Preliminary Assessment/Site Inspection Report
Santa Susana Field Laboratory
Simi Valley, California

EPA ID No.: CAN000908498
USACE Contract No.: W91238-06-F-0083
Document Control No.: 12767.063.419.1650

November 30, 2007

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U.S. Environmental Protection Agency
Region 9

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List of Acronyms

AOCs	Areas of Concern
APTF	Advanced Propulsion Test Facility
BBI	Brandeis-Bardin Institute
Boeing	The Boeing Company
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CMS	Corrective Measures Study
DHS-RHB	California Department of Health Services – Radiological Health Branch
DOE	Department of Energy
ECL	Engineering Chemical Labortory
EIS	Environmental Impact Statement
ETEC	Energy Technology and Engineering Center
FSDF	Former Sodium Disposal Facility
HRS	Hazard Ranking System
LETF	Laser Engineering Test Facility
LOX	liquid oxygen
MCL	Maximum Contaminant Level
MMH	monomethyl hydrazine
NASA	National Aeronautics and Space Administration
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NTO	nitrogen tetroxide
OUs	Operable Units
PA/SI	Preliminary Assessment/Site Inspection
ppb	parts per billion
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RIHL	Rockwell International Hot Laboratory
RMDF	Radioactive Materials Disposal Facility
RWQCB	California Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SMMC	Santa Monica Mountain Conservancy
SNAP	Space Nuclear Auxiliary Power
SRE	Sodium Reactor Experiment
SSFL	Santa Susana Field Laboratory
STL-IV	Systems Testing Laboratory IV
SWMUs	Solid Waste Management Units
TCE	trichloroethylene
TSDF	treatment, storage, and disposal facility

EPA	Environmental Protection Agency
WESTON	Weston Solutions, Inc.

1.0 INTRODUCTION

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), Weston Solutions, Inc. (WESTON) was tasked to conduct a Preliminary Assessment/Site Inspection (PA/SI) of the Santa Susana Field Laboratory (SSFL) site, located approximately 2 miles south of the City of Simi Valley and 29 miles northwest of downtown Los Angeles, California, on a plateau near the crest of the Simi Hills.

The purpose of the PA/SI is to review existing information and collect additional information on the site and its environs using the U.S. Environmental Protection Agency's (EPA's) Hazard Ranking System (HRS) criteria to assess the relative threat associated with actual or potential releases of hazardous substances at the site. The HRS has been adopted by the EPA to help set priorities for further evaluation and eventual remedial action at hazardous waste sites. The HRS is the primary method of determining a site's eligibility for placement on the National Priorities List (NPL). The NPL identifies sites at which the EPA may conduct remedial response actions. This report summarizes the findings of these preliminary investigative activities.

The SSFL site (EPA ID No.: CAN000908498) was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) in 1980. EPA has conducted investigations at various locations throughout the site. The individual locations were assigned separate EPA ID numbers. In April, 2007, EPA ID No.: CAN000908498 was created as a parent site to the various SSFL sites (i.e., CA3890090001 - Energy Technology Engineering Center, CA1800090010 – Rockwell International – Rocketdyne Division (NASA), CAD093365435 – Rockwell International Corporation Rocketdyne Division, CAD982399776 – Rockwell International Corporation – SSFL II, CAD982399719 – Rockwell International Corporation – SSFL I). All of the SSFL locations have been combined into this parent site in order to allow EPA to evaluate the entire site as a single entity (1).

More information about the Superfund program is available on the EPA web site at http://www.epa.gov/superfund. The fact sheet attached in Appendix F describes EPA's site assessment process.

1.1 Apparent Problem

The apparent problems at the site, which contributed to EPA's determination that a PA/SI was necessary, are presented below:

- Multiple operations at the SSFL over the last six decades have resulted in the contamination of surface and subsurface environmental media by various hazardous substances.
- Extensive use of the most predominant hazardous substance at the site, trichloroethylene (TCE), has impacted the groundwater beneath the site. Several TCE plumes exist

throughout the site.

- Drinking water wells at the site were contaminated with TCE and shut down after workers were exposed to TCE concentrations above Federal and State limits (2, 3, 4).

2.0 SITE DESCRIPTION

2.1 Location

The SSFL is located approximately 2 miles south of the City of Simi Valley and 29 miles northwest of downtown Los Angeles, California, in the southeast corner of Ventura County. The approximate geographic coordinates for the center of the site are 34° 13' 35" north latitude and 118° 41' 30" west longitude. The location of the site is shown in Figure 2-1.

2.2 Site Description

The SSFL site occupies 2,850 acres of rugged terrain on a plateau near the crest of the Simi Hills, at an approximate average elevation 1,900 feet above mean sea level. The site is bordered to the northwest by the Brandeis-Bardin Institute (BBI) and to the northeast by the Santa Monica Mountain Conservancy (SMMC). Further to the north lies the Simi Valley, which is densely populated. The southern border of the site is adjacent to Bell Canyon, a residential development. There is dense residential development in the San Fernando Valley, approximately 5 miles southeast of the site. Properties adjacent to the eastern border of the site are zoned for light agricultural use. There is a residential community located in Woolsey Canyon, approximately ¼-mile east of the SSFL boundary, and a new community is under development near Dayton Canyon. The western border of the site is adjacent to land designated as open space by Ventura County. A section of Runkle Canyon, located in this area, recently has been proposed for development (2, 4).

The SSFL site is divided into four administrative areas (Areas I, II, III, and IV), with undeveloped land acting as buffer zones to the northwest and south, as shown in Figure 2-2. The size, location, and current ownership of these areas are as follows:

- Area I is 670 acres located in the northeastern section of the site. It is currently owned by the Boeing Company (Boeing). There is a 41-acre section in the northwestern part of Area I that is owned by the National Aeronautics and Space Administration (NASA).
- Area II is 409 acres located in the north central section of the SSFL site and is currently owned by NASA.
- Area III is 114 acres located to the west of Area II. It is currently owned by Boeing.
- Area IV is 290 acres located in the northwestern section of the site. It is currently owned by Boeing, with a 90-acre section that is leased to the U.S. Department of Energy (DOE).

- There is a total of 1,325 acres of undeveloped land located to the northwest and to the south of the SSFL site that is currently owned by Boeing (4, 5).

2.3 Operational History

Prior to being developed, the SSFL site was used for ranching. Development of the land started in 1948 by North American Aviation (a predecessor company of Boeing) in the northeast section of the site. In 1954, a majority of the site was acquired, and development began on the western section of the site. The undeveloped areas to the south were acquired in 1968 and 1976, and to the north in 1998 (2).

The main operations at the SSFL site included research, development, and testing for liquid-fueled rocket engines. Operations at the site have been conducted by Boeing since 1996. Prior to 1996, the site was operated by the Rocketdyne Division (Rockedyne) of North American Aviation and the Rockwell International Corporation. Between 1953 and 1961, approximately 8,000 rocket engine tests were conducted at the site. Rocket engine testing declined in the 1980s and 1990s, and it ended in 2005. During the testing process, rocket engines were flushed with an organic solvent, primarily TCE. Additionally, TCE was used to clean other equipment at the rocket test areas. After the engines and equipment were flushed, any TCE that did not evaporate was discharged from the test stands to concrete spillways. The spillways emptied to channels which drained into retention and/or skim ponds. Many of the channels and ponds were either unlined or lined with poorly maintained concrete surfaces. The ponds eventually drained into Bell Creek. It is estimated that up to 800,000 gallons of TCE were used during this process (2, 4).

In addition to rocket engine testing, the SSFL was used for nuclear energy research and testing. These operations were conducted on a 90-acre section of the site known as the Energy Technology and Engineering Center (ETEC). The ETEC property was leased to DOE and operated by Atomics International (a division of North American Aviation) and Rockwell International Corporation from the 1950s to the early 1980s.

The following is a brief summary of activities conducted at each of the four SSFL administrative areas:

- Area I – The primary operation in Area I was rocket engine testing at the Advanced Propulsion Test Facility (APTF), the Laser Engineering Test Facility (LETF), Canyon, and Bowl. Testing in this area began in 1953. Large rocket engine tests in this area mainly used petroleum-based fuels with a liquid oxygen (LOX) oxidizer as well as monomethyl hydrazine (MMH) – nitrogen tetroxide (NTO). Additionally, solid propellant, such as perchlorate, was used during small rocket motor tests and research and development programs within Area I. Rocket testing in this area included the solvent flushing procedure outlined above.
- Area II – Rocket engine testing was the main operation at Area II. Testing took place at four test areas: Alfa, Bravo, Coca, and Delta. Small jet engine testing also was conducted in this area. Testing began in 1953 and used similar fuels and solvent cleaning procedures to those in Area I.
- Area III – Small engine testing with an MMH-NTO propellant was conducted in

Area III at the Systems Test Laboratory IV (STL-IV). The propellant ingredients were developed at the Engineering Chemistry Laboratory (ECL). Organic solvents were used to flush the small jet engine thrust chambers after each test. The solvent wastes were stored in similar surface impounds used at Areas I and II.

- Area IV – Area IV primarily was used as a test facility for nuclear reactors and related projects. Research and development on nuclear reactor subsystems began in the 1950s. Nuclear operations at ETEC included 10 nuclear research reactors, such as the Sodium Reactor Experiment (SRE) and the Space Nuclear Auxiliary Power (SNAP) compound liquid-metal reactors, and seven critical facilities. The main nuclear facilities within Area IV included the Radioactive Materials Disposal Facility (RMDF) and the Rockwell International Hot Laboratory (RIHL). The RMDF was used for storing irradiated fuel elements, packaging radioactive wastes, and treating low-level radioactive wastes. The RIHL was used for decladding fuel elements. Additionally, an area known as the Former Sodium Disposal Facility (FSDF) or Area IV burn pit was used from 1966 to the late 1970s to dispose of metallic sodium, sodium-potassium mixtures, solvents, and radioactively-contaminated equipment. The operations in Area IV have resulted in radiological and chemical contamination of soil and groundwater (2, 4, 6, 7).

2.4 Regulatory Involvement

2.4.1 U.S. Environmental Protection Agency

The SSFL site is listed in the Resource Conservation and Recovery Information System database under the following EPA ID numbers as a Treatment, Storage and Disposal Facility (TSDF) and a Large Quantity Generator: CAD000629972, CA1800090010, CA3890090001, and CAD093365435. The SSFL site was brought into the Resource Conservation and Recovery Act (RCRA) corrective action process by EPA Region 9 in 1989. The EPA completed the Preliminary Assessment Report and the Visual Site Inspection portions of the RCRA Facility Assessment (RFA) process in 1994 (4, 5, 8, 9, 10, 11).

2.4.2 U.S. Department of Energy

The DOE currently is responsible for characterization and remediation of radiological contamination at the ETEC site in Area IV. On May 2, 2007, a federal district court order was issued prohibiting the DOE from conducting actions at the ETEC site until the DOE completes an Environmental Impact Statement (EIS) evaluating the cumulative impacts associated with the DOE's activities at the site (7, 12).

