

United States Environmental Protection Agency (USEPA)

Radiological Studies at Santa Susana Field Lab SSFL Quarterly Workgroup meeting

October 22, 2009



Agenda

1. Introduction of EPA Staff
2. EPA's Role at the Santa Susana Field Laboratory (SSFL)
3. Radiological Background Study Field Effort
4. Status of Area IV Radiological Study
5. Schedule and Next Steps for EPA's Studies



US EPA Santa Susana Field Lab Technical Team

US EPA

- ▣ Nicole Moutoux, Project Manager, San Francisco
- ▣ Craig Cooper, Project Manager, San Francisco
- ▣ Mary Aycok, Project Manager, San Francisco
- ▣ Gregg Dempsey, Senior Science Advisor, Las Vegas

US EPA Contractors

- ▣ Eric Evans, Project Manager, Hydrogeologic, Inc.
- ▣ Carl Palladino, Radiological Specialist, The Palladino Company, Inc.



EPA' s Role at SSFL

- ▣ EPA is responsible for the completion of a radiological background study and a radiological study in SSFL Area IV
- ▣ State of California Department of Toxic Substances Control is responsible for regulating and certifying the overall clean-up of SSFL



RADIOLOGICAL BACKGROUND STUDY



Snake Rangler



Radiological Background Study Objectives

- ▣ The purpose of the Background Study is to determine the level of “ambient or background” radioactivity found in soil.
- ▣ The results of the Background Study will be compared to radiological data collected at the SSFL to determine the extent of radiological contamination.



Status of Radiological Background Study

- ✓ Initial project planning
- ✓ Background location evaluation and selection
- ✓ Sampling Plan preparation
- ✓ Sampling preparation and mobilization
- ✓ Sampling - Mobilization 1 (August-September 2009)
- Sampling - Mobilization 2 (November 2009)
- Laboratory analyses
- Data validation, evaluation, and statistical analysis
- Report preparation

