



**Closure Plan**  
**Hazardous Waste Management Facility:**  
**Buildings T029 and T133**  
**ETEC**  
**Santa Susana Field Laboratory, Area IV,**  
**Ventura County, California**

Revision 0

Approved:

  
\_\_\_\_\_  
Program Manager

07/16/15  
Date

## REVISION HISTORY

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## DEFINITIONS

*none*

## ACRONYMS

ACM	Asbestos Containing Material
AEA	Atomic Energy Act
AOC	Administrative Order of Consent
BTEX	benzene, toluene, ethylbenzene & xylenes
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
COC	Chemicals of Concern
COCA	Consent Order for Corrective Action
D&D	Decontamination and Decommissioning
DOE	Department of Energy
DOT	Department of Transportation
DHS	Department of Health Services
DTSC	California Department of Toxic Substances Control
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ETEC	Energy Technology Engineering Center
HDPE	high-density polyethylene
HWMF	Hazardous Waste Management Facility
NASA	National Aeronautical and Space Administration

ORM	Other Regulated Material
PAH	Poly aromatic hydrocarbons
PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Feasibility Study
SSFL	Santa Susana Field Laboratory
SVOC	Semi-volatile organic compounds
TPH	Total petroleum hydrocarbons
VCAPCD	Ventura County Air Pollution Control District
VOC	Volatile Organic Compounds

## EXECUTIVE SUMMARY

This document presents the Resource Conservation and Recovery Act (RCRA) Closure Plan for the Hazardous Waste Management Facility (HWMF) Buildings T029 and T133 located in the Energy Technology Engineering Center (ETEC) of Area IV of the Santa Susana Field Laboratory (SSFL) in Ventura County, California. This RCRA Closure Plan describes the plan for decontamination and demolition associated with the clean closure of the T029 and T133 structures within the HWMF. Separate structure clean closure evaluations will be made for these facilities as they are physically distinct locations separated by approximately 1,300 feet.

The ETEC structures and improvements (including the HWMF Buildings T029 and T133) are owned by the U.S. Department of Energy (DOE), although the land on which they are located is owned by The Boeing Company (Boeing). The ETEC was co-operated by the DOE and Rocketdyne Propulsion and Power, a division of The Boeing Company (Rocketdyne) until 2005, then by Boeing until 2014. On September 30, 2014, the period of performance for Boeing's ETEC Closure Contract DE-AC03-99SF21530 with the DOE was completed. North Wind, Incorporated (North Wind) has assumed responsibilities for ETEC Closure activities under contract DE-EM0000837.

This Closure Plan was originally prepared by MWH Americas, Inc., for Rocketdyne Propulsion and Power and The Boeing Company, submitted to DTSC and approved in December 2003. Due to suspension of decommissioning and demolition (D&D) activities based on the mandated completion of an Environmental Impact Statement (EIS) for Area IV at SSFL and the subsequent change in ETEC facility management from Boeing to North Wind, updates to this plan are necessary. This Plan has been prepared in accordance with the closure requirements for Interim Status Facilities found in the California Code of Regulations (CCR) Title 22, Division 4.5, Chapter 15, and is consistent with the Department of Toxic Substances Control's Permit Writer Instructions for Closure of Treatment and Storage Facilities - October 2002. The Closure Plan objective is to remove and achieve clean closure for the structures located at the T029 and T133 sites.

DOE and its predecessor agencies conducted nuclear research and energy development at ETEC from the mid-1950's until the mid-1990s. All nuclear research was terminated in 1988. The DOE performed decommissioning and a survey of Building T029 because it housed calibration equipment from 1959 until 1974. This work was published in DOE Certification Docket dated April 1997, confirming that all radiological standards have been achieved for T029. DOE did not use Building T133 and was therefore not responsible for the final radiological screening. Rocketdyne completed the T133 screening and submitted the findings to the California Department of Health Services (DHS) in January 2004. The survey indicates that all radiological standards have been achieved for T133. The Radiologic Health Branch of DHS approved the survey on 13 March 2007.

The ETEC operations included facilities for testing alkaline liquid metal coolants (primarily sodium and sodium-potassium alloy). The HWMF (Buildings T029 and T133) was permitted by the California Department of Toxic Substances Control (DTSC) as a RCRA hazardous waste

storage and treatment facility for non-radiological alkaline metal wastes. Building T029 was used for containerized storage of alkaline metal wastes. The containerized wastes were then transferred to Building T133 for treatment. At Building T133, the wastes were heated in a metal lined treatment chamber where they would react with the air to form metal oxides. The metal oxides were removed from the air with an air scrubber, which was operated under a Ventura County Air Pollution Control Permit. After the heat treatment, the residual metal oxides were rinsed from the treatment chamber walls and floor. This rinsate and the air scrubber liquid wastes were stored in onsite tanks pending removal by vacuum trucks for management at permitted offsite facilities. Operation of the HWMF ceased in 1997, and Rocketdyne sent DTSC a closure notification letter in July 1998. The RCRA hazardous waste storage and treatment permit for the HWMF expired November 30, 2003.

All hazardous wastes have been previously removed from the HWMF. The HWMF closure will therefore start with decontamination of buildings, equipment, structures and improvements. Verification samples will then be collected of the various media (i.e., metal, concrete, wood, asphalt, etc.) to confirm that decontamination is complete and to provide waste classification data. After verification of decontamination, the T029 and T133 equipment and structures will be demolished and removed for management at permitted offsite facilities, as there will be no reuse of any equipment.

In August 2007, the California DTSC entered into a Consent Order for Corrective Action (COCA) with DOE, NASA, and Boeing under its RCRA authority. This Order (a) requires remediation of contaminated soils at SSFL by 2017 or earlier and requires a cleanup remedy for groundwater to be in place by 2017 or earlier; (b) provides the option for DTSC to require more work to be conducted offsite from Area IV to assess air, soil and water contamination; and (c) requires the preparation of an Environmental Impact Report (EIR), pursuant to the California Environmental Quality Act (CEQA). In December 2010, DOE and DTSC signed an Administrative Order on Consent (AOC), which outlines the specific investigation and remediation program for all of Area IV soils; while groundwater investigation and remediation is still being conducted under RCRA Corrective Action requirements specified in the 2007 COCA between DTSC, DOE, NASA and Boeing.

As a result of these Orders, the sections containing information on the status of, history and the planned remediation of soils and groundwater have been removed. This information will be discussed in detail in the documents associated with regulatory programs having authority over these activities. As such, this Closure Plan has been updated to include only those activities associated with D&D activities.

## 1. FACILITY IDENTIFICATION

<b>Facility Name:</b>	Hazardous Waste Management Facility (HWMF)
<b>EPA ID No:</b>	CAD000629972
<b>Facility Address:</b>	Santa Susana Field Laboratory 5800 Woolsey Canyon Road Canoga Park, California 91304
<b>Mailing Address:</b>	North Wind, Inc. 1425 Higham Street Idaho Falls, ID 83402
<b>Contact Person:</b>	Brad Frazee, Program Manager
<b>Facility Operator:</b>	North Wind, Inc. 1425 Higham Street Idaho Falls, ID 83402 208-528-8718
<b>Facility Owner:</b>	U.S. Department of Energy Mr. John Jones 4100 Guardian Street, Suite 160 Simi Valley, CA 93063 (805) 416-0992 john.jones@emcbc.doe.gov
<b>Preparer of Closure Plan:</b>	North Wind, Inc. 1425 Higham Street Idaho Falls, ID 83402
<b>Nature of Business:</b>	<p>The U.S. DOE is responsible for operation of the ETEC, which is a government-owned complex of buildings located within Area IV of the SSFL in Ventura County, California. Although owned by DOE, ETEC has been co-operated by The Boeing Company (Boeing), until North Wind Inc. took over operations from Boeing on October 1, 2014. ETEC does not have specific site boundaries, but is instead a group of experimental research, development and testing facilities owned by DOE or where DOE sponsored operations occurred. The remaining portions of Area IV are not owned or controlled by DOE.</p> <p>DOE and its predecessor agencies conducted nuclear research and energy development at the ETEC from the mid-1950s until the mid-1990s. Activities sponsored by DOE included nuclear operations (development, fabrication, disassembly, and examination of nuclear reactors, reactor fuel and other radioactive materials) and the development of liquid metal heat transfer systems in support of the Liquid Metal Fast Breeder Reactor Program. All nuclear research at ETEC terminated in 1988. Since that time, DOE has been performing</p>