2.4.3 California Department of Toxic Substances Control

After completion of the RFA, the EPA delegated RCRA authority to the California Department of Toxic Substances Control (DTSC). DTSC is the current lead agency overseeing the RCRA

corrective action process for the SSFL, including the ETEC site. The RCRA corrective action process includes four phases: 1) the RFA, 2) the RCRA Facility Inspection (RFI), 3) the Corrective Measures Study (CMS), and 4) the Corrective Measures Implementation. During the RFA phase, 125 Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) were identified for the SSFL site. SWMUs and AOCs are locations where hazardous materials were used, stored, or handled. Ten additional AOCs were identified during the initial RFI phase, resulting in a total of 135 SWMUs and AOCs (2, 13).

The objectives of the RFI phase are to characterize the nature and extent of chemical contamination in environmental media, evaluate risks to human health and the environment, gather data for the CMS, and identify areas for additional work. The 135 SWMUs and AOCs have been grouped by location into 51 RFI sites. The SSFL site was further divided into 10 Group Reporting Areas to provide an integrated approach to collecting data from all environmental media across interrelated areas of the site. The Group 6 Reporting Area that includes the ETEC site is the first to receive a Group RFI Report. In addition to the Group Reporting Areas, characterizations at the SSFL site have been conducted along two parallel paths, one for groundwater and one for soil/surface related media. This process was formalized in 1999 by defining these two paths as Operable Units (OUs). The Surficial Media OU consists of the saturated and unsaturated soil, sediment, surface water, near-surface groundwater, air, biota, and weathered bedrock. The Chatsworth Formation OU is comprised of the Chatsworth formation aquifer and the saturated and unsaturated unweathered bedrock (2, 13).

In August 2007, the DTSC issued a Consent Order for Corrective Action to Boeing, NASA, and the DOE that included, among other things, requirements for: 1) a corrective action schedule 2) interim measures 3) the RFI process 4) remedy selection 5) the CMI process, and 6) the California Environmental Quality Act (CEQA) process (2, 13).

2.4.4 California Regional Water Quality Control Board

The California Regional Water Quality Control Board (RWQCB) has issued waste discharge permits to the SSFL since 1958. Starting in 1984, the RWQCB began issuing surface water discharge permits to the SSFL under the National Pollutant Discharge Elimination System (NPDES). Surface water discharges from the site are monitored at 18 NPDES locations (RFI). The RWQCB has stated that, from 1998 through 2006, discharges from the SSFL have continually exceeded effluent limits for dioxin, heavy metals, and other pollutants. In July 2007, the RWQCB – Los Angeles Region issued an order requiring Boeing to cease and desist all discharges of contaminants that exceed specified effluent limits (2, 14).

2.4.5 California Department of Health Services – Radiological Health Branch

The California Department of Heath Services – Radiological Heath Branch (DHS-RHB) oversees Boeing's Radioactive Materials License, performs radioactive facility verification surveys, conducts environmental monitoring, and evaluates radioactive facility cleanup (2, 7).

3.0 INVESTIGATIVE EFFORTS

Numerous investigations have been conducted throughout all four areas at the SSFL site over the past three decades. As stated above, investigations have resulted in the identification of 135 different SWMUs and AOCs. It is not within the scope of this PA/SI to individually address all of the previous investigations. Table 1 presents an outline of the primary facilities at the SSFL site, their use, and the hazardous substances associated with these facilities that were determined during previous investigations (2, 4, 13, 15)

4.0 HAZARDOUS RANKING SYSTEM FACTORS

4.1 Sources of Contamination

For HRS purposes, a source is defined as an area where a hazardous substance has been deposited, stored, or placed, as well as those soils that have become contaminated from the migration of a hazardous substance. As mentioned above and as shown in Table 1, a wide range of operations at the SSFL site that began in 1948 involved the use of various hazardous substances. There are 135 individual SWMUs and AOCs that are potential sources of contamination as defined by the HRS. The primary chemicals that comprise these sources are organic solvents (mainly TCE), petroleum-based fuels, hydrazine-based fuels, liquid metals (mainly sodium and potassium), and radionuclides (2, 4).

The surface impoundments that comprised the water reclamation system at the SSFL received wastes that contained many of these chemicals. Throughout its operation, a total of 28 surface impoundments were used at the SSFL site to collect cooling water and rinse water from the rocket engine tests. Additionally, the impoundments were used to collect storm water runoff and accidental spills. Many of the surface impoundments and drainages leading into them were either unlined or lined with poorly maintained concrete surfaces that exhibited cracks. (4, 15).

TCE is the contaminant present in the largest quantity throughout all of the SSFL sources. Estimates indicate that up to 800,000 gallons of TCE were used during the engine flushing procedures. Cooling and rinse water containing TCE entered the surface impoundments, ultimately resulting in contamination of the underlying soil and groundwater. Recent estimates indicate that over 500,000 gallons of TCE were discharged to the ground at the SSFL site during its operation (2, 16).

4.2 Groundwater Pathway

In determining a score for the groundwater migration pathway, the HRS evaluates: 1) the likelihood that sources at a site actually have released, or potentially could release, hazardous substances to groundwater; 2) the characteristics of the hazardous substances that are available for a release (i.e., toxicity, mobility, and quantity); and 3) the people (targets) who actually have been, or potentially could be, impacted by the release. For the targets component of the evaluation, the HRS focuses on the number of people who regularly obtain their drinking water from wells that are located within 4 miles of the site. The HRS emphasizes drinking water usage over other uses of groundwater (e.g., food crop irrigation and livestock watering), because, as a screening tool, it is designed to give the greatest weight to the most direct and extensively studied exposure routes.

An observed release of TCE to the groundwater beneath the SSFL site is well documented. Analytical data indicate that both the shallow aquifer and the deeper Chatsworth Formation aquifer have been contaminated with TCE. Although other volatile organic compounds, such as trans-1,2-dichloroethylene, vinyl chloride, Freon-113, toluene, and benzene, also have been detected, TCE is the compound detected with the highest concentration and greatest frequency (15, 17).

TCE contamination in the groundwater was documented as early as August, 1980, in an internal letter produced by Rockwell international. The letter states that drinking water Well #5 was contaminated with TCE at a concentration of 9 parts per billion (ppb), which is over the DHS limit of 5 ppb. The DHS limit for TCE corresponds with the EPA Maximum Contaminant Level (MCL) of 5 ppb. Based on the contamination, Rockwell International shut down the well and began providing bottled drinking water to the people working at the SSFL site by January, 1981. Two additional wells, Well #6 and Well #13, were operational at the time that TCE was detected in Well #5. Well #6 was a standby well, and Well #13 was an active well that was not contaminated with TCE (3).

In March, 1983, it was documented that TCE was detected at a concentration of 10 ppb in Well #5 and Well #6. Additionally, TCE was detected in Well # 13 at a concentration of 2.8 ppb. Analytical data provided by DHS for a period from 1985 to 1987 indicated concentrations of TCE up to 180 ppb in Well #5, 320 ppb in Well #6, and 2.0 ppb in Well#13. An extensive groundwater monitoring program has been in place at the SSFL site since 1984. Throughout this time, TCE has been detected in 355 out of 425 wells that have been sampled at the site, with a maximum concentration of 110,000 ppb detected in well RD-35A (3, 16).

4.2.1 Hydrogeological Setting

The SSFL is located in the Simi Hills, within the east-west trending Transverse Ranges physiographic province. The Simi Hills separate the Simi Valley from the western part of the San Fernando Valley. The primary geologic units present at the SSFL are Quaternary Alluvium and the upper Cretaceous Chatsworth Formation. The alluvium is a mixture comprised principally of sand and silty sand, with minor amounts of silt and clay. The thickness of the

alluvium is typically 5 to 15 feet, but in a few locations it is over 30 feet thick. The Chatsworth Formation is a marine turbidite sequence primarily comprised of medium-grained sandstone with interbedded siltstone and shale units (2, 4, 18, 19).

Groundwater occurs at the SSFL in the alluvium, weathered bedrock, and unweathered bedrock. First-encountered groundwater typically exists under water table conditions and may be encountered in any of these media. Because the site is located on a topographic high in the Simi Hills, groundwater migrates from the site downhill to the Simi and San Fernando Valleys. Therefore, there are no up gradient sources of contamination for the site. The alluvium and weathered bedrock comprise the shallow groundwater system, with a deeper groundwater system in the fractured Chatsworth Formation. Surface runoff may be stored and transmitted from the shallow groundwater system to the underlying Chatsworth Formation. The shallow zone is composed of unconsolidated sand, silt, and clay eroded from the surrounding formations and the underlying weathered in-place portion of the Chatsworth Formation. The shallow zone is discontinuous and subject to seasonal variations throughout the SSFL. It is saturated along ephemeral channels and in the southern part of Burro Flats, which is located in the western part of the site. The saturated portion of the shallow zone may be as thick as 10 feet at the SSFL. Shallow zone water level data indicates that the piezometric surface tends to mimic the topographic surface. Depth to water has ranged from 2 feet to a maximum of 35 feet. The variation is season and location dependent. In some areas of the site, the shallow zone aquifer appears to be separate and distinct from the Chatsworth Aquifer; however, in other areas they appear to be interconnected (4, 19).

The Chatsworth Formation system is primarily a fracture-controlled aquifer composed of bedded sandstone with interbeds of siltstone and claystone, and is highly fractured in the SSFL area. Sedimentary rocks comprising the Chatsworth Formation are dominantly interleaved layers of sandstone and finer grained rocks such as siltstones and shales. These stratified rocks are characterized by rapid lateral and vertical change, reflecting their complex depositional environment. In spite of the presence of faults and fine-grained layers within the Chatsworth Formation, all portions of the Chatsworth Formation appear to be interconnected through fractures (4, 20).

4.2.2 Groundwater Targets

The internal Rockwell International letter indicated that TCE was detected in Well #5 at a concentration of 9 ppb, which exceeded the DHS limit (as well as the MCL) of 5 ppb. In August 1980, Rockwell International estimated the total population of the SSFL at 550 people. Additionally, it was estimated that Well #5 comprised 60% of the monthly water supply for this population, with Well #13 providing the remaining water. The letter indicates that Well #13 did not contain TCE; therefore, an apportioned population of approximately 330 people were subjected to TCE contamination above the MCL (3).

Golden State Water Company operates two municipal drinking water wells (Niles Well and Sycamore Well) that are located between a 3-4 mile radius to the northwest of the SSFL site. The groundwater is blended at the Niles Blending Station through four system interconnections

with the Calleguas Municipal Water District, which obtains its water from surface water sources. The population that can potentially receive water from the Niles Blending Station is estimated at 38,119 people. Year 2006 records indicate that 80 percent of the water serving this population came from the Calleguas Municipal Water District; therefore, the apportioned population served by groundwater is 7,624. Although TCE has not been detected in the Golden State Water Company municipal drinking water supply, the above population may be subjected to potential future contamination from the SSFL site (Contact Reports).

4.2.3 Groundwater Pathway Conclusion

An observed release of TCE from the SSFL site to groundwater has been established based on data collected from 1980 to the present. For HRS purposes, a release to groundwater is established when a hazardous substance is detected in a hydraulically down gradient well at a concentration significantly above background levels, and some portion of the release is attributable to the site. A hazardous substance is considered to be present at a concentration significantly above background levels when one of the following two criteria is met: (1) the hazardous substance is detected in the contaminated sample, when not detected in the background samples or (2) the hazardous substance is detected in the contaminated sample at a concentration equal to or greater than three times the maximum background level, when detected in the background samples.

