Texas (1949)	Drums Across the River (1954)
Frontier Vengeance (1940)	Utah Wagon Train (1951)	They Rode West (1954)
Pony Express Days (1940)	Al Jennings of Oklahoma (1951)	Arrow in the Dust (1954)
Covered Wagon Days (1940)	Brave Warrior (1952)	Apache (1954)
The Carson City Kid (1940)	Wagons West (1952)	Return from Witch Mountain (1978)
Young Bill Hickok (1940)	Rose of Cimarron (1952)	
Adventures of Red Ryder (1940)	Shadows of Tombstone (1953)	



# Items related to the SSFL donated to the Chatsworth Historical Society

**Tole painted ceiling board above Silvernale Ranch House fireplace**

The board was donated to the CHS by Albert Knight in 2014. The board was given to AI by Pat Montoya Jr.'s son, who was working in the SSFL maintenance department, in 2012.



The top picture is the painted board; the bottom picture is the back of the board, it has a wall hanger, and says:  
SSFL Ranch House  
Pat Montoya Jr  
1979-2009

# Items related to the SSFL donated to the Chatsworth Historical Society

## Atomics International Dosimeter Charger and two pens (direct read pocket dosimeters)

Donated by an Atomics International employee who was a nuclear engineer at SSFL for 25 years, from 1962 to 1987. He recently celebrated his 95<sup>th</sup> birthday.



# Items related to the SSFL donated to the Chatsworth Historical Society

**CAUTION**



**RADIATION  
AREA**

**Various Safety signs from Atomics International**

Donated by an Atomics International employee who was a nuclear engineer at SSFL for 25 years, from 1962 to 1987. He recently celebrated his 95<sup>th</sup> birthday.

**DELICATE  
INSTRUMENTS**



**HANDLE WITH  
GREAT CARE**

L-85

© LABELMASTER, CHICAGO, ILL. 60648

**EVACUATE**





# Items related to the SSFL donated to the Chatsworth Historical Society



## Various Safety signs from Atomics International

Donated by an Atomics International employee who was a nuclear engineer at SSFL for 25 years, from 1962 to 1987. He recently celebrated his 95<sup>th</sup> birthday.

# DOE RADIOLOGICAL ACTIVITIES IN AREA IV

Source:  
SSFLCAG  
youtube video  
“Future Open  
Space”



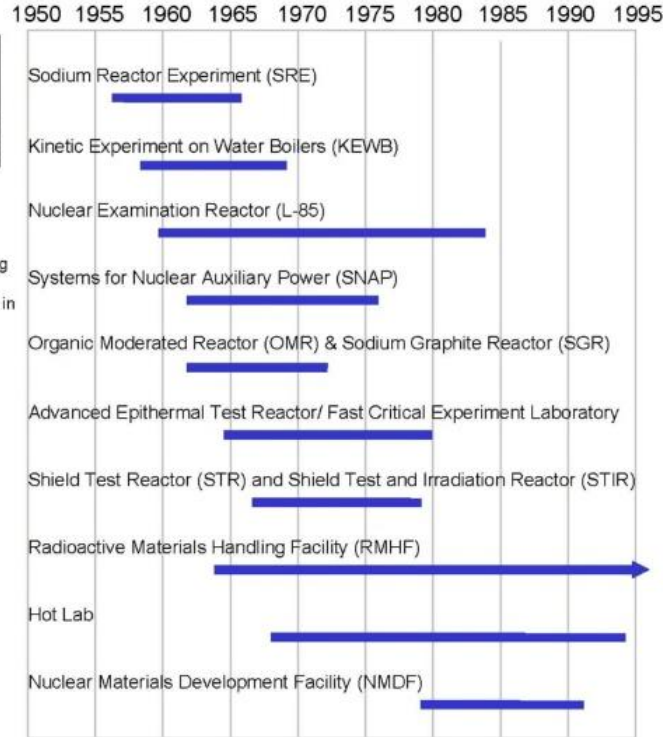
## Systems for Nuclear Auxiliary Power (SNAP):

- Atomic International (AI) program to develop space nuclear power systems.
- A system was launched from Vandenberg Air Force Base on April 3, 1965.
- Remains the only nuclear reactor placed in space by the U.S.



## The Hot Lab:

- Used for 30 years to handle, examine, and disassemble highly radioactive items.
- Activities done remotely in heavily shielded rooms.
- Decontaminated and decommissioned in the mid-1990's.



## Sodium Reactor Experiment (SRE):

- Atomic Energy Commission program to test a sodium-cooled power reactor.
- Supplied power to the City of Moorpark.
- The first nuclear reactor in the U.S. to produce power for a commercial power grid.
- Partial melting of 13 of the 43 reactor fuel assemblies occurred in 1959, which released nuclear gasses.