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	<p>decontamination and decommissioning of ETEC facilities which became radioactively activated or contaminated.</p> <p>ETEC was operated as a center of excellence for the non- nuclear testing of liquid metal reactor components for the DOE. ETEC facilities were involved with the design, construction and operation of the worlds’ largest and most sophisticated facilities for testing liquid metal steam generators, pumps, tanks, valves, and instrumentation. ETEC also served as a skill center for heat transfer engineering expertise on nation-wide energy conversion projects. The ETEC complex maintained facilities for testing liquid metal components (e.g., sodium and sodium-potassium), a seismic test facility, and several multi-purpose test facilities. The major test facility operated by ETEC was the Sodium Components Test Installation, a sodium-heated steam generator test facility. Testing support programs included the Small Components Test Loop and the Sodium Pump Test Facility.</p> <p>The ETEC complex also includes two buildings permitted by the DTSC for the storage (Building T029) and treatment (Building T133) of alkali metal wastes such as sodium, sodium-potassium alloy, lithium and materials containing or having residuals of these alkali metals (e.g., piping, valves, etc.). The T029 and T133 buildings are referred to collectively as the HWMF. The HWMF began operation in 1978 and was fully permitted in 1983 as a RCRA hazardous waste treatment and storage facility for non-radiological chemical wastes generated on-site. The RCRA operating permit was renewed in 1988 and 1993 (Appendix A). In 1990, the HWMF was allowed to treat alkali metals from an off-site Northern California location via an emergency permit issued July 2, 1990 (Appendix A). The emergency permit was issued by the DHS because seventy-five, thirty-ounce containers of metallic sodium waste were illegally abandoned by an unknown party on a privately owned five acre parcel in Butte County, California. Each thirty-ounce container held six 1"x1"x6" bars of metallic sodium waste. The DHS determined that the Rocketdyne Treatment Facility at Building T133 offered the most desirable means for treating this waste under emergency conditions operations in 1997.</p> <p>The operations performed under the RCRA permit included the storage of sodium, sodium- potassium or lithium waste or equipment contaminated with these metals at Building T029; transfer of the wastes and contaminated equipment to Building T133; and treatment of the metals wastes and contaminated equipment at Building T133. At the Building T133 location, the metal wastes treated were placed</p>
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	<p>in an iron bowl in a metal lined treatment chamber. The bowl was heated using natural gas and the waste metals reacted with the air to form metal oxides. The metal oxides were removed from the air with an air pollution control device (an air scrubber) under a Ventura County Air Pollution Control Permit. After the heat treatment, the residual metal oxides were rinsed from the inside area of the treatment chamber with water. The air scrubber produced a liquid waste water which, along with the treatment chamber rinse water, was drained to a below grade tank and then pumped to an above ground tank for temporary storage. Both tanks were located within the Building T133 boundary. The alkali wastewater was transferred to waste water trucks for off-site disposal.</p>
<p><b>Environmental Permits:</b></p>	<p>The only environmental permit at the HWMF is a Ventura County Air Pollution Control District (VCAPCD) Permit to Operate, # 0271, which regulated the operation of the scrubber at Building T133. This permit is currently not active because the HWMF is not active. Rocketdyne cancelled the Permit to Operate and notified the VCAPCD that the HWMF will be undergoing closure.</p> <p>Radiological Decommissioning and Decontamination:      Decontamination of radiological contamination at ETEC is being performed by DOE under authority of the Atomic Energy Act (AEA). Before a former DOE radiological facility at ETEC can be released for unrestricted use per state regulatory standards, the California DHS must concur with the DOE determination regarding the decontamination and decommissioning of the facility. This release process is to ensure that the facility will not expose future users to hazards or risks from radiation. As an Agreement State under the provisions of the AEA, the State of California also has jurisdiction over non-DOE radiological activities at ETEC.</p> <p>The DOE performed decommissioning and a survey of Building T029 because it housed radioactive calibration equipment from 1959 until 1974. This work was published in DOE Certification Docket dated April 1997, confirming that all radiological standards have been achieved for T029. DOE did not use Building T133 and was therefore not responsible for the final radiological screening. Rocketdyne completed the T133 screening and submitted the findings to the DHS in January 2004. The survey indicated that all radiological standards had been achieved. The Radiologic Health Branch of DHS approved the survey on 13 March 2007.</p> <p>In August 2007, the California DTSC entered into a Consent Order with DOE, NASA, and Boeing under its RCRA authority. This Order</p>

	<p>(a) requires remediation of contaminated soils at SSFL by 2017 or earlier and requires a cleanup remedy for groundwater to be in place by 2017 or earlier; (b) provides the option for DTSC to require more work to be conducted offsite from Area IV to assess air, soil and water contamination; and (c) requires the preparation of an EIR, pursuant to the CEQA.</p> <p>In 2003, the HWMF permit expired, and DOE submitted an HWMF Closure Plan (December 2003) to DTSC. In February 2006, DTSC issued a Class 2 modification to the permit and approved the amendment of the closure plan (essentially approving the December 2003 HWMF Closure Plan). Soon afterwards, DOE began pre-demolition work, consisting of pre-demolition sampling and assessment activities. Before physical demolition and decommissioning (D&amp;D) began, DTSC issued a letter (May 23, 2007, and clarification letter dated June 4, 2007) that requested DOE to suspend all activities associated with the closure and/or D&amp;D of the HWMF until an EIS is completed, in response to a Federal District Court ruling. DTSC also requested that DOE submit a Class 1 permit modification to allow extension of the closure schedule. In response to DTSC’s letter, DOE placed the HWMF in a safe and stable configuration, and has been conducting environmental monitoring and site characterization activities while working on finalizing the EIS. Closure activities are expected to resume after the DTSC’s EIR, DOE’s EIS are completed and a revised HWMF closure plan is approved by DTSC. In 2014, the Class I Permit was modified to change the HWMF operator from Boeing to North Wind.</p> <p>DOE’s obligations with respect to soils at the site are defined further in the 2010 AOC. The AOC also requires the cleanup of soils by 2017. Both Orders provide the option for DTSC to require more work to be conducted offsite from Area IV to assess air, soil and water contamination.</p> <p>As a result of these Orders, the sections containing information on the status of, history and the planned remediation of soils and groundwater have been removed. This information will be discussed in detail in the documents associated with regulatory programs having Hazardous Waste Closure and Corrective Action.</p>
<p><b>Certification:</b></p>	<p style="text-align: center;"><b>CERTIFICATION</b></p> <p>"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the</p>

	<p>person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."</p>
<p><b>Signature:</b></p>	<p>All permit applications shall be signed as follows:</p> <p>(1) for a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who is authorized to perform similar policy or decision making functions, which govern the operation of the regulated facility, for the corporation;</p> <p>(2) for a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or</p> <p>(3) for a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:</p> <p>(A) the chief executive officer of the agency, or</p> <p>(B) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA).</p> <p> 07/16/15    _____    Brad Frazee, COO (North Wind) Date</p> <p>_____</p> <p>John Jones for DOE Date</p>

## **2. FACILITY LOCATION**

### **2.1 Size**

The HWMF (comprised of the T029 and T133 buildings) is part of the ETEC complex located within Area IV of the SSFL. The former ETEC consists of approximately 90 acres located within a geographic area identified as Area IV. Area IV consists of approximately 290 acres located in the westernmost part of the SSFL. The SSFL encompasses 2,850 acres of land located in the southeastern portion of Ventura County. The locations of the SSFL and former ETEC are shown in Figure 1 (Appendix B), with the locations of Buildings T029 and T133 shown in Figure 2 (Appendix B).

### **2.2 Topographic Map**

Land use within a one-mile radius of the T029 and T133 buildings is depicted in Figure 3 (Appendix B). The only development within a one-mile radius of the HWMF is the infrastructure of the SSFL. The adjacent properties within one-mile of HWMF are undeveloped and the land use is agricultural, consisting of livestock grazing.

### **2.3 Hydrogeologic Conditions of the Area**

The SSFL is located in the Simi Hills of southeastern Ventura County. The Simi Hills are in the northern part of the Transverse Range geomorphic province and separate the Simi Valley from the western part of the San Fernando Valley. The primary subsurface units present near the HWMF are the unconsolidated Quaternary alluvium and unconsolidated fill and the Cretaceous Chatsworth Formation. The unconsolidated alluvium generally consists of sand and silty sand with minor amounts of silt and clay. The thickness of the unconsolidated material is expected to range from less than 5 feet up to possibly more than 15 feet. The Chatsworth formation is generally composed of well-consolidated massive sandstone with interbeds of siltstone and claystone. The fracture systems within the Chatsworth Formation are associated with bedding planes, joints and faults. Movement of groundwater is primarily along fractures; not through the interstices of the unfractured formation. Groundwater occurs at SSFL in the unconsolidated alluvium, weathered bedrock, and unweathered bedrock (MWH, 2009).

A comprehensive discussion of the geologic and hydrologic systems at the SSFL, including the HWMF, can be found in the 2014 Report on Annual Groundwater Monitoring (Boeing, February 2015).

#### **2.3.1 Sources of Drinking Water**

Groundwater is not used as a source of drinking water at SSFL. Bottled water is provided for drinking at the facility and water for non-potable uses is provided at the facility by the Calleguas Municipal Water District.

### **2.3.2 Surface Water Bodies**

The locations of surface water bodies within one mile of the HWMF are shown on Figure 3. All surface water bodies within one mile of the facility are artificial or man-made structures. The primary functions of the on-site surface water impoundments are the recycling of water for industrial purposes and the retention of water from site operations and site runoff.

## **2.4 SOIL AND GROUNDWATER CONDITIONS**

Details of the current soil and groundwater conditions at the SSFL and within the vicinity of the HWMF are discussed in the 2014 Annual Groundwater Monitoring Report (Boeing, February 2015).

## **2.5 WEATHER AND CLIMATE**

### **2.5.1 Climate**

The climate in the area of SSFL is characterized as "Mediterranean." The mean temperature during the winter months is approximately 50 degrees Fahrenheit (°F) and the mean temperature in the summer months is approximately 70°F.