The 2,850 acre SSFL site is located in the Simi Hills at an approximate average elevation of 1,900 feet above mean sea level. The groundwater beneath the site forms a regional groundwater high; therefore, there are no up gradient sources of contamination. Furthermore, TCE is not a naturally occurring substance and should not be present at background concentrations. TCE was initially detected in a drinking water well at the site in 1980. As stated above, TCE was detected in Well #5 at a concentration of 9 ppb, exceeding both State and Federal drinking water limits of 5 ppb. An extensive groundwater monitoring program was initiated in 1984. Analytical data collected by the DHS from 1985 to 1987 showed increasing concentrations of TCE up to 320 ppb. The groundwater beneath the SSFL site continues to remain contaminated with TCE, with current data indicating concentrations as high as 110,000 ppb. This release is attributable to the SSFL site because TCE has been used extensively throughout its operational history (3, 16)

4.3 Surface Water Pathway

In determining the score for the surface water pathway, the HRS evaluates: 1) the likelihood that sources at a site actually have released, or potentially could release, hazardous substances to surface water (e.g., streams, rivers, lakes, and oceans); 2) the characteristics of the hazardous substances that are available for a release (i.e., toxicity, persistence, bioaccumulation potential, and quantity); and 3) the people or sensitive environments (targets) who actually have been, or potentially could be, impacted by the release. For the targets component of the evaluation, the HRS focuses on drinking water intakes, fisheries, and sensitive environments associated with surface water bodies within 15 miles downstream of the site.

4.3.1 Hydrologic Setting

A majority of the surface water runoff from the SSFL site drains to the southeast through Bell Canyon Creek. Bell Canyon Creek flows into the Los Angeles River approximately 5 miles from the site. The Los Angeles River empties into the Pacific Ocean in Long Beach, CA. The remaining surface water runoff drains from a section of Area IV through a series of ephemeral drainages in Runkle and Meier Canyons. The ephemeral drainages enter either Arroyo Simi or Conejo Creek, approximately 3 miles north of the site. These streams flow into Calleguas Creek, which empties into the Pacific Ocean near Point Magu. In addition to the ephemeral drainages, there are approximately 28 springs/seeps within or adjacent to the SSFL property. The springs/seeps receive groundwater from the aquifer beneath the SSFL site (2, 15, 19).

4.3.2 Surface Water Pathway Targets

The SSFL site is located in a semiarid area where precipitation averages approximately 18 inches per year. Surface water in the creeks that drain the site is seasonal. Drainages, such as Meier Creek, are dry 99 percent of the year. Due to the ephemeral nature of the streams that drain the site, there is not a sufficient amount water to support surface water intakes or fisheries. Surface water runoff at the site is controlled by a series of artificial drainages and impoundments. There are a total of 18 NPDES outfalls located throughout the site that are regulated by the RWQCB. Discharges from the SSFL have exceeded effluent limits for dioxin, heavy metals, and other pollutants. Additionally, recent data indicate that TCE was detected at a concentration of 93 ppb in one of the springs/seeps that drains from the site (14, 16, 22).

There are several Federal and State endangered or threatened species that have either been observed or are likely to exist at the SSFL site and the surrounding land. These species have the potential to be exposed to surface water contamination at the site. The Federal endangered or threatened species are the following: Braunton's milkvetch , Lyon's pentachaeta, California orcutt grass, San Diego fairy shrimp, Arroyo southwestern toad, Quino checkerspot butterfly, Least Bell's vireo, and Southwestern willow flycatcher. The State endangered or threatened species are the following: Costal rosy boa, San Diego mountain king snake, and the Ringtail (7).

4.3.3 Surface Water Pathway Conclusion

A release of TCE to the groundwater beneath the SSFL site is documented. The groundwater discharges to the surface water at 28 spring/seep locations. Recent data indicated that TCE has been detected at one of the spring/seep locations. The SSFL site and surrounding land support habitat for endangered and threatened species.

4.4 Soil Exposure and Air Pathways

In determining the score for the soil exposure pathway, the HRS evaluates: 1) the likelihood that there is surficial contamination associated with the site (e.g., contaminated soil that is not covered by pavement or at least 2 feet of clean soil); 2) the characteristics of the hazardous substances in the surficial contamination (i.e., toxicity and quantity); and 3) the people or

sensitive environments (targets) who actually have been, or potentially could be, exposed to the contamination. For the targets component of the evaluation, the HRS focuses on populations that are regularly and currently present on or within 200 feet of surficial contamination. The four populations that receive the most weight are residents, students, daycare attendees, and terrestrial sensitive environments.

In determining the score for the air migration pathway, the HRS evaluates: 1) the likelihood that sources at a site actually have released, or potentially could release, hazardous substances to ambient outdoor air; 2) the characteristics of the hazardous substance that are available for a release (i.e., toxicity, mobility, and quantity); and 3) the people or sensitive environments (targets) who actually have been, or potentially could be, impacted by the release. For the targets component of the evaluation, the HRS focuses on regularly occupied residences, schools, and workplaces within 4 miles of the site. Transient populations, such as customers and travelers passing through the area, are not considered targets.

4.4.1 Physical Conditions

The SSFL site is located in a mountainous region that is primarily surrounded by undeveloped land. There is a wide range of physical conditions that exist at the 2,850 acre site. Some sources of contamination at the site, particularly in Area IV, are either covered with roofs or paved with asphalt. Additionally, sources within Area IV are fenced and subject to manned security. Other sources at the SSFL site are less sheltered; however, only transient populations may be exposed to these sources (22, 23)

4.4.2 Soil and Air Targets

There are no residences, schools, daycare facilities, or terrestrial sensitive environments located on or within 200 feet of surfical contamination at the site. The nearest residences are located to the southeast in Bell Canyon and the northeast at the SMMC's Sage Ranch Park. The ranger's house at Sage Ranch Park is the only permanent residence on that property.

Continuous outdoor air sampling for radioactivity is conducted along the perimeter of Area IV. Annual exposures measured on and off site are below the Nuclear Regulator Commissions annual dose limit to the general public of 100 millirem above natural background, as used by DOE. Additionally, there is no known historic outdoor ambient air sampling that can be used to document a release to air (5, 21).

4.4.3 Soil Exposure and Air Migration Pathway Conclusions

A release of hazardous substances to site soils has been documented. However, there are no residences, schools, daycare facilities, or terrestrial sensitive environments located on or within 200 feet of surficial contamination at the site. There is no known historic outdoor ambient air sampling that can be used to document a release to air.

5.0 EMERGENCY RESPONSE CONSIDERATIONS

The National Contingency Plan [40CFR 300.415 (b) (2)] authorizes the EPA to consider emergency response actions at those sites that pose an imminent and substantial threat to human health or the environment. For the following reasons, a referral to Region 9's Emergency Response Office does not appear to be necessary:

- The SSFL site was brought into the RCRA corrective action process by EPA Region 9 in 1989.
- The DTSC is the current lead agency overseeing the RCRA corrective action process. The sources of contamination at the site have been identified through this process and continue to undergo further characterization and remediation.

6.0 SUMMARY

The 2,850 acre Santa Susana Field Laboratory site is located on a plateau near the crest of the Simi Hills, approximately 2 miles south of the City of Simi Valley and 29 miles northwest of downtown Los Angeles, California, in the southeast corner of Ventura County. The SSFL site is divided into four administrative areas (Areas I, II, III, and IV), with undeveloped land acting as buffer zones to the northwest and south. Currently, the Boeing Company owns Areas I, III, IV, and the undeveloped buffer zones. The National Aeronautics and Space Administration owns a small portion of Area I and all of Area II. Boeing leases a section of Area IV, known as the Energy Technology Engineering Center (ETEC), to the U.S. Department of Energy.

Operations at the SSFL site began in 1948 and primarily consisted of research, development, and testing for liquid-fueled rocket engines. Thousands of rocket engines were tested throughout Areas I, II, and III during the 1950s and 1960s. Rocket engine testing declined in the 1980s and 1990s, and all rocket testing operations ended in 2005. Various hazardous substances were used during operations at the site; however, the organic solvent trichloroethylene (TCE) was used the most extensively. It is estimated that up to 800,000 gallons of TCE were used to clean and flush out rocket engines after testing. Spent TCE was discharged from the test stands to a series of drainage channels and surface impoundments. Many of the drainage channels and impoundments were either unlined or lined with poorly maintained concrete. As a result, the groundwater beneath the site was contaminated with TCE. High concentrations of TCE remain in the groundwater.

In addition to rocket engine testing, the ETEC portion of the SSFL site in Area IV was used for nuclear energy research and testing. Nuclear research at ETEC started in the 1950s. Ten nuclear research reactors were operated at the site along with several facilities that handled radioactive wastes. The operations in Area IV have resulted in radiological contamination of soil and groundwater at the site.

The SSFL site was brought into the Resource Conservation and Recovery Act (RCRA) corrective action process by EPA Region 9 in 1989. The EPA completed the RCRA Facility

Assessment (RFA) in 1994 and delegated RCRA authority to the California Department of Toxic Substances Control (DTSC). The DTSC is in the process of overseeing a RCRA Facility Inspection (RFI) for the site. During the RFA and RFI, 135 Solid Waste Management Units and Areas of Concern were identified as potential sources where hazardous materials were used, stored, or handled. These sources have been divided into 10 Group Reporting Areas during the RFI process. The Group 6 Reporting Area is the first to receive and RFI Report. In addition to the DTSC oversight, the California Regional Water Quality Control Board (RWQCB) regulates effluent from 18 National Pollutant Elimination Discharge System (NPDES) locations throughout the site.

The following pertinent Hazard Ranking System (HRS) factors are associated with the site:

- A release of TCE to the groundwater beneath the SSFL site is well documented. Analytical data indicate that both the shallow aquifer and the deeper Chatsworth Formation aquifer have been contaminated with TCE. Although other contaminants have been detected, TCE is the compound detected with the highest concentration and greatest frequency.
- TCE was detected in the groundwater as early as 1980. Records indicated that TCE was detected in a drinking water well at a concentration of 9 parts per billion (ppb), which exceeded the State and Federal drinking water limits of 5 ppb. Approximately 330 people were subjected to contaminated groundwater from this drinking water well. The well was shut down due to the contamination, and bottled drinking water was provided. The groundwater beneath the SSFL site continues to be contaminated, with current concentrations of TCE has high as 110,000 ppb.
- The groundwater beneath the SSFL site forms a regional groundwater high; therefore, there are no up gradient sources of contamination.
- Currently, there are approximately 7,624 people that receive groundwater from a blended municipal drinking water system that is located between a 3-4 mile radius from the site.
- Groundwater beneath the SSFL site discharges to the surface water at 28 spring/seep locations. Recent data indicated that TCE has been detected at one of the spring/seep locations. The SSFL site and surrounding land support habitat for endangered and threatened species. These species have the potential to be exposed to surface water contamination at the site.

7.0 REFERENCE LIST

1. U.S. Environmental Protection Agency (EPA), Envirofacts Warehouse, Superfund, CERCLIS Query Results, http://oaspub.epa.gov/enviro/fii_master/fii?retrieve?fac_search, based on data extracted November 16, 2007.