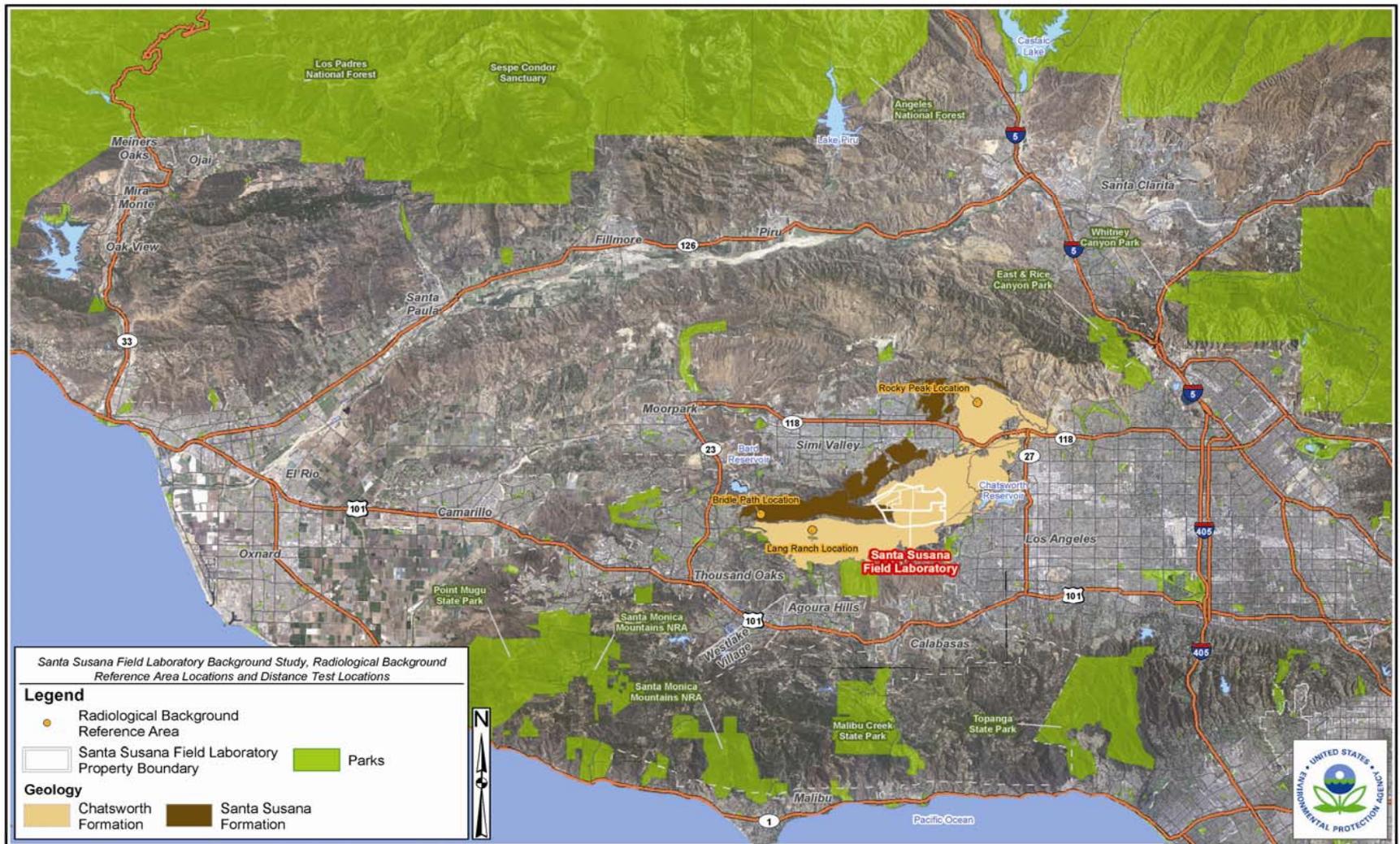


Location Evaluation and Selection

- ❑ Conducted with considerable assistance from community members
- ❑ Initially, over 200 locations in seven general areas were identified and considered
- ❑ Eleven locations were evaluated
- ❑ Three locations were selected for background sampling
- ❑ These areas are referred to as Radiological Background Reference Areas (RBRAs)



Radiological Background Reference Areas (RBRAs)



Lang Ranch Chatsworth Formation



Rocky Peak Chatsworth Formation



RBRA sampling activities

Gamma screening and survey

- ▣ Conducted a gamma radiation screening walkover survey over entire 1-acre area
- ▣ Randomly selected one point within the 1-acre area and constructed a sampling grid based off the randomly selected point
- ▣ Selected one 1/2 acre area for sampling



RBRA sampling activities Gamma screening and survey



RBRA sampling activities

Surface soil sampling

- ▣ Staked out and collected surface soil samples at 27 sampling locations in the Lang Ranch RBRA and 28 sampling locations in the Rocky Peak RBRA for analysis



RBRA sampling activities

Surface soil sampling



RBRA sampling activities

Subsurface soil sampling

- ❑ 10 locations from each RBRA were randomly selected for subsurface soil sampling
- ❑ Samples were collected from 3 to 10 feet below ground surface
- ❑ At some locations, we were not able to get as deep as 10 feet and samples were collected over shallower depths



RBRA sampling activities

Subsurface soil sampling



RBRA sampling activities

Borehole gamma logging

- ❑ PVC was placed in borehole after subsurface soil samples were collected
- ❑ Collected gross gamma radiation measurements down entire length of the borehole
- ❑ One minute static measurements were collected every six inches



RBRA sampling activities

Borehole gamma logging



Distance Test Locations

- ▣ Address concern that the three background locations are too close to SSFL
- ▣ Collected 20 surface soil samples at distances at least 10 miles from SSFL
- ▣ Compare sampling results to ensure that the three background locations are not impacted by SSFL