Based on climate data between 2000 and 2015 from the National Weather Service, rainfall has ranged from approximately 4 inches to approximately 37 inches on a calendar year basis. Average rainfall is on the order of 18 inches per year, although in 2007 the state of California entered into drought conditions which continue. The majority of the rainfall occurs between October and April.

### **2.5.2 Wind Pattern**

A westerly wind ranging from 5 to 10 knots typically occurs from April to October. From November to March, the wind pattern is interrupted by weather fronts and "Santa Ana" wind conditions. During the passage of a weather front, gusty winds up to 20 knots occur from the southeast to the south. Winds shift to westerly or northerly following frontal passage and winds exceeding 25 knots may occur. During the fall, winter, and spring months, Santa Ana wind conditions can cause winds from the north or northeast in excess of 30 knots.

### 3. FACILITY DESIGN AND OPERATIONS

The HWMF T029 and T133 buildings were designed to provide hazardous waste storage and treatment for ETEC operations that generated alkali metal wastes through the use of alkali metals as heat transfer media. Over time, the alkali metals used as heat transfer media became saturated with impurities (such as oxygen, hydrogen or carbonaceous compounds) and were declared waste material. The waste material and the equipment/components that contained them were transferred to Building T029 for storage. The waste stored in Building T029 was then transferred to the Building T133 when capacity in the T133 treatment chamber was available. A flow chart providing an overview of the waste management process for sodium and sodium-potassium wastes (the predominant alkali metals used) at Buildings T029 and T133 is shown in Figure 4.

The storage and treatment of lithium metal (used as heat transfer media) also took place at Buildings T029 and T133, as authorized under the 1988 RCRA Part B permit. Additionally, the HWMF Operations Plan indicated that excess lithium hydride and zirconium hydride powder, which was purchased but never used, was stored at T029 and then treated at T133.

In 1990, the HWMF was allowed to treat alkali metals from an off-site Northern California location via an emergency permit issued July 2, 1990 (Appendix A). The emergency permit was issued by the DHS as a result of the illegal abandonment of seventy-five, thirty-ounce containers of metallic sodium waste by an unknown party on private property located in Butte County, California. Each thirty-ounce container held six 1-in x 1-in x 6-in bars of metallic sodium waste. The emergency permit was prepared for the one-time only waste stream, which was handled exactly as the sodium equipment at the HWMF.

#### 3.1 Building T029 Area

##### 3.1.1 Description of Building T029

Building T029 was designed and constructed in 1959, but was designated and used only for the storage of alkali metals since 1978. It was used as the instrument calibration facility between 1959 and 1974; and was vacant between 1974 and 1978.

Building T029 is located adjacent to a sandstone outcrop and has an elevation change of approximately 12 feet across the site as shown on Figure 5, T029 Topographic Detail. Construction drawings for T029 are presented in Appendix D. However, Figure 6 depicts the current layout of T029 with Figures 7 through 10 including photographs of Building T029.

Building T029 is a 20-foot by 40-foot building; steel frame, roof, and siding; constructed on a concrete slab (Figure 7, Photos 1 and 2). An 8-foot wide door is located on the northwestern side of the building. This area was used for the movement of metal boxes or drums containing waste material. A 10-foot by 4-foot, 8-inch concrete pad is located to the west of this door (Figure 7, Photo 1). Another concrete pad (approx. 13.5-ft x 5-ft, is located to the northeast of the building. No door is located at that area (Figure 6). A 3-ft wide pedestrian entrance door is located on the south side of the building (Figure 9, Photo 5).

The two concrete patches shown on Figure 6 were placed when the calibration instruments were removed from this building in the 1970s. Figure 8, Photo 3 shows the patch located in the northeast corner of the building.

The structure is located immediately to the south of a large rock formation (Figure 10, Photo 7). A chain-link fence surrounds the building and the asphalt road leading to the building (Figure 6), which approaches from the west. The areas immediately to the north, south and east of the building are bare soil/rock, except where previously indicated (Figure 6, Figure 10, Photo 8). A low drainage spot is present southeast of the building. A polyvinyl chloride (PVC) drainage pipe (4-in diameter x 6-ft length [Figure 9, Photo 6]) was installed extending approximately 1.5-ft beyond the fence. The purpose of this pipe is to allow rainfall to drain from the south side of the building and from the roof.

### 3.1.2 Design Capacity of T029

Metal boxes (referred to as B-boxes), and drums containing waste components were stored on pallets along the perimeter of the building, allowing approximately 12-ft of aisle space in the middle of the building. Total storage capacity at T029 was approximately 5,500 gallons in any combination of containers.

### 3.1.3 Ancillary Equipment at T029

Ancillary equipment used at T029 consisted of a standard forklift for moving the B-boxes and drums.

### 3.1.4 Containment System

The concrete floor of Building T029 was sealed with a chemically resistant coating (Figure 7, Photo 2, (Appendix B)), applied on a yearly basis during active use of the building, as required by the RCRA Part B permit conditions. The waste stored at T029 was placed in various types of containers, depending on the nature of the waste. These wastes consisted of: 1) alkali metal wastes (sodium, sodium-potassium, lithium) used as heat transfer media, 2) test components containing or contaminated with alkali metal wastes, and 3) excess lithium hydride and zirconium hydride powder which were purchased as raw materials but never used. The storage methods for these different wastes are discussed below.

- Sodium and Lithium Metal Waste and Components with Sodium or Lithium: The sodium and lithium metal wastes were solid at ambient temperature and packaged in Department of Transportation (DOT) drums or in smaller, sealed containers (B-boxes).
- Sodium-Potassium Alloy Waste and Components with Sodium-Potassium: Sodium-potassium alloy was liquid at ambient temperature and was contained in sealed components (such as bubblers) which were stored in 55-gallon containers under argon cover gas. The 55-gallon containers were over packed in 85-gallon drums as secondary containment.

- **Lithium Hydride Waste:** Lithium hydride is solid at room temperature. As described in the HWMF Operations Plan, lithium hydride waste was not produced at the site, but was a material that was purchased new and held in storage in "as-received" containers or cast into various sizes. The material was subsequently declared excess and managed as waste. The containers of lithium hydride were moved on pallets by forklifts from T029 to T133 for treatment.
- **Zirconium Hydride Waste:** Similar to the lithium hydride, zirconium waste was not produced at the site. Zirconium hydride powder was purchased new and held in storage in "as-received" containers in Building T029. The material was subsequently declared excess and managed as waste. The containers of zirconium hydride powder were moved on pallets by forklifts and transported to T133.

## 3.2 Building T133 Area

### 3.2.1 Description of Building T133 Area

The T133 area was designed and constructed in 1977 for the treatment of alkali metal wastes. Part of Building T133 was constructed from materials previously used at former Building T724, the Hot Oil Sodium Cleaning facility. When Building T724 was closed, the upper portion of the building (walls and ceiling) were decontaminated and certified clean. The walls and ceiling were then cut free from the bottom metal floor and transferred for use in construction of Building T133. A schematic of the T133 layout is provided as Figure 14 (Appendix B), while Figure 13 (Appendix B) provides a layout detail for the treatment chamber. Figures 14 – 20 (Appendix B) provide photographs of T133.

Building T133 is located on a flat pad with less than 10-ft of elevation change across the site (Figure 11, Appendix B). The area is approximately 87-ft x 71-ft in size and surrounded by a chain link fence. The area includes the treatment room, office building, a size reduction area, a sodium-potassium feed tank (referred to as tank T-2), an air scrubber and two tanks for storage of caustic wastewaters generated by the scrubber and treatment room (Figure 12 (Appendix B)). The treatment chamber and building are constructed on a concrete slab (Figures 12, 13, 14 (Appendix B)). The treatment building is constructed of metal.

The area around Building T133 is covered with asphalt or concrete, with an 8-in high berm surrounding the entire area (Figures 12 and 14 (Appendix B)). The area to the north, west and south outside of the berm are not paved (Figure 12; Figure 17, Photo 7; Figure 20, Photos 11 and 12 (Appendix B)). An asphalt road is present to the east of T133 (Figure 14 (Appendix B)).

#### **3.2.1.1 Process Description for Treatment of Sodium and Sodium-Potassium Metals**

There were two primary treatment processes performed at T133: (1) the treatment of solid alkali metals (sodium) and components containing sodium and/or sodium-potassium, and (2) the treatment of liquid alkali metals (sodium-potassium). In both cases, the reactive metals were converted by heat to caustic aqueous solutions in the treatment chamber. For the solid sodium metal, a batch process was used whereby metal pieces would be manually placed in the treatment

chamber. For the sodium-potassium, a specially designed feed system was utilized because this material was liquid at room temperature. An overview of the chemical reactions and basic steps involved in the treatment of the alkali metals is presented in Figure 21 (Appendix B). The following sections describe the pre-treatment and treatment steps for the solid and liquid alkali metal wastes, respectively. Construction drawings for T133 area are provided in Appendix D with descriptions of the process equipment provided in Section 3.2.2.