2. MHW, Group 6-Northeastern Portion of Area IV RCRA Facility Investigation Report, Santa Susana Field Laboratory, Ventura County, California, Volume I – Text, Tables, and Figures, September 2006.

3. Rockwell International, Internal Letter, Drinking Water Supply-SSFL, August 14, 1980.

4. Science Applications International Corporation, Final RCRA Facility Assessment Report for Rockwell International Corporation Rocketdyne Division, Santa Susana Field Laboratory, Ventura County, California, May 1994.

5. The Boeing Company, Site Environmental Report for Calendar Year 2005, DOE Operations at The Boeing Company Santa Susana Field Laboratory, September 2006.

6. Ecology and Environment, Inc. (E&E), Preliminary Assessment, Rockwell International, Santa Susana Field Lab Former Sodium Burn Pit, August 18, 1989.

7. U.S. Department of Energy (DOE), Environmental Assessment for Cleanup and Closure of the Energy Technology Engineering Center, March 2003.

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9. EPA, Envirofacts, RCRAinfo Query Results, http://oaspub.epa.gov/enviro/fii_master.fii_retrieve?fac_search=handler_id&fac_value=CA1800090010, based on data extracted June 8, 2006.

10. EPA, Envirofacts, RCRAinfo Query Results, http://oaspub.epa.gov/enviro/fii_master.fii_retrieve?fac_search=handler_id&fac_value=CA3890090001, based on data extracted June 8, 2006

11. EPA, Envirofacts, RCRAinfo Query Results, http://oaspub.epa.gov/enviro/fii_master.fii_retrieve?fac_search=handler_id&fac_value=CAD093365435, based on data extracted June 8, 2006

12. California Department of Toxic Substances Control (DTSC), Letter, Discontinuation of DOE Activities at the Santa Susana Field Laboratory, Simi Valley, California, June 26, 2007.

13. DTSC, Santa Susana Field Laboratory, Simi Hills, Ventura County, California, Docket No. P3-07/08-003, Consent Order for Corrective Action, August 2007.

14. California Regional Water Quality Control Board (RWQCB), Cease and Desist Order No.

R4-2007-0YYY Requiring the Boeing Company, Santa Susana Field Laboratory to Cease and Desist Discharges of Contaminant Concentrations in Excess of Applicable Water Quality Standards to Waters of the United States, July 2007.

15. E&E, Summary Review of Preliminary Assessments/Site Inspections of Rockwell International Santa Susana Field Laboratory, July 19, 1989.

16. DTSC, Santa Susana Field Laboratory Groundwater Investigation (Presentation), February 8, 2007.

17. MWH, Work Plan, Phase 2 Groundwater Site Conceptual Model, Santa Susana Field Laboratory, Ventura County, California, April 2007.

18. Montgomery Watson, Technical Memorandum Conceptual Site Model, Movement of TCE in the Chatsworth Formation, Santa Susana Field Laboratory, Ventura County, California, April 2000.

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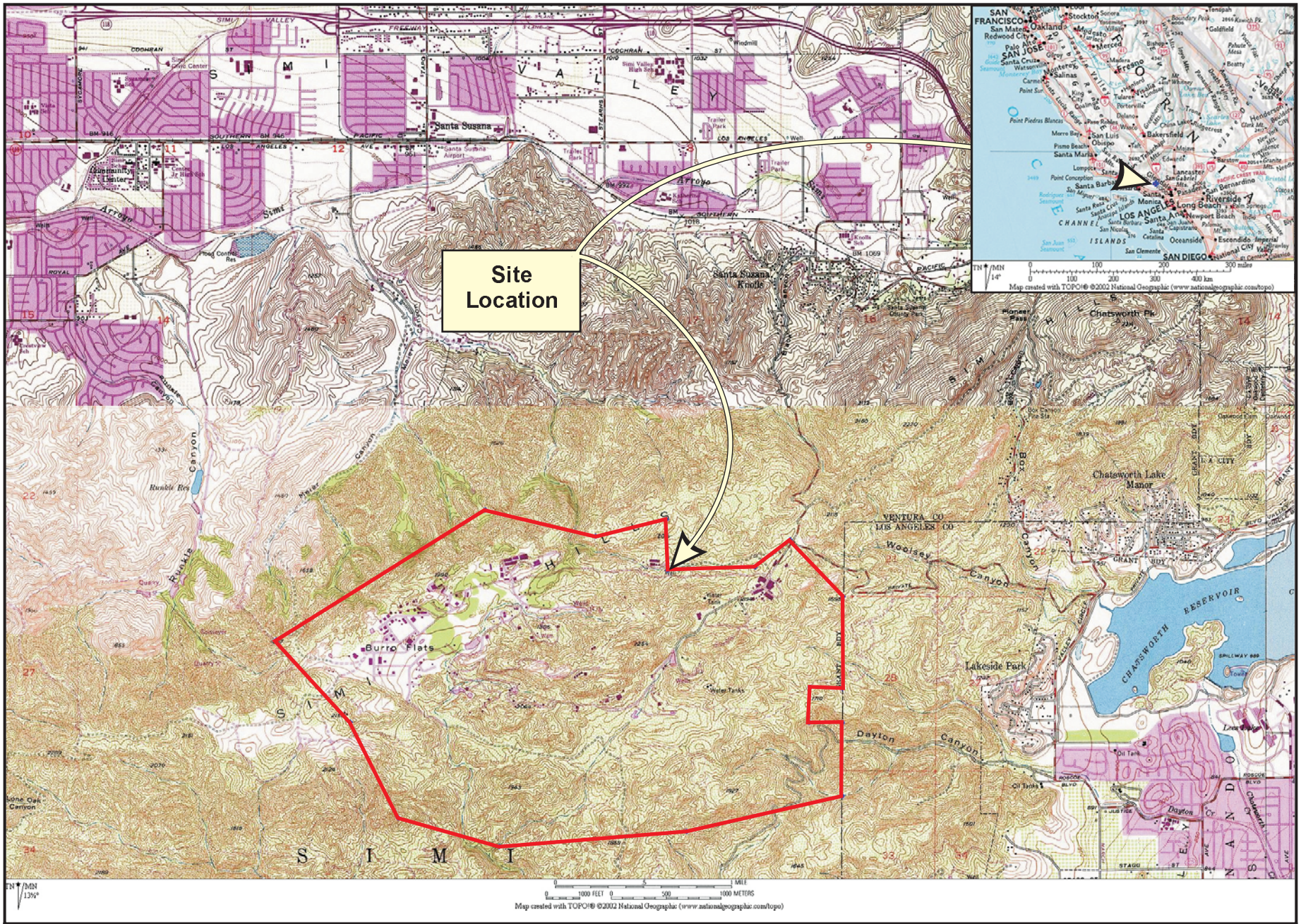
21. Weston Solutions, Inc., Site Inspection Report, Energy Technology Engineering Center/Area IV, Simi Hills, California, September 2003.

22. PRC Environmental Management, Inc., Federal Facility Review, Preliminary Assessment/Site Inspection Final Report, Energy Technology Engineering Center, Simi Hills, California, September 21, 1993.

Table 3-1 Primary Waste Facilities at the SSFL site		
Facility	**Use**	**Hazardous Substances**
AREA I		
APTF Ponds #1 and #2	Cooling water basin, emergency spill containment, treatment	Petroleum fuels, nitric acid, MMH-NTO, TCE
LETF Pond	Waste storage and treatment	Corrosive liquids (sodium hydroxide and sodium fluoride), TCE
Area I Burn Pit	Waste storage and treatment	Solid propellants, explosives, TCE
Perimeter Pond	Water containment and storage	Petroleum fuels, nitric acid, MMH-NTO, TCE, 1,1,1-trichloroethane (TCA), freon
R-1 Pond	Water storage	Petroleum fuels, nitric acid, MMH, TCE, TCA, Freon, corrosive liquids
Bowl Area	Catchment for Bowl Test Area, emergency spill containment	Petroleum fuels, TCE, TCA, freon
Canyon Area	Catchment for Canyon Test Area, emergency spill containment	Petroleum fuels, TCE, TCA, freon
AREA II		
Storable Propellant Area (SPA) Ponds #1 and #2	Container rinsate, emergency spill containment, treatment	MMH-NTO, 1,2-dimethyl hydrazine
Propellant Load Facility (PLF) Impoundment	Spill containment, treatment	MMH-NTO
Delta Skim Pond	Rinsate and spill containment	TCE, Freon, MMH, chlorinated and fluorinated solvents
Alfa-Bravo Skim Pond	Cooling water catchment, spill containment	Hydrazine, formaldehyde, methylene chloride, Freon, TCE, trans-1,2-dichloroethylene (DCE), acetone
Alfa Tank	Storage tank	Spent TCE