Distance Test Locations

Surface Soil sampling

- ▣ Collected 6 surface soil samples from each compass quadrant
 - Northeast quadrant
 - Southeast quadrant
 - Northwest quadrant
 - Southwest quadrant

- ▣ Randomly selected 6 sampling locations out of 10 for each quadrant



Distance Test Locations Surface Soil sampling



Distance Test Locations

Gamma screening

- ▣ At each Distance Test Location, a surface gamma screening walkover survey was conducted
- ▣ A 50 by 50 foot area was surveyed surrounding each Distance Test Location



Radionuclides of Interest

- ▣ Naturally occurring radionuclides (e.g., U-238, U-235, Th-232, etc.)
- ▣ Radionuclides found in fallout (e.g., Cs-137, Sr-90, etc.)

Produced at SSFL

- ▣ Radionuclides found in nuclear fuel (e.g., Pu-238, U-235, etc.)
- ▣ Fission Products (e.g., Cs-137, Sr-90, etc.)
- ▣ Activation Products (e.g., U-233, Eu-152, Co-60, etc.)



Laboratory Selection

- ▣ Selected a lab that will achieve low detection limits and provide quality data
- ▣ Detection limit: the lowest concentration of a substance that can be measured in a laboratory within a specific certainty



Data Evaluation

- ▣ Ensure laboratory data quality
- ▣ Apply statistical methods to help us understand and use the data
- ▣ Calculate a background value for each radionuclide



RADIOLOGICAL STUDY OF SSFL

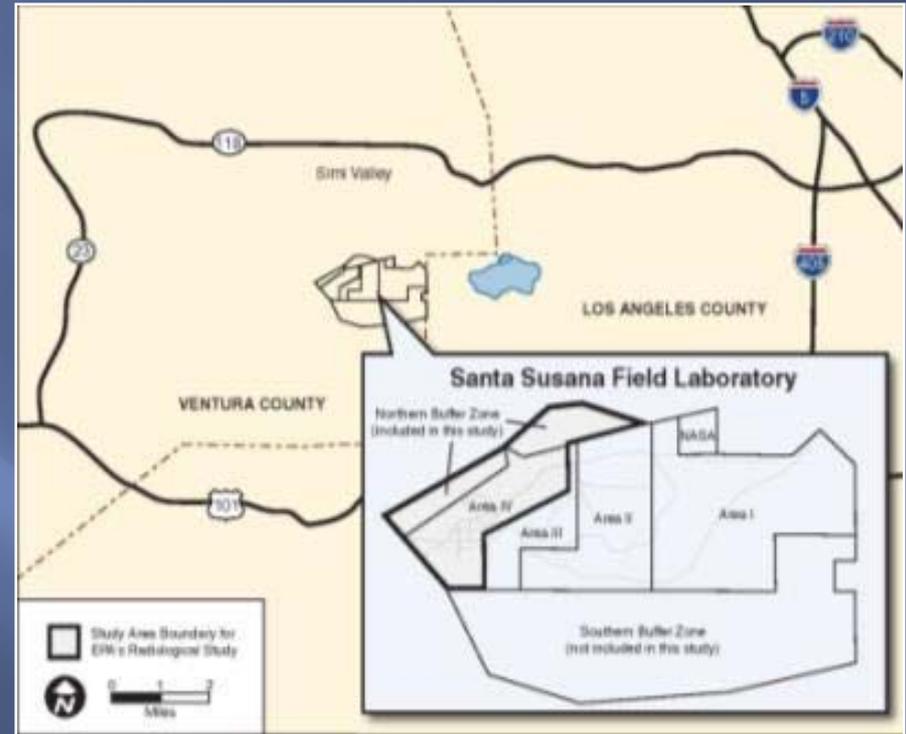
AREA IV AND THE NORTHERN
BUFFER ZONE



Area IV Project Overview

Goal: Determine the extent of radiological contamination associated with Area IV.