**Solid Alkali Waste Treatment.** The basic steps associated with treatment of the solid alkali wastes are as follows:

1. **Size Reduction** - In preparation for treatment, the solid components containing sodium (e.g., solid metals) were cut into smaller sections, as necessary, prior to placement in the treatment room. The components were cut in order to expose the sodium or sodium-potassium and to ensure materials would fit on the treatment pan. The size-reduction operation was performed on the cement-floored handling area of the facility, located to the south of the treatment chamber under the canopy (Figure 15, Photo 2 (Appendix B)). This area was constructed within a carbon steel secondary containment system. Cutting was performed using electric saws. Due to the nature of the material to be cut (steel and stainless steel), blades were frequently broken. These were disposed in accordance with applicable regulations. Occasionally mineral oil or kerosene was used as a lubricant during cutting operations. Between one and 5 gallons of kerosene or mineral oil was placed in a container within the metal pan, and the oil recirculated within the cutting area.
2. **Transfer to Treatment Chamber** - After size reduction, the components were transferred to the treatment chamber within Building T133 and placed on the treatment pan (Figures 13 and 19, Photo 10 (Appendix B)). If the articles were small, they were placed back into their original storage container (steel drum or metal box) which was then transferred to the treatment chamber. The pieces were then removed from the container manually and placed onto the treatment pan. When emptied, the container was then removed from the chamber with the hoist prior to initiating treatment. Larger pieces were hooked to the hoist directly and transferred onto the treatment pan within the treatment chamber.
3. **Treatment (Heating/Scrubbing)** - The components within the treatment pan were heated by natural gas burner until the sodium or sodium/potassium metals melted. The metal(s) in the pan reacted with the air in the treatment chamber (e.g. were oxidized) to form oxides that either remained in the pan or were exhausted from the room through a wet (water) scrubber to remove the oxide aerosols prior to release to the atmosphere. Wastewater from the scrubber was directed via underground piping with secondary containment to Tank T-1 (Figure 16- Photo 4 (Appendix B)).
4. **Wash Down** - After the oxidation was completed, the treatment pan was washed with water to remove remaining oxides. In the wash-down process, the oxides were converted to a solution of sodium hydroxide (NaOH) or potassium hydroxide (KOH). The wash-down liquid was directed via the sump (Figure 19, Photo 11 (Appendix B)) through

underground piping with secondary containment to Tank T-1 (Figure 18, Photo 8 (Appendix B)).

5. Liquid Waste Storage/Waste Management - The caustic solution in Tank T-1 was either: 1) emptied directly via vacuum truck for offsite disposal or recycling, or 2) transferred to Tank T-3 through an above-grade rubber hose. Tank T-3 has been installed to provide additional caustic solution storage capacity. When Tank T-3 was used, its contents would be emptied via vacuum truck for offsite disposal or recycling (Figure 16, Photo 5; Figure 17, Photo 6 for Tank T-1; and Figure 18, Photo 9 (Appendix B) for Tank T-3).
6. Sodium-Potassium Wastes - Devices containing sodium-potassium were first chilled to solidification with liquid nitrogen and placed on the treatment pan. Waste sodium-potassium (a liquid at room temperatures) would be transferred under pressurized argon gas to Tank T-2 first; and then fed from Tank T-2 into the treatment chamber for treatment (Figure 15, Photo 3 (Appendix B) for Tank T-2). The reaction process for sodium-potassium was similar to the sodium treatment as shown in Figure 21 (Appendix B). Because of the presence of potassium, the treatment by-products included potassium hydroxide in addition to the sodium hydroxide in the chamber wash down and air scrubber discharges. The treatment chamber wash down and air scrubber liquid wastes were sent to Tank T-1 first, then to Tank T-3 when T-1 reached capacity.

### **3.2.1.2 Process Description for Treatment of Lithium Metal, Lithium Hydride and Zirconium Hydride**

Per the HWMF Operations Plan, lithium metal, lithium hydride and zirconium hydride were also treated at Building T133 in the same manner as the sodium waste. Treatment of lithium metal and lithium hydride would have contributed lithium to the caustic waste streams stored in Tanks T-1 and T-3. Treatment of zirconium hydride would have contributed zirconium to the caustic waste streams also stored in Tanks T-1 and T-3.

## **3.2.2 Treatment Chamber/Pan and Ancillary Equipment Descriptions**

### **3.2.2.1 Treatment Chamber/Pan**

As shown on Figure 12, the treatment chamber is located at the southern end of the T133 building. A schematic of the treatment chamber is provided in Figure 13. The treatment chamber is approximately 21-ft x 10-ft, with 10-ft high walls. The walls are steel-lined and the floor is concrete. An elevated steel drain pan, approximately 9-ft x 14-ft, is located within the treatment chamber with a 5-ft diameter treatment pan with a 3-ft diameter steel ring located towards its center. The elevated steel drain pan served to collect and funnel the sodium hydroxide solution generated through the wash down phase.

The treatment pan is constructed from a 5-ft diameter carbon steel dished-head approximately 3/4-inch thick. The bottom of the pan was directly heated by a natural gas ring burner. A smaller carbon steel ring, with an area of about 6 ft<sup>2</sup>, is welded inside the larger pan in order to limit the exposed surface area of the liquid metals, which controlled the oxidation rate (Figure 19, Photo

10 (Appendix B)). The pan has been removed from its original position and is currently being stored in the southeast corner of the fenced area under cover.

A welded 3-in carbon steel drain line is connected between the drain pan and the steel lined sump in the treatment room. The sump's dimensions are 16-in x 21-in x 27-in deep (Figure 19, Photo 11 (Appendix B)). The caustic solution drained through a 4-in diameter cast iron line located within the 18-in wide x 23-in high concrete containment trench to storage Tank T-1 (Figure 19, Photo 8(Appendix B)).

### **3.2.2.2 Air Scrubber**

A Venturi air scrubber is located to the west of the treatment chamber (Figure 15, Photo 3 (Appendix B)). The purpose of the scrubber was to remove oxides in the air stream by transformation to sodium hydroxide or potassium hydroxide solution. This “wet scrubbing system” consisted of a Venturi scrubbing section, separator section, recirculation tank and recirculation pump. The wastewater solutions were discharged to Tank T-1 (Figure 16, Photo 4 (Appendix B)).

The scrubber was permitted through a Ventura County Air Pollution Control District Permit to Operate (No. 0271), which established air emissions limits and monitoring and reporting requirements. A copy of the ‘Permit to Operate’ is contained in Appendix A.

### **3.2.2.3 Tank T-1**

Tank T-1 (Figure 16, Photo 5; Figure 17,Photo 6 (Appendix B)) is a below-grade storage tank used to receive and hold caustic liquid wastes (hydroxide solutions) produced by the scrubber and the treatment chamber wash down following the treatment of alkali metal wastes. The rectangular tank is constructed of steel with dimensions of approximately 61-in wide x 128-in long x 73.5-in deep (from flange to base), with a capacity of 1,318 gallons. It was installed in 1988 and is located within an 8-in thick concrete pit acting as secondary containment. The inner surface of the concrete was sealed with epoxy coating. Specifications drawing for Tank T-1 are provided in Appendix D.

Tank T-1 replaced the prior caustic solution storage vessel referred to as the "sump pit" in the first RCRA Part B permit for this facility, due to no secondary containment. The sump pit was a 6-ft x 12-ft x 6-ft deep pit, lined with 4-in concrete. Location and specifications for this sump pit is provided in Appendix C (Drawing No. 303-133-S1, dated August 18, 1977). As the Appendix D drawing indicates, the former sump pit was located at the same location as current Tank T-1. A photograph also included in Appendix C shows the installation of the new Tank T-1 in the excavation location of the former sump pit.

### **3.2.2.4 Tank T-2**

The intended purpose of Tank T-2 was to temporarily hold waste sodium-potassium and to transfer it through a feed line into the treatment chamber. Tank T-2 was brought to the T133 area from another location that also included the use of sodium-potassium; however, the prior

location could not be determined. This tank was manufactured by the Butane Tank Corporation and was rated for 1,000 °F service at 50 psig. However, the application at the HWMF only required it to contain sodium-potassium at room temperature for a maximum pressure of 14 psig.

Tank T-2 is constructed of stainless steel and is horizontal with an operating capacity of 270 gallons. Dimensions are 36-in diameter x 60-in long. Tank T-2 is elevated approximately 20-in above grade, and located within a 7-ft x 4-ft x 2-ft high carbon steel containment area (Figure 15, Photo 3).

The operation of Tank T-2 (e.g., filling with sodium-potassium and transfer of sodium-potassium to the treatment chamber) was described in the HWMF Operations Plan as follows:

*"T-2 is filled through valve V-3 from a supply tank of sodium-potassium that is brought to the site. The sodium-potassium is transferred into tank T-2 by raising the argon cover gas pressure in the supply tank to greater than 3 psig. An argon cover gas of 3 psig is maintained by a pressure regulator attached to argon compressed gas cylinder. This pressure is used to control the feed of eutectic sodium-potassium from the tank to the treatment pan. A pressure relief set at 14 psig prevents over-pressurization."*

A normally-closed pneumatically operated valve, PV-1, started and stopped the eutectic sodium-potassium flow to the treatment pan. A 3 ¼-in ID feed line with manual isolation valve (V-1), 1 ½-in remotely-operated shutoff valve (PV-1) with Swagelok connections, 1 ½-in manual isolation valve (V-2) with Swagelok connections, and 1 ½-in tubing with Swagelok connections installed into the treatment room for Sodium-potassium injection. A 3 ¼-in manual valve (V-3) with Swagelok end cap is connected to the feed line in parallel with isolation valve (V-1) for Sodium-potassium filling. The 1 ½-in tubing leading to the treatment room is connected to a 1 ¼-in check valve (CV-1) and solenoid valve (SV-1) with Swagelok connections for argon purge supply. The feed line is connected to an internal dip tube 1-in from tank bottom. All lines are stainless steel.