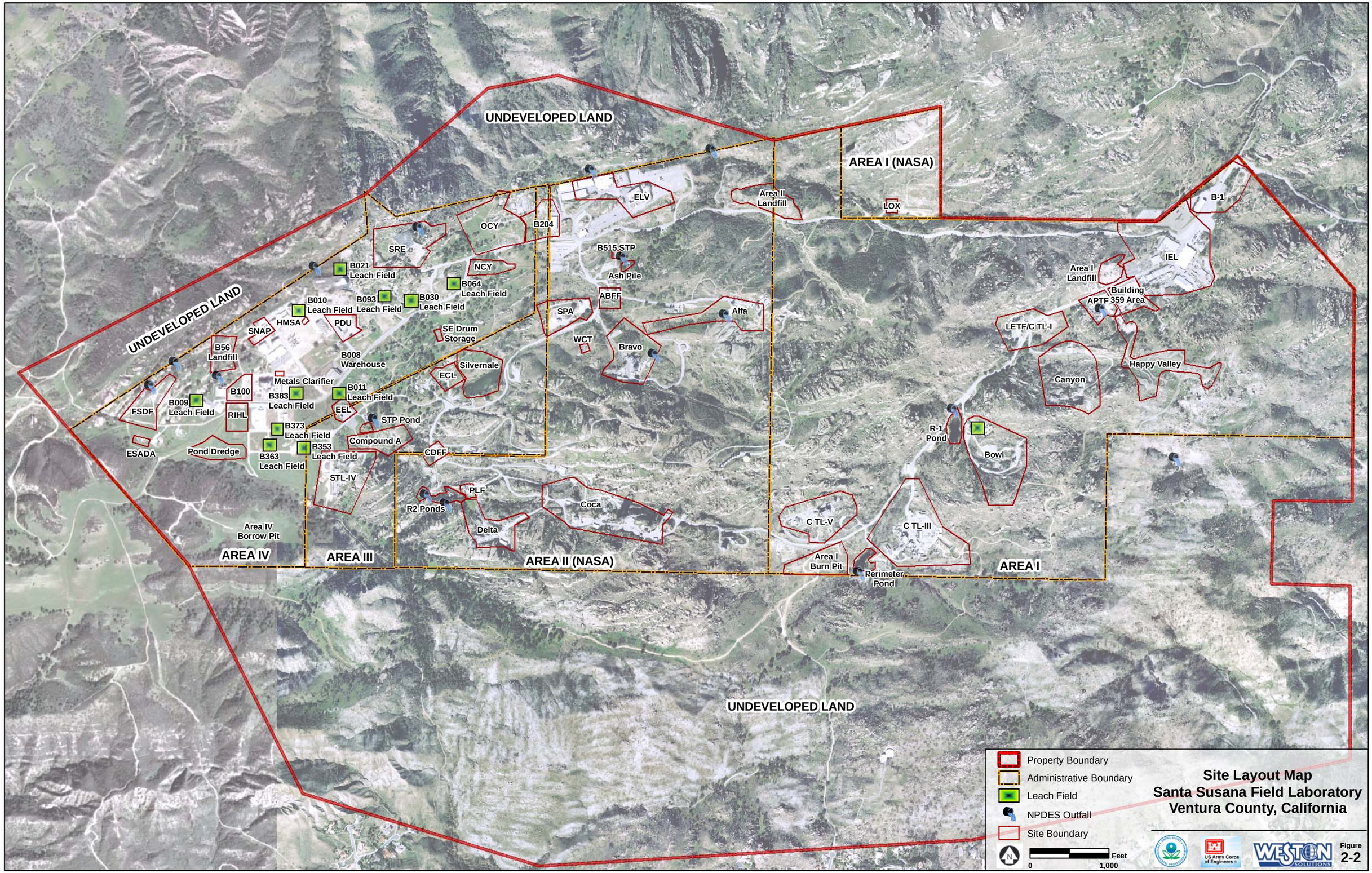
Table 3-1 Primary Waste Facilities at the SSFL site		
Facility	**Use**	**Hazardous Substances**
Alfa Skim Pond	Catchment for Alfa test area, emergency containment	Petroleum fuels, TCE, TCA, freon
Bravo Skim Pond	Catchment for Bravo test area, emergency containment	Petroleum fuels, TCE, TCA, freon
Coca Skim Pond	Catchment for Coca test area	Petroleum fuels, TCE, TCA, freon
Building 206 ELV	Storage	TCE
R-2A and R-2B Ponds	Water containment and storage	Petroleum fuels, TCE, TCA, Freon, MMH
AREA III		
ECL Pond	Treatment and storage	Methylene chloride, sodium hydroxide, formaldehyde, nitric acid, sodium azide, dimethyl sulfoxide
Compound A	Wastewater catchment	Hydrofluoric acid
Systems Test Laboratory (STL) – IV Ponds #1 and #2	Cooling water catchment, spill containment	MMH, hydrazine, TCA, TCE, polycyclic aromatic hydrocarbons (PAHs)
Silvernale Reservoir	Water Storage and treatment	Hydrazine, DCE, methylene chloride, TCE, trichlorotrifluoroethane
AREA IV		
Old Conservation Yard	Drum and equipment storage	Cesium-137, PAHs, polychlorinated hydrocarbons (PCBs), dioxins
New Conservation Yard	Drum and equipment storage	Volatile organic compounds (VOCs), PAHs, PCBs, dioxins, metals
SRE	Liquid-metal-cooled nuclear reactor	Mercury, VOCs, PAHs, PCBs, dioxins

Table 3-1 Primary Waste Facilities at the SSFL site		
Facility	**Use**	**Hazardous Substances**
RMDF	Handling, treatment, and storage of high-activity radioactive waste	Strontium-90, Cesium-137
RIHL	Radioactive fuel decontamination	Transuranics and fission products, lead, mercury
SNAP Reactor (Building 059)	Groundwater contamination from Building 059	Cobalt-60, chlorinated solvents
S.E. Drum Storage Yard	Drum Storage	Unknown contents
Empire State Atomic Development Authority (ESADA) Chemical Storage Yard	Drum Storage	Sodium hydroxide
Building 100 Trench	Burning and Disposal	Unknown waste
Former Sodium Disposal Facility (Building 886)	Treatment and Disposal	Metallic sodium, PCBs, organic solvents, Cesium-137
Hazardous Waste Management Facility (Building 133)	Equipment storage	Metallic sodium, potassium, gross beta soil contamination



Site Location Map
Santa Susana Field Laboratory
Ventura County, California

Figure
2-1



Base Map from USGS High Resolution State Orthoimagery for Los Angeles County, California, 2006.

APPENDIX A:
Transmittal List

TRANSMITTAL LIST

Date: November 2007
Site Name: Santa Susana Field Laboratory
EPA ID No.: CAN000908498

A copy of the Preliminary Assessment/Site Inspection Report for the Santa Susana Field Laboratory site should be sent to the following people:

REPOSITORIES

California State University, Northridge
Urban Archives Center
Oviatt Library, Room 4
18111 Nordhoff Streeet
Northridge, California 91330
Attention: Mr. Robert Marshall

Los Angeles Public Library
Platt Branch
23600 Victory Boulevard
Woodland Hills, California 91367
Attention: Janet Metzler

Simi Valley Library
2969 Tapo Canyon Road
Simi Valley, California 93063
Attention: Ms. Ellen Allen

RESPONSIBLE PARTIES

Thomas Johnson, Jr.
Deputy Federal Project Director
US Department of Energy
Energy Technology Engineering Center
PO Box 10300
Canoga Park, CA 91309

Mr. Allen Elliot (AD_10)
National Aeronautical and Space Administration
Marshall Space Flight Center
MSFC, Alabama 35812

Ms. Blythe Jameson
Environmental Communications
The Boeing Company
6633 Canoga Avenue MC AB57
Canoga Park, CA 91309

REGULATORY AGENCIES

Mr. Norman Riley
Department of Toxic Substances Control, Headquarters
1001 I Street
P.O. Box 806
Sacramento, 95812-2828

Ms. Cassandra Owens
Los Angeles Regional Water Quality Control Board
320 West 4th Street
Suite 200
Los Angeles, California 90013

Mr. Kerby Zozula
Ventura County Air Pollution Control Division
669 County Square Drive, Second Floor
Ventura, California 93003

WORKGROUP MEMBERS

Mr. Dan Hirsch
Committee to Bridge the Gap
605 Waldeberg Drive
Ben Lomond, CA 95005

Ms. Barbara Johnson
Santa Susana Knolls Homeowners Association
6714 Clear Springs Road
Susana Knolls, California 93063

Sheldon Plotkin, PhD
Southern California Federation of Scientists
3318 Colbert Avenue
Los Angeles, California 90066

Ms. Marie Mason
6437 Clear Springs Road
Simi Valley, CA 93063-4839

Mr. Jonathan Parfrey
Executive Director
Physicians for Social Responsibility-Los Angeles
3250 Wilshire Boulevard, Suite 1400
Los Angeles, California 90010-1604

Mr. L. Robert Greger

California Department of Public Health
Radiologic Health Branch
P.O. Box 997414, MS 7610
Sacramento, CA 95899-7414

OTHER INTERESTED PARTIES

Mr. Burt Cooper
Agency for Toxic Substances and Disease Registry
U.S. Public Health Service
1600 Clifton Road
Atlanta, GA 30333

Mr. Stan Bauer
CEMRO-MD-HA
U.S. Army Corps of Engineers
Omaha District Office
215 North 17th Street
Omaha, Nebraska 68102

Ms. Deborah Glik
UCLA School Public Health
P.O. Box 951772
Los Angeles, California 90095-1772

John Brady
American States Water Company
Golden State Water Company Division
401 South San Dimas Canyon Road
San Dimas, CA 91773

Barbara Council
Ventura County Water and Sanitation Department
7150 Walnut Canyon Road
Moorpark, CA 93020-0250

APPENDIX B:
Site Reconnaissance Interview and Observation Report/ Photographic Documentation

(No Site Reconnaissance Interview or Observations was necessary for the preparation of this report)

APPENDIX C:
Contact Log and Contact Reports

CONTACT LOG

SITE: Santa Susana Field Laboratory
EPA ID NO.: CAN000908498

NAME	AFFILIATION	PHONE	DATE	INFORMATION
John Brady	American States Water Company	(805) 528-7312	6-11-07	See Contact Report
Barbara Council	Ventura County	(805) 654-2024	6-14-07	See Contact Report
John Brady	American States Water Company	(805) 524-7312	6-14-07	See Contact Report
Tim Miller	Santa Monica Mountain Conservancy – Sage Ranch Park	(818) 999-3753	6-18-07	See Contact Report
Gerard Abrams	California Environmental Protection Agency - DTSC	(916) 255-3600	8-22-07	See Contact Report

CONTACT REPORT 1

AGENCY/AFFILIATION: American States Water Company		
DEPARTMENT: Golden State Water Company Division		
ADDRESS/CITY: 401 South San Dimas Canyon Road, San Dimas		
COUNTY/STATE/ZIP: Los Angles County, CA 91773		
CONTACT(S)	TITLE	PHONE
John Brady	Water Quality Engineer	(805) 528-7312
PERSON MAKING CONTACT: Joe De Fao		DATE: 6-11-07
SUBJECT: Population Served by Niles and Sycamore Wells		
SITE NAME: Santa Susana Field Laboratory		EPA ID#: CAN000908498

DISCUSSION: Golden State Water company was contacted to discuss the population that is served by two wells that fall within the 3-4 mile radius of the site. Weston discussed the population apportionment calculations used by the Hazard Ranking System with Water Quality Engineer John Brady. Mr. Brady provided information for the Niles and Sycamore in an email (see attached email in confidential section). Additionally, Weston provided the location of the wells as shown in the EPA GIS map, and Mr. Brady confirmed that the locations were accurate.

CONTACT REPORT 2

AGENCY/AFFILIATION: Ventura County		
DEPARTMENT: Water and Sanitation Department		
ADDRESS/CITY: 7150 Walnut Canyon Road, Moorpark		
COUNTY/STATE/ZIP: Ventura County, CA 93020-0250		
CONTACT(S)	TITLE	PHONE
Barbara Council		(805) 654-2024
PERSON MAKING CONTACT: Joe De Fao		DATE: 6-14-07
SUBJECT: Status of abandoned wells surrounding the SSFL site		
SITE NAME: Santa Susana Field Laboratory		EPA ID#: CAN000908498

DISCUSSION: Weston contacted Barbara Council from Ventura County Water and Sanitation Department to discuss the status of several abandoned wells surrounding the SSFL site. Ms. Council provided information in an email (see attached email and map).

DeFao, Joseph

From: Barbara Council [Barbara.Council@ventura.org]
Sent: Friday, June 15, 2007 10:08 AM
To: DeFao, Joseph
Subject: RE: Map for Ventura Wells

Attachments: Simi Valley Area Map.pdf

Simi Valley Area Map.pdf (190 ...

Attached is a well location map for the area between the city of Simi Valley and the Boeing Facility. The 3 destroyed wells nearest the facility to the northwest (in the area of the Well 29 triangle) were dry test holes that were never completed.

There are three wells in the area on the geotracker map where Well 6 is suppose to be. All three are "can't locate" and belong to Rancho Simi Recreation and Parks District. I don't have records for any destroyed well in that area.

Most of the destroyed wells in the developed part of this area were destroyed during development. I haven't found any data to indicate that any of the destroyed wells were destroyed because of water quality. That doesn't mean poor quality wasn't the reason though. If I can help you with anything else, let me know.

>>> "DeFao, Joseph" <Joe.DeFao@WestonSolutions.com> 06/14/2007 9:48 AM
>>> >>>
Oops! Sorry. It always helps to send the attachment. Here you go...