## The Radioactive Materials Handling Facility (RMHF):

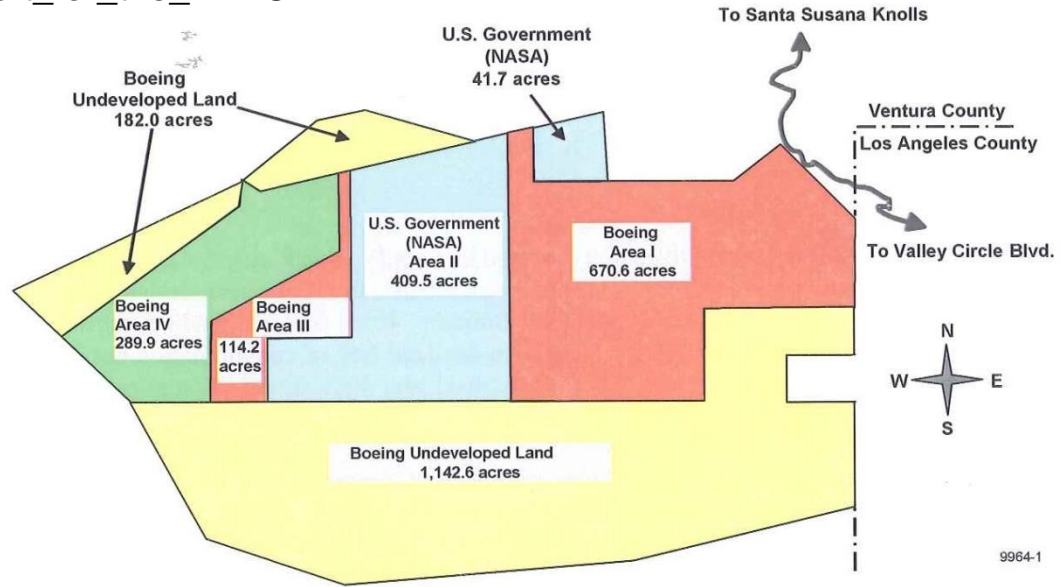
- Used for packaging radioactive material for offsite disposal.
- Septic tank leach field was contaminated by cesium and strontium in 1962.
- Leach field was cleaned up and released for unrestricted use.
- RMHF remains in use supporting the cleanup of other facilities.

Subdivisions			
Owner	Jurisdiction	Acres	Subtotals
Boeing	Boeing--Area IV	289.9	2,399.3
	Boeing--Area I and III	784.8	
	Boeing (Undeveloped land)	1,324.6	
Government	NASA (former AFP 57)	409.5	451.2
	NASA (former AFP 64)	41.7	
Total Acres			2,850.5

## Boeing Acreage and Ownership

Source:  
DOE\_2008\_Site\_Enviromental\_Report\_for\_the\_ETEC

by Boeing pg21





**SSFL Chart of Acreage and Areas**

Listing By Area			Sources		
Area I	Rocket Testing	670.60		NASA_Historic_Resources_Survey_2009.pdf	
Area I	NASA LOX	41.70	good	various	
Area II	NASA Rocket Testing	409.50	good	NASA_Historic_Resources_Survey_2009.pdf	
Area III	Rocket Testing	114.20	good	DOE_2008_Site_Environmental_Report_for_the_ETEC pg21	
Area IV	Atomics International	289.90	good	DOE_2008_Site_Environmental_Report_for_the_ETEC pg21	
	Subtotal	<u>1,525.90</u>			
1968	Undeveloped Land - Bell	1,142.60		SSFLmap1 acres identified	
	Total SSFL In some reports	<u>2,668.50</u>			
1997	Undeveloped Land - Brandeis	182.00		brandeis-boeing-legal-settlement.html	1,060.00 Per Boeing Silvernale article
	Total SSFL per Boeing	<u>2,850.50</u>		As of March 2016 per Boeing website	838.00 Silvernale
					222.00 Difference
	<b>As of 12/31/1958</b>				409.50 Area I
	owned by NAA	1074.714		SSFL Site Operations/Ownership history pdf pg 146	114.20 Area II
	USAF (NASA)	451.183		SSFL Site Operations/Ownership history pdf pg 146	<u>289.90</u> Area III
	leased from Ida Dundas	76.87		SSFL Site Operations/Ownership history pdf pg 146	<u>838.00</u>
		<u>1602.767</u>			24.40 Difference
<b>Listing by Date Acquired</b>					
1947[1]	Dundas Parcel A	540.69		SSFL Site Operations/Ownership history pdf pg 140	617.56 Lease amendment
	less Dundas Parcel E?				(540.69) Parcel A
1954	Silvernale	838.00		SSFL Site Operations/Ownership history pdf pg 142	
1968	Undeveloped Land - Bell	1,142.60		SSFLmap1 acres identified	
	Other unexplained perhaps				
???	Sage?	47.21		calculated	
1976	Geopac (Sage) Parcel E	100.00		SSFL Site Operations/Ownership history pdf pg 149	
1997	Undeveloped Land - Brandeis	182.00		brandeis-boeing-legal-settlement.html	
	Total SSFL	<u>2,850.50</u>			
Note [1]	In 1947 NAA entered a 15 year lease with Dundas on property in Area I In 1949 they amend the lease to identify 540 acres as Parcel A In 1954 they purchase Parcel A				
Note [2]	SSFL Site Operations/Ownership history pdf pg 146 mentions Paradise Valley Road				