### **3.2.2.5 Tank T-3**

Tank T-3 was used for storage of the caustic solution prior to off-site transfer. Tank T-3 is made from high-density polyethylene (HDPE) resin. Tank T-3 is a vertical, cylindrical double-walled tank. The inner tank is 120-in diameter x 106-in high with a capacity of 5,190 gallons, while the outer tank is 144-in diameter x 97-in high with a capacity of 6,840 gallons (Figure 18, Photo 9).

Tank T-3 was batch loaded from Tank T-1 as Tank T-1 approached capacity. A sump pump transferred the caustic solution through an aboveground rubber hose from Tank T-1 to an opening in the top of Tank T-3. The contents of Tank T-3 would be removed by a vacuum truck, similar to the removal process for tank T-1, for offsite management at a permitted facility.

### 3.2.3 Design Capacity

The design capacities for the Building T133 treatment chamber and ancillary equipment are described as follows:

- Treatment Chamber: Design of the treatment pan limited the surface area of the molten metal to 6.25 square feet, which provided a maximum oxidation rate of 62.5 pounds per hour of sodium, based on experimental evidence. This rate generated a caustic solution from the Venturi scrubber and treatment chamber of approximately 1,900 pounds of 10 percent NaOH.
- Tank T-1: Maximum capacity of 1,318 gallons, working capacity of 1,000 gallons.
- Tank T-2: Working capacity of 270 gallons.
- Tank T-3: Maximum capacity of 5,190 gallons, working capacity of 5,000 gallons.

### 3.2.4 Containment System

Containment systems were installed at all levels at the Building T133 area as follows.

- T133 Area: The ground surface at the T133 area is covered with concrete or asphalt. The concrete was coated with epoxy annually during the active use of the area. The overall area is surrounded by an 8-in berm. Two sumps used for rainwater collection are located on the northeastern and northwestern corners; respectively.
- Treatment Chamber: The floor of the treatment room is constructed of 4-in thick reinforced concrete surrounded with 3-in carbon steel angle (net height is 2 3/4-in) as secondary containment beneath the steel lining/drain pan. The floor and steel angle are sealed with caustic-resistant material. Concrete secondary containment is also provided for the steel sump located in the treatment chamber.
- Venturi Scrubber: The scrubber is located to the west of the treatment building on an epoxy coated concrete pad and bermed with a 2-in metal plate.
- Tank T-1: Tank T-1 is located within a secondary concrete containment. The secondary containment tank for T-1 is an 8-in thick, epoxy-coated concrete pit.
- Tank T-2: Tank T-2 is located within a 7-ft x 4-ft x 2-ft high carbon steel containment area.
- Tank T-3: Tank T-3 is a double-wall aboveground tank with a secondary containment capacity of 6,840 gallons.
- Pipes: All pipes at the HWMF designed to transfer caustic solution are located within secondary containment structures. The steel pipe from the sump to Tank T-1 in the

treatment chamber is located in an 18-in wide x 23-in high concrete, epoxy-coated trench. The pipe from the scrubber to Tank T-1 is above-grade within secondary containment located at the Venturi Scrubber area extending to Tank T-1. The above-grade rubber hose from Tank T-1 to Tank T-3 was located within a 4-in HDPE flexible hose.

### **3.2.5 Environmental Leak Detection and Monitoring System**

A high level alarm and leak detection system was installed at Tank T-1. There is approximately 2-in to 9-in dead air space between the carbon steel tank liner and the concrete pit acting as secondary containment. The leak detector, consisting of an electrical conductivity probe, was installed near the bottom of the steel tank. Any liquid accumulating in the concrete containment area activated the detection alarm. The integrity of Tank T-1 has been confirmed bi-annually since 1993, using an ultrasound examination, as required by the Part B permit. No leakage has been noted.

Tanks T-2 and T-3 are aboveground tanks and were visually inspected for leaks.

All piping at the HWMF is above-grade with the exception of the pipe connecting the sump in the treatment room to Tank T-1. Inspections were required by the Part B Operating Permit. The integrity of the pipe from the treatment room to Tank T-1 was tested on an annual basis. No leakage was detected, with the exception of the pipe failure that occurred in September 1988 (Section 3.3). The concrete trenches providing conveyance for the Tank T-1 pipes are coated with caustic resistant epoxy. The trenches were inspected every six months and all exposed piping examined on an annual basis, with no observations of leakage.

### **3.3 History of Spills at the HWMF**

There are no records of spills occurring at the T029 storage area; however, there are several documented records spills of sodium hydroxide solution at the T133 area since activation of the HWMF in 1978, which is summarized in Table 1 (Appendix C).

## 4. HAZARDOUS WASTE CONSTITUENTS

Knowledge of the processes associated with the waste generation and treatment is important to understand the hazardous waste constituents that may have been present at Buildings T029 and T133. This section provides a description of the waste generation and waste treatment processes followed by identification of the hazardous waste constituents potentially present.

### 4.1 Waste Generation Process

#### 4.1.1 Sodium and Sodium Potassium Wastes

The primary alkali metals used for the heat exchange test loop at the ETEC were sodium metal and a sodium-potassium alloy. The wastes generated in association with the heat exchange test loops were: 1) components (piping, pumps, valves, etc.) contaminated with and/or containing spent sodium or sodium-potassium, 2) spent sodium metal, or 3) spent sodium-potassium alloy. The components and spent sodium metal and sodium-potassium alloy are referred to as alkali metal wastes.

Components to be tested were filled with sodium metal or sodium-potassium alloy which acted as heat transfer media in large loop heat exchanger tests and other small experimental test loops. These tests were performed in inert atmospheres (e.g., argon or nitrogen) as the physical nature of the alkali metals required that they be kept clean of atmospheric impurities (oxygen, carbon dioxide, water vapor etc.). The sodium or sodium-potassium was heated to a temperature of 200 to 1,500°F and pumped through a recirculating loop as part of a normal test facility operation. A test sodium loop typically incorporated a smaller loop designed to remove any impurities that may have entered the system and deteriorated the heat transfer properties of the sodium. Within the smaller loop, the sodium was cooled in a device referred to as a "cold trap" for the removal of impurities such as oxygen, carbon dioxide or hydrogen. Bubblers containing sodium-potassium were used to purify the inert gas.

Generally, stainless steel material was used for sodium test components, while carbon steel was used for sodium-potassium test components. Chemicals (such as fluorinated or chlorinated solvents) that had the potential to etch the stainless steel or carbon steel metals were deliberately excluded from the system in order to minimize stress and corrosion failure in the components. Over time, the sodium and sodium-potassium used in the test loops would become saturated with impurities such as oxygen, hydrogen or carbonaceous compounds (such as sodium carbonate), and could no longer function as heat transfer media.

Wastes generated from these operations included various stainless steel or carbon steel components (pipes, valves, pumps, heat exchangers, etc.) that had been filled with sodium or sodium-potassium; spent sodium metal and spent sodium-potassium alloy; sodium cold traps; and sodium-potassium bubblers. These wastes were transported to building T029 for storage and then moved to T133 for treatment, as described in Sections 3.1 and 3.2, respectively.

#### 4.1.2 Lithium Metal Wastes

According to the HWMF Operations Plan, lithium metal was also used as heat transfer media in a manner consistent to that described above for sodium metal. Use of lithium metal as heat transfer media would have resulted in the generation of lithium metal waste and components containing lithium metal.

#### 4.1.3 Lithium Hydride and Zirconium Powder Wastes

The HWMF Operations Plan also indicated that lithium hydride and zirconium hydride powders were not produced at the site, but had been purchased “new”. The lithium hydride was held in storage in the “as-received” containers or cast into various sizes. The zirconium hydride was also held in storage in the “as-received” containers. Both wastes were stored in building T029 and were subsequently declared excess. The lithium and zirconium hydrides were managed as wastes as described in Sections 3.1.4 and 3.2.1.2.

### 4.2 Waste Generated During Handling and Treatment of Metal Wastes

Different wastes generated in the handling, storage and treatment of the alkali metal wastes included:

- Fire suppression residues resulting from fire suppression activities when sodium or sodium-potassium media was exposed to air;
- Sodium hydroxide generated during waste storage due to contact with air;
- Spent petroleum liquid wastes from operating the saws to cut alkali metal impacted components into smaller sizes for treatment in the treatment chamber; and
- Sodium, potassium, lithium and zirconium hydroxide (caustic) solutions from the air scrubber and treatment chamber wash down water (containing varying concentrations of metals).

#### 4.2.1 Fire Suppression Wastes

Though infrequent, wastes could also be generated as the result of a spill or a fire. The physical characteristics of sodium and sodium-potassium include reactivity with exposure to air resulting in fire. During these events, fire-fighting chemicals such as sodium carbonate ( $\text{Na}_2\text{CO}_3$ ), referred to by brand name “NaX”, would be used to extinguish the sodium-based fires. The suppressed fire waste was scooped up and placed into approved containers. The suppressed fire waste material was layered with additional NaX to preclude further reaction with air.