-----Original Message-----
From: Barbara Council [mailto:Barbara.Council@ventura.org]
Sent: Thursday, June 14, 2007 9:46 AM
To: DeFao, Joseph
Subject: Re: Map for Ventura Wells

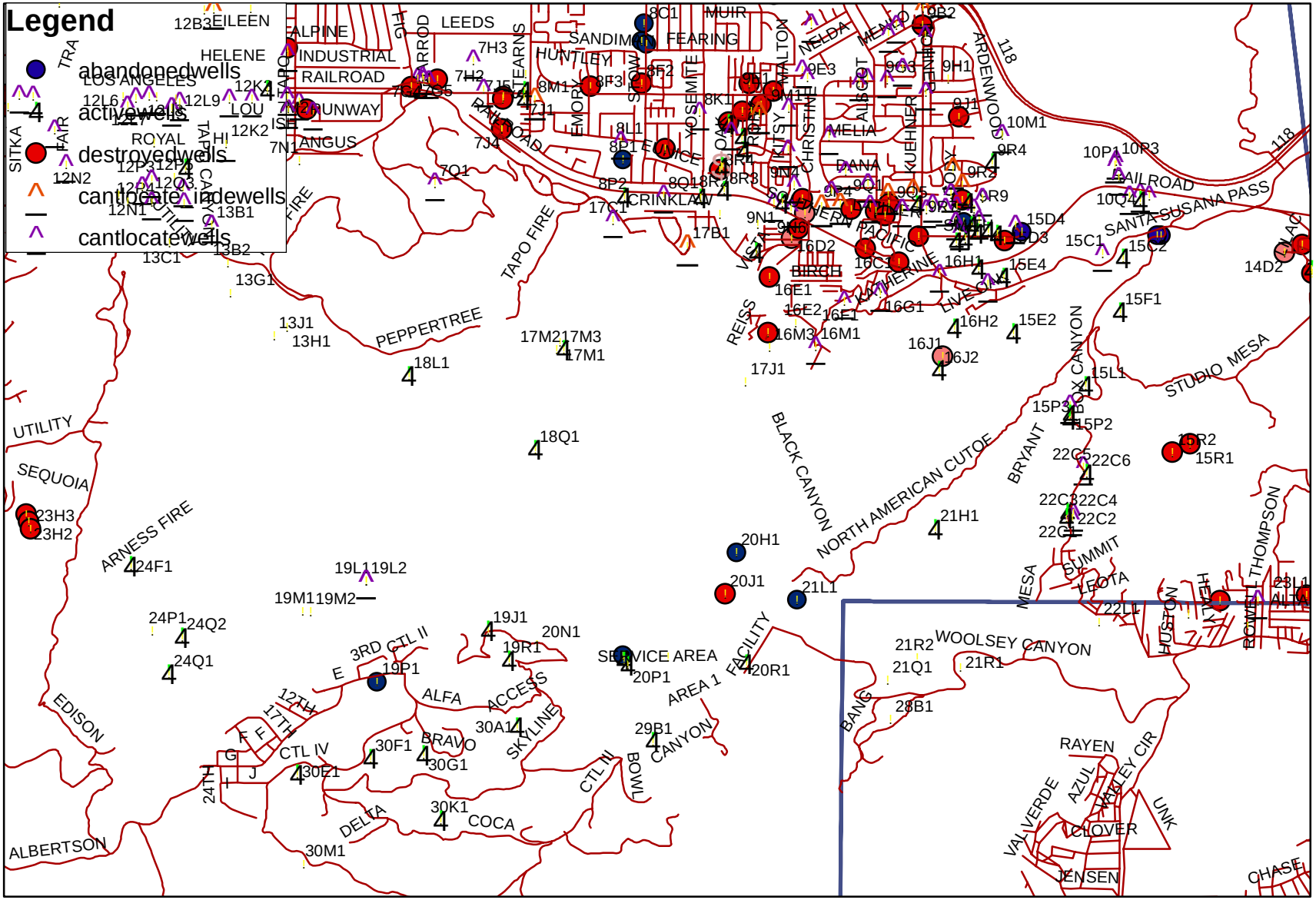
There's no attachment.

>>> "DeFao, Joseph" <Joe.DeFao@WestonSolutions.com> 06/14/2007 9:42 AM
>>> >>>
Hi Barbara,

Here's the map that I spoke to you about identifying the locations of the destroyed Ventura WWD wells. Please let me know if there is any other information you need in order to determine the reason that these wells were destroyed. Thanks again for your help.

Joe De Fao
Weston Solutions, Inc.
1575 Treat Blvd., Suite 212
Walnut Creek, CA 94598
phone: (925) 948-2657
fax: (925) 948-2601

Simi Valley Area



DISCLAIMER: The information contained herein was created by the County of Ventura Water and Environmental Resources, Groundwater Section for its own use. The County of Ventura assumes no liability for damages incurred directly or indirectly as a result of errors, omissions or discrepancies

CONTACT REPORT 3

AGENCY/AFFILIATION: American States Water Company		
DEPARTMENT: Golden State Water Company Division		
ADDRESS/CITY: 401 South San Dimas Canyon Road, San Dimas		
COUNTY/STATE/ZIP: Los Angles County, CA 91773		
CONTACT(S)	TITLE	PHONE
John Brady	Water Quality Engineer	(805) 528-7312
PERSON MAKING CONTACT: Joe De Fao		DATE: 6-14-07
SUBJECT: Population Served by Niles and Sycamore Wells		
SITE NAME: Santa Susana Field Laboratory		EPA ID#: CAN000908498

DISCUSSION: Weston contacted Mr. Brady to provide clarification on the population served by groundwater from the Niles and Sycamore wells. Mr. Brady provided information in a follow up email (see attached email in confidential section).

CONTACT REPORT 4

AGENCY/AFFILIATION: Santa Monica Mountain Conservancy		
DEPARTMENT: Sage Ranch Park		
ADDRESS/CITY: 1 Black Canyon Road, Simi Valley		
COUNTY/STATE/ZIP: Ventura County, CA 93063		
CONTACT(S)	TITLE	PHONE
Tim Miller	Ranger	(818) 999-3753
PERSON MAKING CONTACT: Joe De Fao		DATE: 6-18-07
SUBJECT: Status of wells on the Sage Ranch property		
SITE NAME: Santa Susana Field Laboratory		EPA ID#: CAN000908498

DISCUSSION: Weston contacted Tim Miller at the Sage Ranch Park to discuss the status of the wells located on the Sage Ranch Park property. Mr. Miller stated that no wells are used for drinking water purposes. Mr. Miller stated that drinking water is provided by Ventura County via the Metropolitan Water District. There is one well on the property that is used for fire suppression. Mr. Miller stated that he has lived on the property for 11 years and is aware of the TCE contamination at the adjacent SSFL property.

CONTACT REPORT 5

AGENCY/AFFILIATION: California Environmental Protection Agency		
DEPARTMENT: Department of Toxic Substances Control		
ADDRESS/CITY: 1001 I Street, Sacramento		
COUNTY/STATE/ZIP: Sacramento County, CA 95814-2828		
CONTACT(S)	TITLE	PHONE
Gerard Abrams		(916) 255-3600
PERSON MAKING CONTACT: Joe De Fao		DATE: 8-22-07
SUBJECT: Location and Information for Private Wells Surround the SSFL Site		
SITE NAME: Santa Susana Field Laboratory		EPA ID#: CAN000908498

DISCUSSION: Weston contacted Gerard Abrams of the DTSC to discuss the location and available information on private drinking water wells surround the SSFL site. Mr. Abrams stated that most of the wells surrounding the site are abandoned. He provided additional information on well locations in an email (see attached email).

DeFao, Joseph

From: Gerard Abrams [GAbrams@dtsc.ca.gov]
Sent: Thursday, August 23, 2007 10:52 AM
To: DeFao, Joseph
Cc: Jim Pappas; Norm Riley; Tom Seckington
Subject: Well Data and Ownership Info for offsite wells NE SSFL

Attachments: Table from 1998 Offsite Well Inventory Report by GRC.pdf; 092206 email from DDassler to Gabrams re analytical results for NE Well.doc.doc; Figure showing Offsite wells in NE.pdf; Offsite well access information dec05.pdf; Spopradic Detects Table 1 excerpt 092206.pdf; Statistical Summary of TCE Results for Off-Site GW - 2004.pdf; SPRING SEEP LOCATION SAMPLING 7 21 06.pdf


Table from 1998 Offsite Well I...


092206 email from DDassler to ...


Figure showing Offsite wells i...


Offsite well access informatio...


Spopradic Detects Table 1 exce...


Statistical Summary of TCE Res...


SPRING SEEP ICATION SAMPLING

Joe

Per our discussion yesterday on your request for available ownership information for wells located offsite in the NE SSFL as part of EPAs review of SSFL for Superfund Listing, I attached the well information we discussed. Boeing has also conducted sampling of seeps and springs around SSFL. I've included the figure showing sample locations. If, during your review, you uncover ownership information or new wells around SSFL or in Simi Valley not on available records, DTSC would be most interested receiving such information.
Thanks much

Gerard Abrams
Northern California Permitting and Corrective Action Branch 916-255-3600
916-255-3596 FAX

APPENDIX D:
Latitude and Longitude Calculations Worksheet

Latitude and Longitude Calculation Worksheet (7.5' quads) Using an Engineer's Scale (1/50)

Site Name Santa Susana Field Laboratory **CERCLIS #** CAN000908498

AKA

Address

City Simi Hills **State** CA **ZIP**

Site Reference Point Center of SSFL

USGS Quad Name Calabasas **Scale** 1:24,000

Township N/S **Range** E/W **Section** ___ ¼ ___ ¼ ___ ¼

Map Datum ☐ 1927 ☐ 1983 **(Check one)** **Meridian**

Map coordinates at southeast corner of 7.5' quadrangle (attach photocopy)

Latitude 34 ° 07 ' 30 "N **Longitude** 118 ° 37 ' 30 "W

Map coordinates at southeast corner of 2.5' grid cell

Latitude 34 ° 12 ' 30 "N **Longitude** 118 ° 42 ' 30 "W

Calculations

LATITUDE(x)

A) Number of ruler graduations between 2.5' (150") grid lines ___ **(a)**

B) Number of ruler graduations between south grid line and the site reference point ___ **(b)**

C) Therefore, a/150 = b/x, where **x= Latitude in decimal seconds, north of the south grid line**

Expressed as minutes and seconds (1' = 60") = ___ ° ___ ' ___ "N

Add to grid cell latitude = ___ ° ___ ' ___ "N + ___ ° ___ ' ___ "N

Site latitude = 34 ° 13 ' 35 "N

LONGITUDE(y)

A) Number of ruler graduations between 2.5' (150") grid lines 80 **(a)**

B) Number of ruler graduations between south grid line and the site reference point 0 **(b)**

C) Therefore, a/150 = b/x, where **x= Longitude in decimal seconds, west of the east grid line**

Expressed as minutes and seconds (1" = 60") = ___ ° ___ ' ___ "W

Add to grid cell longitude = ___ ° ___ ' ___ "N + ___ ° ___ ' ___ "N

Site longitude = 118 ° 41 ' 30 "W

APPENDIX E
References

APPENDIX F
EPA Quick Reference Fact Sheet

United States Environmental Protection Agency
Office of Solid Waste and Emergency Response
Publication 9345.4-03FS
September 1993