- Work Components:
 - Historical Site Assessment
 - Gamma Scan Survey
 - Soil and Water Sampling and Analysis
 - Data Evaluation and Reporting



Historical Site Assessment Objectives

- ▣ Determine the complete list of potential radiological contaminants associated with SSFL Area IV
- ▣ Identify locations where the releases and spills of radioactive materials may have occurred
- ▣ Guide EPA's upcoming soil and water testing



Historical Site Assessment Status

▣ Gathering, Managing and Reviewing Documents

- Over 85,000 records collected to date from Department of Energy (DOE) and Boeing
- Independent research at Federal Archives, Record Centers, and Private collections
- Establishing a website to post documents to be used by EPA
- Document reviews will be focused on “new” information



Historical Site Assessment Status

- ▣ Aerial Photo Analysis
 - 30% done . Final work product due January 2010
 - Work being done by experts contracting with EPA Las Vegas Lab
 - Year by Year analysis from 1938 to present with emphasis on years during nuclear activities
 - Identifies potential dump, spill areas and past surface water drainages



Historical Site Assessment Status

- ▣ Interviews of Former Employees
 - Independent EPA interviews
 - Joint EPA and DOE interviews
 - DOE only interviews
 - More than 200 former employees have volunteered
 - Former employees choose interview logistics
 - Interviews to start in November
- ▣ For more information, contact EPA's Andrew Taylor at 415-972-3129



Gamma Scanning Technology Options for Area IV Survey

Enhanced Radiological Scanning System (ERGS)

- High detection sensitivity
- Used on relatively flat terrain



Borehole Gamma Logger

- Low detection sensitivity
- Used in boreholes



Hand-Held Gamma Scanner

- Low detection sensitivity
- Used in rough terrain



Mule-Carried Gamma Scanning System

- A mule-carried system with moderate detection sensitivity
- System could scan rough terrain with minimal environmental disturbance.



Wheeled Gamma Scanner

- Low to moderate detection sensitivity
- Used on moderately rough terrain



Gamma Scan Survey Next Steps

- ▣ Draft Work Plan: November 2009
 - Break study area into zones based on accessibility
 - Match best available scanning technology to each zone
 - U.S. Fish and Wildlife Service is requiring formal consultation under the Endangered Species Act



Gamma Scan Survey Next Steps

- ▣ EPA field office
 - EPA and GSA in negotiations over NASA Building located in SSFL Area II
 - If successful, EPA to begin move-in by December
- ▣ Gamma Scan Start Date
 - Must complete vegetation cutting prior to February 15 (the start date of bird nesting season)
 - Gamma scanning to commence in late February
- ▣ For more information, contact EPA's Mary Aycok at 415-972-3289



Water and Soil Testing

- ▣ Water Testing Work Plan
 - Stakeholder group to form later this year
 - For more information, contact EPA's Nicole Moutoux at 415-972-3012
- ▣ Soil Testing Work Plan
 - Stakeholder group to form in early 2010
 - For more information, contact EPA's Craig Cooper at 415-947-4148



EPA's Overall Project Schedule

Activity	Schedule
Radiological Background Study Testing	August 2009 (Done) November 2009
Radiological Background Study Data Report	January 2010
Historical Site Assessment Report	September 2010
Gamma Scan Survey Report	December 2010
Soil, Surface Water, Sediment and Groundwater Testing	Spring 2010 to Summer 2011
Area IV Data Report	September 2011



Upcoming Meetings

- ▣ Next SSFL Inter-Agency Work Group: January/February 2010 (exact date to be determined)
- ▣ Next EPA Public Meeting: Spring 2010
- ▣ Please contact EPA's David Cooper at (415) 972-3245 with suggestions for EPA's community involvement and outreach efforts



EPA Web Site

www.epa.gov/region09/SantaSusana



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