#### 4.2.2 Sodium Hydroxide Generated During Storage/Management

Sodium wastes were moved in DOT-approved drums. The wastes were placed in containers in layers, with layers of sodium waste separated by alternating layers of the fire extinguishing

NaX material. The NaX smothered the waste and prevented direct contact with air, which would result in a relatively small reaction of sodium-forming sodium hydroxide.

#### 4.2.3 Sodium, Potassium, Lithium and Zirconium Hydroxide Solutions

By heating the alkali metal waste (sodium, sodium-potassium, lithium or zirconium), the metal reacted with the oxygen in the treatment room and formed oxides. These were removed from the air with the air scrubber and from the chamber floor, walls, pan, etc. during the wash down. The resultant liquid from both the air scrubber and the chamber wash down was a caustic solution of sodium, potassium, lithium or zirconium hydroxide. The generated hydroxide solutions were categorized as RCRA hazardous waste characteristic of corrosivity (D002 - pH > 12.5).

During treatment of the alkali metal wastes in the treatment chamber, the exposed parts of the steel and stainless steel components may also have been oxidized. The parts (steel and stainless steel) contained various metals, at concentration ranges set by the American Society for Testing and Material (ASTM) or by the American Iron and Steel Institute. Thus, concentrations of metals associated with component materials could be detected in the final hydroxide solution generated by the treatment process.

#### 4.2.4 Mineral Oil and Kerosene

In addition to the production of caustic solutions with potential metals, the T133 area produced spent mineral oil and kerosene products. The mineral oil and kerosene wastes were associated with operation of the saw system used to reduce the size of equipment/components impacted with alkali metals.

### 4.3 Hazardous Waste Constituents

Hazardous waste constituents potentially present at the HWMF based on storage activities at T029 and treatment at T133 include the following:

Constituent	Building T029	Building T133
Sodium metal (D003, D001)	✓	✓
Sodium-potassium alloy (D003, D001)	✓	✓
Sodium Oxide (D003)	✓	✓
Potassium Oxide (D003)	✓	✓
Sodium Hydroxide Solution (D002)		✓
Various Metals (various D-codes)		✓
Lithium Metal (D003)	✓	✓
Zirconium (no waste codes)	✓	✓
Mineral Oil or kerosene (potential D-codes associated with volatile organic components of the mineral oil or kerosene, if present)		✓

Other compounds, such as volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) are considered hazardous waste constituents that could potentially be present due to the kerosene/mineral oil products produced at T133 (Section 4.2.4). Fluoride is also included in the list of hazardous waste constituents present at the site because it was included in the prior Closure Plan, although there is no discussion or documentation of fluoride used at either T133 or T029 in the HWMF records.

No other constituents (e.g., PCBs, pesticides, herbicides, etc.) would be present at the HWMF buildings as all other waste products not associated with the liquid metals test projects were managed at the hazardous waste storage area (HWSA), which is located at a different facility.

Table 2 (Appendix C) provides a summary of the chemicals of concern (COCs) for the HWMF closure tasks, based on the hazardous waste constituents managed at T029 and T133. A description of these chemicals is provided in the following paragraphs.

#### **4.3.1 Reactive, Corrosive and Ignitable Constituents**

The sodium metal, sodium-potassium alloys and lithium metal can be ignitable and reactive if exposed to air or water. The oxides are produced as an intermittent step in the treatment process and can exhibit reactive characteristics. They are ultimately transformed into corrosive hydroxide liquids (e.g., caustic solution with a pH > 12.5).

#### **4.3.2 Metals**

The generated caustic solution was previously analyzed for metals to determine whether any metal, from the various components heated, was present at significant concentrations that could be associated with the treated sodium or sodium-potassium waste. The caustic solution in tanks T-1 and T-3 and the sludge in tank T-1 were analyzed for California Code of Regulations (CCR) Title 22 (Section 66261.24) metals (Appendix E), with a summary of the analytical results in Table 3 (Appendix C). Results indicated that metals were present in both the sludge and liquid samples, with chromium and nickel present in the liquid wastes at concentrations exceeding hazardous waste thresholds as follows:

- Chromium exceeded the RCRA Toxicity Characteristic Leachate Procedure (TCLP) regulatory level of 5.0 milligrams per liter (mg/L).
- Nickel exceeded the California state Soluble Threshold Limits Concentrations (STLC) of 20 mg/L.
- The treatment of lithium hydride was performed at T133 (authorized under the 1984 RCRA Part B Permit) and zirconium was stored at T029. Thus, lithium and zirconium are also considered hazardous waste constituents (Table 2, Appendix C).

### **4.3.3 Mineral Oil and Kerosene: TPH, BTEX and PAHs**

Petroleum hydrocarbons include varying concentrations of benzene, toluene, ethylbenzene and xylenes [BTEX]), and polyaromatic hydrocarbons (PAHs) depending on the type of petroleum product. The PAHs and aromatic VOCs were not used as individual chemicals, but are included in the COC list due to being part of total petroleum hydrocarbons (TPH) composition.

The TPH used at the HWMF was kerosene or mineral oil (also referred to as white oil). This product was used at T133 as a lubricant during the size reduction cutting process. Concentrations of BTEX and PAHs is very low in mineral oil and kerosene products, and a TPH trigger concentration will therefore be used to select samples for BTEX and PAH analyses as further discussed in Section 9.4.

### **4.3.4 Other Compounds**

Non-petroleum VOC compounds and fluoride were not part of the generating waste stream or the waste treatment process. Due to inclusion in the prior approved Closure Plan, the closure approach may include analysis of these chemicals only as a verification measure. These chemical analyses will be performed less frequently than the analyses for hazardous constituents associated with the generating waste stream and/or the treatment process, as further discussed in Section 9.4.

## **5. ESTIMATE AND MANAGEMENT OF MAXIMUM INVENTORY**

Operations at the HWMF were discontinued in 1997. Since the HWMF was a storage and treatment facility, the maximum inventory would not necessarily equate to the amount of waste present at the time of cessation of operations.

### **5.1 T029 Area**

The maximum potential inventory at T029 storage area was 5,500 gallons. However, at the time of cessation of operations in 1997, only 1,365 pounds of sodium and sodium-potassium waste was stored in this building. In 1997, this waste was shipped to Laidlaw Environmental Services in New York for treatment/disposal (Appendix F).

### **5.2 T133 Area**

No sodium or sodium-potassium waste was present at the T133 area at the time of cessation of operations, because all of the sodium or sodium-potassium material had been treated. The maximum volume of caustic solution potentially present at the T133 area is the following:

- Tank T-1: 1,000 gallons (equivalent to 8,340 lbs.)
- Tank T-3: 5,000 gallons (equivalent to 41,700 lbs.)

## **6. FACILITY CLOSURE**

### **6.1 OBJECTIVES**

The objective of this Closure Plan is to outline procedures for achieving clean closure of the structures within the HWMF, and to discuss how Closure Performance Standards prescribed in 22 CCR, Section 66265.111 will be met pursuant to facility closure requirements for Interim Status Facilities in 22 CCR, Division 4.5, Chapter 15. As demolition and removal is planned for Buildings T029 and T133, this intent will be met by demonstrating that hazardous waste and hazardous constituent residues have been removed and are no longer a threat to public health and the environment.

These objectives are to be obtained for the building structures only; the characterization and remediation of the soils and groundwater at the HWMF are being managed under the enforceable AOC/RFI and COCA/RFI programs as discussed earlier in this document; and are not part of this closure.

### **6.2 General Approach to Closure**

As previously stated, all hazardous wastes and materials have been previously removed from containers, tanks and associated equipment at the HWMF buildings T029 and T133. The closure approach for Buildings T029 and T133 will therefore start with decontamination of buildings, equipment and structures. The HWMF buildings T029 and T133 and all associated features will be demolished and removed through this closure action and there will be no reuse of any equipment. The closure approach will include the following steps, which are described in detail in the referenced sections. The approach as identified is based on the fact that the hazardous wastes have already been removed from both T029 and T133.

1. Decontamination of T029 and T133 Structures/Equipment/Area (Section 7.0).
2. Verification Sampling and Demolition of T029 and T133 Equipment and Buildings (Section 8).
3. Removal of T029 and T133 Equipment and Buildings (Section 8.0).

### **6.3 Closure Process**

Progression of the closure of Buildings T029 and T133 will follow the general sequence discussed below:

- Step 1) Initial closure/pre-demo activities, including completion and approval of Storm Water Pollution Prevention Plan (SWPPP); detailed building surveys and inspections, preparation and approval of D&D Work Package documents, including sub-plans, cultural surveys and preparation of information for waste disposition

- Step 2) Mobilization and site setup
- Step 3) Implementation of Closure and Pre-Demolition Surveys
- Step 4) Selective Decontamination and Removal of Non-essential Equipment/Removal of Existing Waste
- Step 5) Abatement of Asbestos Containing Material (ACM)/Other Regulated Material (ORM)/Hazardous Wastes
- Step 6) Demolition and Disposition of Waste
- Step 7) Site restoration and Post Closure Surveys

This Closure Plan will be incorporated as an Appendix to the specific D&D Work Plans that will be prepared as part of the controlling work package for the D&D phase of the work.

### **6.3.1 Preparation of Controlling Documents**

The principal controlling documents that will outline the detailed methodology for the closure of the HWMF pursuant to Interim Status Facility requirements are CA State Hazardous Waste Regulations, this Closure Plan after it has been approved by DTSC, and the facility- or building-specific D&D work plans and associated work package documents that will be prepared and submitted by DOE to DTSC after approval to begin demolition activities is obtained.