EPA

SITE ASSESSMENT:
Evaluating Risks at Superfund Sites

Office of Emergency and Remedial Response
Hazardous Site Evaluation Division 5204G

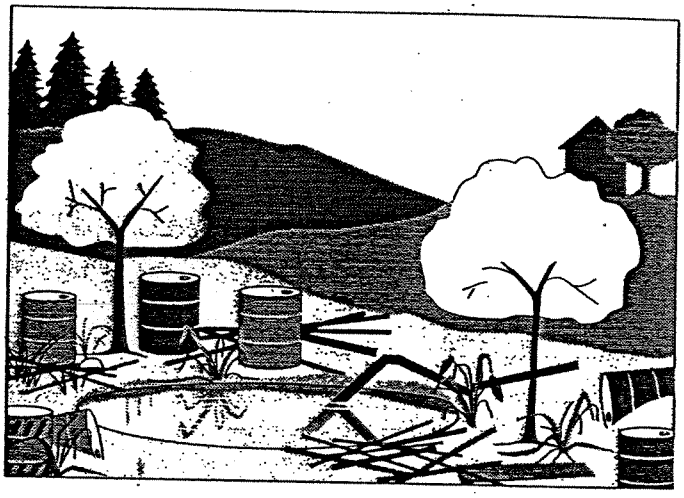
Quick Reference Fact Sheet

The Challenge of the Superfund Program

A series of headline-grabbing stories in the late 1970s, such as Love Canal, gave Americans a crash course in the perils of ignoring hazardous waste. At that time, there were no Federal regulations to protect the country against the dangers posed by hazardous substances (mainly industrial chemicals, accumulated pesticides, cleaning solvents, and other chemical products) abandoned at sites throughout the nation. And so, in 1980 Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, to address these problems.

The major goal of the Superfund program is to protect human health and the environment by cleaning up areas, known as "sites," where hazardous waste contamination exists. The U.S. Environmental Protection Agency (EPA) is responsible for implementing the Superfund program.

At the time it passed the Superfund law, Congress believed that the problems associated with uncontrolled releases of hazardous waste could be handled in five years with $1.6 billion dollars. However, as more and more sites were identified, it became apparent that the problems were larger than anyone had originally believed. Thus, Congress passed the Superfund Amendments and Reauthorization Act (SARA) in 1986. SARA expanded and strengthened the authorities given to EPA in the original legislation and provided a budget of $8.5 billion over five years. Superfund was extended for another three years in 1991.



What is EPA's Job at Superfund Sites?

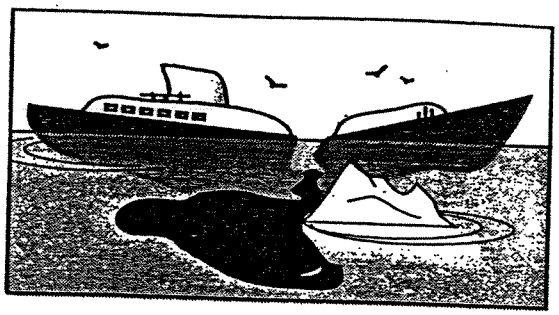
For more than 10 years, EPA has been implementing the Superfund law by:

- Evaluating potential hazardous waste sites to determine if a problem exists;
- Finding the parties who caused the hazardous waste problems and directing them to address these problems under EPA oversight or requiring them to repay EPA for addressing these problems; and
- Reducing immediate risks and tackling complex hazardous waste problems.

The Superfund site assessment process generally begins with the discovery of contamination at a site and ends with the completion of remediation (i.e., cleaning up the waste at a site) activities. This fact sheet explains the early part of the process, called the *site assessment* phase.

The National Response Center

The National Response Center (NRC), staffed by Coast Guard personnel, is the primary agency to contact for reporting all oil, chemical, and biological discharges into the environment anywhere in the U.S. and its territories. It is responsible for:



- Maintaining a telephone hotline 365 days a year, 24 hours a day;
- Providing emergency response support in specific incidents; and
- Notifying other Federal agencies of reports of pollution incidents.

To report a pollution incident, such as an oil spill, a pipeline system failure, or a transportation accident involving hazardous material, call the NRC hotline at **800-424-8802.**

1 Site Discovery

Hazardous waste sites are discovered in various ways. Sometimes concerned residents find drums filled with unknown substances surrounded by dead vegetation and call the NRC, EPA, or the State environmental agency; or an anonymous caller to the NRC or EPA reports suspicious dumping activities. Many sites come to EPA's attention through routine inspections conducted by other Federal, State, or local government officials. Other sites have resulted from a hazardous waste spill or an explosion. EPA enters these sites into a computer system that tracks any future Superfund activities.

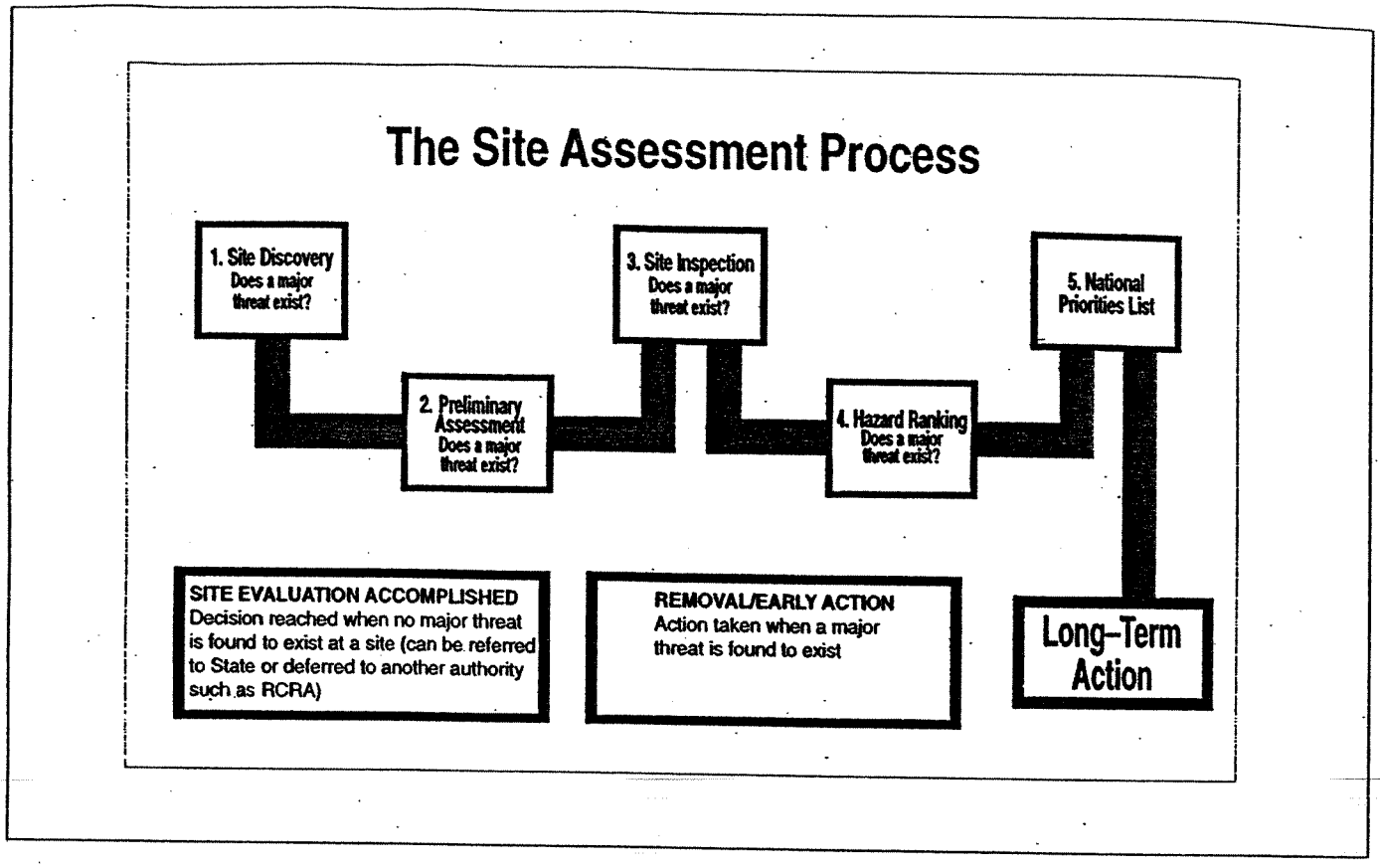
2 Preliminary Assessment

After learning about a site, the next step in the site assessment process is to gather existing information about the site. EPA calls this the *preliminary assessment*. Anyone can request that a preliminary assessment be performed at a site by petitioning EPA, the State environmental agency, local representatives, or health officials.

During the preliminary assessment, EPA or the State environmental agency:

- Reviews available background records;
- Determines the size of the site and the area around it;
- Tries to determine whether hazardous substances are involved;
- Identifies actual or potential pollution victims, such as the nearby population and sensitive environments;
- Makes phone calls or interviews people who may be familiar with the site; and
- Evaluates the need for early action using EPA's removal authority.

By gathering information and possibly visiting the site, EPA or the State environmental agency is able to determine if major threats exist and if cleanup is needed. Many times, the preliminary assessment indicates that no major threats exist.



However, if hazardous substances do pose an immediate threat, EPA quickly acts to address the threat. When a site presents an immediate danger to human health or the environment—for example, there is the potential for a fire or an explosion or the drinking water is contaminated as a result of hazardous substances leaking out of drums—EPA can move quickly to address site contamination. This action is called a *removal* or an *early action*. Additional information on early actions can be found on page 4.

EPA or the State environmental agency then decides if further Federal actions are required. Of the more than 35,000 sites discovered since 1980, only a small percentage have needed further remedial action under the Federal program.

A report is prepared at the completion of the preliminary assessment. The report includes a description of any hazardous substance release, the possible source of the release, whether the contamination could endanger people or the environment, and the pathways of the release. The information outlined in this report is formed into hypotheses that are tested if further investigation takes place. You can request a copy of this report once it becomes final— just send your name and address to your EPA regional Superfund office. See page 8 for further information on these contacts.

Sometimes it is difficult to tell if there is contamination at the site based on the initial information gathering. When this happens, EPA moves on to the next step of the site assessment, called the *site inspection.*

Making Polluters Pay

One of the major goals of the Superfund program is to have the responsible parties pay for or conduct remedial activities at hazardous waste sites. To accomplish this goal, EPA:

- Researches and determines who is responsible for contaminating the site;
- Issues an order requiring the private parties to perform cleanup actions with EPA oversight; and
- Recovers costs that EPA spends on site activities from the private parties.

Removals/Early Actions

EPA can take action quickly if hazardous substances pose an immediate threat to human health or the environment. These actions are called *removals* or *early actions* because EPA rapidly eliminates or reduces the risks at the site. EPA can take a number of actions to reduce risks, including:

- Fencing the site and posting warning signs to secure the site against trespassers;
- Removing, containing, or treating the source of the contamination;
- Providing homes and businesses with safe drinking water; and, as a last resort,
- Temporarily relocating residents away from site contamination.

"EPA can take action quickly if hazardous substances pose an immediate threat to human health or the environment."