The project will comply with 10 CFR 835 (Occupational radiation protection), 10 CFR 851 (Worker safety and health program), DOE order 450.4, Safety Management System policy. The facility- or building-specific D&D work plans will contain procedures that provide the approach to be followed for the closure and demolition process; including, but not limited to the following information:

- Site setup and mobilization, including security boundaries and best management practices for erosion control
- Initial surveys to identify sources or potential sources of hazardous materials, underground utilities, feature tracking (for subsequent remediation programs)
- Procedures for tracking building or site features where the potential for historical releases may have existed, so that these locations can be identified and targeted during subsequent confirmatory soil sampling events
- Utility isolation and deactivation for each structure followed by verification
- Abatement/decontamination activities associated with hazardous- and radiological materials, including handling, packaging, storing, transporting and disposition
- Building demolition

- Waste management (including segregation, loading, transportation and disposition) in accordance with government requirements and results from the surveys
- Site restoration and security measures
- Post Closure Surveys

### **6.3.2 Mobilization**

Step 2 will consist of mobilization activities including the preparation of the area for demolition activities, including personnel training to all approved documents, procedures and plans; installation of erosion control measures; industrial hygiene; and construction of site infrastructures and temporary facilities.

### **6.3.3 Facility Closure and Pre-Demolition Surveys**

During the course of the facility closure process, it will be necessary to conduct one or more of the following surveys to ensure the safety of the workers and the proper handling and management of the equipment and demolition debris. Step 3 will involve the implementation of these surveys. The surveys will initially be conducted prior to building demolition, but could also occur or be repeated at any point during the closure process as necessary to ensure that demolition debris is properly characterized for disposition.

Data collected during these surveys will be used to: 1) ensure the safety of the workers; 2) identify and track those areas that will be part of future sampling events under the soil and groundwater RFI process; 3) aid in the preparation of the controlling plans and subsequent removal/abatement actions for hazardous wastes and ORM required prior to demolition; 4) determine the proper handling and management requirements for the demolition debris; and, 5) further the closure process of the HWMF. Data collected from these surveys will be maintained as part of the Closure and used during the demolition planning and waste management process. All work methods associated with the performance of the surveys will be included in the facility- or building-specific D&D work plans that will be prepared and submitted for review and approval. Descriptions of the surveys are presented below

#### **6.3.3.1 Residual Waste Characterization Survey**

A visual inspection of Buildings T029 and T133 including the area surrounding the structures, the tanks and remaining appurtenances will be visually assessed to determine if there is evidence of residual chemical contamination, such as discoloration of the concrete, or obvious areas potentially attributed to a past leak or spill. The location of each area will be tracked according to the guidelines presented in the Standard Operating Procedure for Building Feature Evaluation and Sampling, Rev.1 (MWH Americas, Inc./CH2M Hill, June 2009), and the process outlined in the building-specific D&D Work Plan. This process will ensure that verification samples can be collected from these exact locations during the soil and/or groundwater remedial actions, addressed under other regulatory programs. The decontamination performance standard will be the removal of hazardous waste constituent residues from the various equipment and structures

as described in Section 7.0. The equipment and structures will be analyzed for the appropriate hazardous waste characteristics in accordance with CCR Title 22, Section 66261 and for verification of decontamination levels as summarized in Tables 3 and 4, Closure Sampling Objectives for T029 and T133, respectively. This characterization will provide the basis for management of the demolished and removed material and equipment, as discussed in Section 8.

### **6.3.3.2 *Underground Utilities Survey***

An underground utilities survey will be conducted to locate and mark underground utilities prior to demolition activities. The purpose of this survey is to identify the locations at which underground utilities will be isolated and disconnected, as well as to ensure that live utilities are not damaged during the excavation of foundations and pavement. The survey will be conducted by a third-party contracted locator service.

### **6.3.3.3 *Land Survey***

The purpose of the land survey is to ensure that locations of improvements are recorded and documented. A land survey of the T029 and T133 areas will be performed and tied to a survey mark established by a registered land surveyor. This information will be used to meet objectives for the soil and groundwater remedial investigation programs currently being managed by others, as well as, ensure that any backfill that may be placed after demolition for stabilization is properly graded for storm water runoff.

### **6.3.3.4 *Asbestos-Containing Material and Other Regulated Material Survey***

A visual survey will be conducted in each structure to identify any asbestos-containing building materials that require abatement prior to demolition. A certified asbestos abatement/removal contractor will be procured to properly remove the ACM according to state and federal guidelines, provide clearance and properly package and disposition the waste to an appropriate offsite disposal facility.

Additionally during the visual inspection, all ORM will be identified and abated prior to demolition. These materials will be packaged and dispositioned in accordance with the approved Waste Management Plan that will be prepared as part of the overall D&D work package.

## **6.4 Demolition and Disposition of Waste**

### **6.4.1 Demolition**

After all activities in Steps 1 – 5 have been completed, Step 6 of the closure process is to initiate demolition. The methods used for the demolition of the buildings, foundations, and other ancillary structures will be detailed in the D&D Work Plans. Demolition methods will be reviewed and stamped by a CA-licensed Structural Engineer during the document preparation phase to ensure all demolition methods can be performed safely.

## **6.4.2 Waste Management**

Currently, it is anticipated that all buildings and structures will be razed and disposed. All resulting construction debris will be appropriately characterized for waste disposal. During demolition, identified contaminated building materials may require size reduction in place for immediate packaging as radioactive waste. Procedures for waste segregation, downsizing, and loading will be detailed in the Waste Management Plan prepared as part of the D&D Work Package.

### **6.4.2.1 Waste Determination Procedures**

The samples collected during the Step 3 surveys will be used to properly characterize the wastes that will be generated during demolition activities. The samples will be collected and analyzed according to the applicable and appropriate analytical methods that will be detailed in the Quality Assurance Project Plan, generated as part of the D&D Work Package.

### **6.4.2.2 Waste Accumulation**

Hazardous wastes that are generated during the closure and demolition activities associated with Buildings T029 and T133 will be accumulated in appropriate containers and stored for less than 90 days in accordance with hazardous waste generator requirements prior to being shipped offsite to the designated disposal facilities. If possible, the wastes will be loaded directly onto the transport vehicles for transport to the designated disposal facilities. If any hazardous liquids are found to be present during the initial surveys, characterization samples will be taken and analyzed, and the wastes pumped directly into storage containers on transport vehicles for offsite disposition to the designated disposal facility.

### **6.4.2.3 Disposal Facilities**

Wastes debris generated during closure will be shipped offsite and outside of California for disposal. Hazardous waste and debris will be shipped to authorized, offsite hazardous waste facilities, as appropriate using Uniform Hazardous Waste Manifests.

## 7. DECONTAMINATION PROCEDURES

### 7.1 Potentially Contaminated Structures and Equipment

This Section provides general information on proposed decontamination procedures techniques that will be used during the closure of the HWMF facilities. Additional detail regarding the actual decontamination techniques will be included in the Work Plan and/or Quality Assurance Plan that will be prepared as part of the D&D Work Package once D&D activities are imminent and this Closure Plan has been approved.

The HWMF was used for the storage and treatment of alkali metals. Some structures and equipment have come into direct contact with the waste material, while other areas only had a potential for contact with the waste. These two different categories are described below.

#### 7.1.1 Direct Contact with Waste

Structures and equipment that have come into direct contact with waste material include those where waste was treated or stored. This type of direct contact occurred at the T133 area, where the waste was treated and the generated caustic solution stored. These items include:

- The treatment chamber
- Venturi scrubber
- Tanks T-1, T-2, T-3
- Miscellaneous piping
- Sumps

#### 7.1.2 No Direct Contact with Waste

All other areas, not specifically enumerated in Section 7.1.1, are considered not to have had direct contact with the waste material. At T133, the remaining areas were used as staging, support function or secondary containment. The leak detection equipment that is located in the interstitial space between the metal liner and concrete of Tank T-1 has not been in contact with the treated waste, as no leakage has occurred from this liner, according to available records.

At T029, the waste was stored in the B-boxes or drums. No waste handling occurred at the T029 area other than the movement of the closed containers. The pipe located on the southern side of building T029 that extends out 1.5 feet was used to provide better drainage of the rainwater collected from the rooftop. Due to the nature of the stored material, water was specifically kept out of the building. The rainwater did not have any contact with the waste material therefore the pipeline also did not have any contact with the waste.

## 7.2 Decontamination Procedures

This section provides general, industry decontamination practices that will be used at T029 and T133. This work will be detailed in the D&D Work Package plans that will be prepared prior to the demolition phase.

### 7.2.1 T029 Area

The containerized wastes stored in Building T029 have been previously removed and the T029 building is empty. Pressure washing may be used as general decon measures for the building and associated areas as follows:

- Walls and Ceiling: The walls and ceiling will be washed first, using a plastic liner to capture the liquids, which will be placed into appropriate containers for characterization prior to disposition.
- Concrete Floor: The floor will be pressure washed last, with the water simultaneously vacuumed into drums to control any wastewater flow, then characterized for proper disposition.