3 Site Inspection

If the preliminary assessment shows that hazardous substances at the site may threaten residents or the environment, EPA performs a site inspection. During the site inspection, EPA or the State collects samples of the suspected hazardous substances in nearby soil and water. EPA may initiate a concurrent SI/remedial investigation at those sites that are most serious and determined early as requiring long-term action. Sometimes, wells have to be drilled to sample the ground water. Site inspectors may wear protective gear, including coveralls and respirators, to protect themselves against any hazardous substances present at the site. Samples collected during the site inspection are sent to a laboratory for analysis to help EPA answer many questions, such as:

- Are hazardous substances present at the site? If so, what are they, and approximately how much of each substance is at the site?
- Have these hazardous substances been released into the environment? If so, when did the releases occur, and where did they originate?
- Have people been exposed to the hazardous substances? If so, how many people?
- Do these hazardous substances occur naturally in the immediate area of the site? At what concentrations?
- Have conditions at the site gotten worse since the preliminary assessment? If so, is an early action or removal needed? (See box above.)

Often, the site inspection indicates that there is no release of major contamination at the site, or that the hazardous substances are safely contained and have no possibility of being released into the environment. In these situations, EPA decides that no further Federal inspections or remedial actions are needed. This decision is referred to as *site evaluation accomplished.* (See page 5 for more details on the *site evaluation accomplished* decision.)

At the completion of the site inspection, a report is prepared. This report is available to the public–call your EPA regional Superfund office for a copy. See page 8 for the phone numbers of these offices.

"During the site inspection, EPA or the State collects samples of the suspected hazardous substances in nearby soil and water."

At sites with particularly complex conditions, EPA may need to perform a second SI to obtain legally defensible documentation of the releases.

Because EPA has limited resources, a method has been developed to rank the sites and set priorities throughout the nation. That method, known as the *Hazard Ranking System*, is the next step in the site assessment process.

4 Hazard Ranking System

EPA uses the information collected during the preliminary assessment and site inspection to evaluate the conditions at the site and determine the need for long-term remedial actions. When evaluating the seriousness of contamination at a site, EPA asks the following questions:

- Are people or sensitive environments, such as wetlands or endangered species, on or near the site?
- What is the toxic nature and volume of waste at the site?
- What is the possibility that a hazardous substance is in or will escape into ground water, surface water, air, or soil?

Based on answers to these questions, each site is given a score between zero and 100. Sites that score 28.5 or above move to the next step in the process: listing on the *National Priorities List*. Sites that score below 28.5 are referred to the State for further action.

5 National Priorities List

Sites that are listed on the *National Priorities List* present a potential threat to human health and the environment, and require further study to determine what, if any, remediation is necessary. EPA can pay for and conduct remedial actions at NPL sites if the responsible parties are unable or unwilling to take action themselves. There are three ways a site can be listed on the National Priorities List:

- It scores 28.5 or above on the Hazard Ranking System;
- If the State where the site is located gives it top priority, the site is listed on the National Priorities List regardless of the HRS score; or
- EPA lists the site, regardless of its score, because all of the following are true about the site:
  - The Agency for Toxic Substances and Disease Registry (ATSDR), a group within the U.S. Public Health Service, issues a health advisory recommending that the local population be *dissociated* from the site (i.e., that the people be temporarily relocated or the immediate public health threat be removed);
  - EPA determines that the site poses a significant threat to human health; and
  - Conducting long-term remediation activities will be more effective than addressing site contamination through early actions.

The list of proposed sites is published in the *Federal Register*, a publication of legal notices issued by Federal agencies. The community typically has 60 days to comment on the list. After considering all comments, EPA publishes a list of those sites that are officially on the National Priorities List. When a site is added to the National Priorities List, the site assessment is completed. Long-term actions take place during the next phase. See page 6 for more details on long-term actions.

Site Evaluation Accomplished

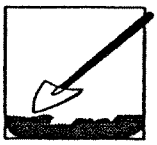
In many instances, site investigators find that potential sites do not warrant Federal action under the Superfund program. This conclusion can be attributed to one of two reasons:

- The contaminants present at the site do not pose a major threat to the local population or environment; or
- The site should be addressed by another Federal authority, such as EPA's Resource Conservation and Recovery Act (RCRA) hazardous waste management program.

When investigators reach this conclusion, the site evaluation is considered accomplished. A site can reach this point at several places during the site assessment process, namely at the conclusion of the preliminary assessment or the site inspection, or once the site is scored under the Hazard Ranking System.

As a Concerned Citizen, How Can I Help ?

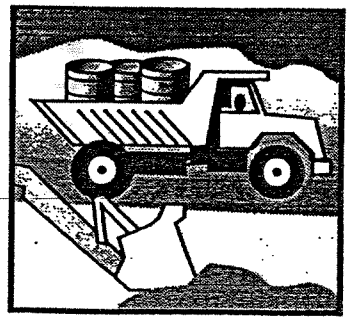
- Read this fact sheet.
- Call EPA with any potential sites in your area.
- Provide EPA with site information.
- Comment on proposed listing of sites on the National Priorities List.
- If the site is listed on the NPL, work with your citizens' group to apply for a technical assistance grant.



Addressing Sites in the Long Term

Once a site is placed on the National Priorities List, it enters the long-term or remedial phase. The stages of this phase include:

- ✓ Investigating to fully determine the nature and extent of contamination at the site, which can include a public health assessment done by the ATSDR;
- ✓ Exploring possible technologies to address site contamination;
- ✓ Selecting the appropriate technologies—also called remedies;
- ✓ Documenting the selected remedies in a record of decision (ROD);
- ✓ Designing and constructing the technologies associated with the selected remedies;
- ✓ If necessary, operating and maintaining the technologies for several years (e.g., long-term treatment of ground water) to ensure safety levels are reached; and
- ✓ Deleting the site from the National Priorities List, completing Superfund's process and mission.



Some Commonly Asked Questions

Q: **What exactly is a site?**
A: EPA designates the area in which contamination exists as the "site." Samples are taken to define the area of contamination. At any time during the cleanup process the site may be expanded if contamination is discovered to have spread further.

Q: **How long will it take to find out if a threat exists?**
A: Within one year of discovering the site, EPA must perform a preliminary assessment. The preliminary assessment allows EPA to determine if there is an immediate danger at the site; if so, EPA takes the proper precautions. You will be notified if you are in danger. EPA may also contact you to determine what you know about the site.

Q: **What is the State's role in all these investigations?**
A: The State can take the lead in investigating and addressing contamination. It also provides EPA with background information on (1) immediate threats to the population or environment, and (2) any parties that might be responsible for site contamination. The State shares in the cost of any long-term actions conducted by the Superfund program, comments on the proposal of sites to the National Priorities List, and concurs on the selected remedies and final deletion of sites from the National Priorities List.

Q: **Why are private contractors used to assess sites?**
A: EPA has a limited workforce. By using private contractors, EPA is able to investigate more sites. Also, EPA is able to draw on the expertise of private contracting companies.

Q: **Why are there so many steps in the evaluation process? Why can't you just take away all the contaminated materials right now, just to be safe?**
A: When EPA assesses a site, it first determines if contamination poses any threats to the health of the local population and the integrity of the environment. Dealing with worst sites first is one of Superfund's national goals. By evaluating contamination in a phased approach, EPA can quickly identify sites that pose the greatest threats and move them through the site assessment process. Once EPA understands the conditions present at a site, it searches for the remedy that will best protect public health and the environment. Cost is only one factor in weighing equally protective remedies. Many sites do not warrant actions because no major threat exists. However, if a significant threat does exist, EPA will take action.

about Superfund Sites

Q: **If a site is added to the National Priorities List, how will we know when EPA has completed the cleanup efforts?**

A: EPA notifies the public and requests their comments on the actions proposed to treat site contaminants. In addition, the community is notified when a site will be deleted from the National Priorities List. The entire process can take as long as 7 years; at sites where ground water is contaminated, it can take even longer.

Q: **I live next door to a site and I see EPA and contractor personnel wearing "moon suits." Am I safe?**

A: EPA and contractor personnel wear protective gear because they might actually be handling hazardous materials. Also, these people are regularly exposed to contaminants at different sites and do not always know what contaminants they are handling. EPA takes steps to protect the public from coming in contact with the site contamination. If a dangerous situation arises, you will be notified immediately.

Q: **If a site is added to the National Priorities List, who pays for the activities?**

A: EPA issues legal orders requiring the responsible parties to conduct site cleanup activities under EPA oversight. If the parties do not cooperate, Superfund pays and files suit for reimbursement from responsible parties. The sources of this fund are taxes on the chemical and oil industries; only a small fraction of the fund is generated by income tax dollars.

Q: **How can I get more information on any health-related concerns?**

A: Contact your EPA regional Superfund office for more information. The ATSDR also provides information to the public on the health effects of hazardous substances. Ask your EPA regional Superfund office for the phone number of the ATSDR office in your region.

Q: **How can I verify your findings? What if I disagree with your conclusions?**

A: You can request copies of the results of the site assessment by writing to your EPA regional Superfund office. The public is given the opportunity to comment on the proposal of a site to the National Priorities List and the actions EPA recommends be taken at the site. If a site in your community is listed on the National Priorities List, a local community group may receive grant funds from EPA to hire a technical advisor. Call your EPA regional Superfund office (see page 8) for the location of an information repository and for information on applying for a **technical assistance grant.**

Q: **How can I get further information? How can I get a list of the sites EPA has investigated?**

A: Contact your EPA regional Superfund office (see page 8) for more information and a list of sites in your area.

Important Phone Numbers

For information on the Superfund program or to report a hazardous waste emergency, call the national numbers below.

U.S. EPA Headquarters Hazardous Site Evaluation Division

☎ Site Assessment Branch
703-603-8860

Federal Superfund Program Information

☎ EPA Superfund Hotline
800-424-9346

Emergency Numbers:

Hazardous Waste Emergencies

☎ National Response Center
800-424-8802

ATSDR Emergency Response Assistance

☎ Emergency Response Line
404-639-0615

For answers to site-specific questions and information on opportunities for public involvement, contact your region's Superfund community relations office.

EPA Region 1: *Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont*

☎ Superfund Community Relations Section
617-565-2713

EPA Region 2: *New Jersey, New York, Puerto Rico, Virgin Islands*

☎ Superfund Community Relations Branch
212-264-1407

EPA Region 3: *Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia*

☎ Superfund Community Relations Branch
800-438-2474

EPA Region 4: *Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee*

☎ Superfund Site Assessment Section
404-347-5065

EPA Region 5: *Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin*

☎ Office of Superfund
312-353-9773

EPA Region 6: *Arkansas, Louisiana, New Mexico, Oklahoma, Texas*

☎ Superfund Management Branch, Information Management Section
214-655-6718

EPA Region 7: *Iowa, Kansas, Missouri, Nebraska*

☎ Public Affairs Office
913-551-7003

EPA Region 8: *Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming*

☎ Superfund Community Involvement Branch
303-294-1124

EPA Region 9: *Arizona, California, Hawaii, Nevada, American Samoa, Guam*

☎ Superfund Office of Community Relations
800-231-3075

EPA Region 10: *Alaska, Idaho, Oregon, Washington*

☎ Superfund Community Relations
206-553-2711