### 7.2.2 T133 Area

Decontamination of the T133 area, equipment and structures may also be performed using pressure washing techniques, with the exception of Tank T-2 and its associated hoses and the containment for the piping connecting Tank T-1 and Tank T-3. All other waste materials, such as the caustic solution, have already been removed from the T133 area. These general decontamination techniques are as follows:

- Removable Piping/Equipment, Treatment Chamber Building and Tanks T-1 and T-3: A large decon pad will be constructed, lined with plastic, and used for pressure washing miscellaneous items such as process piping, metal catch pans, etc. The decontamination pad rinsate will either be pumped into appropriate drums or into Tank T-3.
- Treatment chamber: The treatment chamber will be thoroughly pressure washed, including the floor, ceiling, walls and inside doors. Existing wastewater flow system will be used to capture the decontamination rinsate, flowing from Tank T-1 to Tank T-3. Rinsate contained in T-3 and in drums, if any, will be tested for waste disposal characterization and appropriately transported and disposed of at an off-site treatment/disposal facility.

- Venturi Air Scrubber: The order for cleaning the scrubber will be from top to bottom, in order to minimize the possibility for recontamination. Overall scrubber decontamination will be performed from the outside, without entering the chamber, accessed through the main opening on the east side of the scrubber. The bolts from the manway will be removed and any residual water, if present, will be pumped-out. The floor, walls, de-mister and ducting of the main chamber will be pressure washed using a high pressure wash with four to six foot extension wands.
- Concrete /Asphalt Areas: The overall concrete/asphalt area at the T133, including secondary containment for the piping will also be washed, as a precautionary measure. The water would accumulate in the two sumps located on the northeastern and northwestern corners of the pad. The water will be pumped into T-3 or drums for sampling and ultimate treatment/disposal offsite.
- Tank T-2 and Associated Lines: Tank T-2 is maintained with an inert cover gas (argon), as a preventative measure to protect against the reaction of possible sodium-potassium residues with oxygen from the air. Efforts have been taken to determine the extent, if any, of sodium-potassium residuals in Tank T-2. An ultrasonic examination of the tank was made, and no residual sodium-potassium was detected within Tank T-2. However, as a precautionary safety step, residual sodium-potassium will be presumed to be present, and the tank will be managed accordingly.
- Tank T-1 to Tank T-3 Transfer Hose: The flexible hose used for transferring the caustic waste from Tank T-1 to Tank T-3, including the secondary flexible containment pipe will be disposed as a hazardous waste at an off-site facility, as this option is more cost effective than decontamination.

### 7.3 Decontamination of Equipment

The following provisions have been made to decontaminate equipment during closure of the HWMF facilities should a need for such procedures arise. The decontamination and disposition of personal protective equipment (PPE) is not discussed in this Closure Plan, but will be detailed in the Safety and Health Plan prepared during the D&D Work Package documents after approval of this Closure Plan by DTSC.

Decontamination procedures will include steam-cleaning, scrubbing the equipment with an industrial grade detergent and rinsing with tap water, or simply wiping the equipment clean. The selection of the appropriate decontamination method will be determined in the field by the project management responsible for overseeing closure activities. However, the use of wiping for decontamination purposes will be reserved for small equipment; such as hand tools.

### 7.4 Provisional Decontamination Area

As closure proceeds toward completion, it may be necessary to decontaminate large pieces of heavy equipment used in the demolition process. If this is deemed necessary, a suitable location in the vicinity of the HWMF that is situated apart from physical demolition activities will be

selected for the construction of a temporary decontamination pad. A containment berm will be established around the perimeter of the pad using sand bags or the equivalent. The entire pad and containment berm will be covered with minimum 10-mil poly sheeting and anchored on the outside of the berm using sand bags or other appropriate means. Liquids generated from decontamination activities will be directed to one end of the pad and simultaneously vacuumed into a truck or pumped into drums and managed appropriately.

## **7.5 Management of Decontamination Wastes**

Water generated from decontamination activities will be collected using a vacuum truck or will be pumped into appropriate shipping containers. Used wipe rags and disposable equipment generated from decontamination activities will be collected and placed in appropriate shipping containers. Wastes generated from decontamination activities will be characterized and managed as appropriate. The accumulation of these wastes will be performed in accordance with Section 6.4 of this Closure Plan.

## **7.6 Field Records**

Field records will be maintained to demonstrate that closure activities are conducted in a manner that is consistent with all approved controlling plans and procedures as discussed in Section 6.3.1. Field Records will be compiled in a bound field notebook. Information recorded in the notebook may include:

- Date
- The time at which daily activities commence
- Weather conditions
- Daily tailgate meeting information
- Activities that are scheduled for the day, including a notation as to whether they have been completed on that day
- Name of personnel onsite and their representative companies
- D&D information
- Sampling information
- Waste shipment information
- Other data relevant to the site activities associated with Closure
- Unusual conditions

- Issues that delay closure activities
- Communications to, and from oversight Agencies
- Project Comments

Photographs may be taken to photo-document certain activities where necessary and appropriate. Photographs taken of closure activities will be maintained as part of the HWMF closure field records.

## 8. VERIFICATION SAMPLING AND DEMOLITION

After decontamination is complete, all improvements (including buildings, slabs, etc.) at the HWMF buildings T029 and T133 will be demolished. None of the improvements or equipment will be reused or left onsite. All verification sampling and demolition tasks will be performed in accordance with the appropriate D&D Work plans and procedures that will be prepared prior to the D&D phase.

The following section describes the tasks associated with verification sampling for demolition and demolition debris management of the HWMF Buildings T029 and T133.

### 8.1 Verification Sampling

#### 8.1.1 Verification Sampling Objectives

After the decontamination described in Section 7.0 is complete, verification sampling will be performed prior to demolition. The primary verification sampling objective is to determine if additional decontamination is warranted. If additional decontamination is performed, it will be followed by another round of verification sampling.

An additional verification sampling objective is to provide the data necessary for waste classification in accordance with the California Code of Regulations, Title 22, Division 4.5. This is a necessary objective as the closure approach includes demolition and removal of all structures and equipment. Classification of the materials before demolition will allow for proper segregation of the demolition debris (e.g., nonhazardous versus hazardous waste).

Based on the hazardous constituents potentially associated with T029 and T133 operations as previously described, the following constituents and hazardous waste criteria will be evaluated in the verification sampling step:

- reactivity and ignitability due to the presence of alkali metals (sodium, sodium-potassium, lithium);
- corrosivity due to the high pH of the sodium and potassium hydroxide solutions;
- toxicity due to the presence of metals;

Table 4 (Appendix C) summarizes the sampling objectives for Buildings T029 and Table 5 (Appendix C) summarizes the sampling objectives for building T133 and its associated hazardous waste unit.

#### 8.1.2 Verification Sampling Methodology

Specific methodology associated with the collection, handling, packaging and subsequent analysis of verification samples will be detailed in the Quality Assurance Project Plan that will

be prepared as part of the D&D Work Package documents. The information presented in this Section outlines generally accepted methods for sample collection that will likely be used.

The types of verification samples to be collected include core, chip or wipe samples from the various types of building material, which may consist of concrete, metal, plastic or wood. Water samples (i.e., rinsate) may also be collected if equipment is inaccessible for wipe or matrix sampling. Core or chip samples will be collected of concrete as appropriate. Chip samples will be collected from concrete surfaces where it is impractical to core concrete samples. Samples will be collected from metal surfaces using gauze. Samples will be placed in glass jars and labeled with the appropriate information.

Based on the size of the area, samples will be collected in accordance with the current DTSC guidance documents, *Permit Writer Instructions for Closure of Treatment and Storage Facilities (DTSC, 2002)*. The information below summarizes the proposed number of samples to be collected from the various units:

- Building T029
  - One wipe sample will be collected from each wall for a total of 4 wipe samples. This is consistent with the recommended frequency of one sample per 300 square feet. The location of the wipe samples on each will be selected to be representative of wall condition and building use.
- Building T133
  - T133 Treatment Chamber Walls and Ceiling: a total of 5 wipe samples will be collected from the chamber - one from each wall, and one from the ceiling.
  - Treatment pan: 1 sample due to relatively small size.
  - Steel lining/drain pan: 1 sample due to relatively small size.
  - Sump lining: 1 sample due to relatively small size.
  - Tanks T-1, T-2 and T-3: 1 sample will be collected from the inside of each tank, due to the equal potential for contamination distribution on the interior surface of the tank.
- Other Types of Verification Samples
  - Other building materials may consist of plastic or wood. Chip or core samples of these types of material will be collected by sawing, cutting or drilling the area to be analyzed. Core samples will be the primary collection method where practical. A consistent approach of one sample per 300 square feet will be used to determine the number of samples. Samples will be placed in glass jars and labeled with the appropriate information as described in Section 8.1.5.

- Asphalt Roadways
  - The T029 asphalt roadway will be sampled to determine if any releases occurred due to storage of containers outside of Building T029. The analytical results will be evaluated to determine if there is evidence of a release at T029 and also for waste characterization purposes to ensure that the asphalt is properly disposed of.

As mentioned previously, the sampling program will be detailed in the appropriate plans that will be prepared as part of the D&D Work Package documents, specifically the Quality Assurance Project Plan, which will outline the methods and types of verification samples to be collected, the decontamination procedures for sampling equipment, the number of verification as well as quality control samples to be collected, and the proper analytical methods to be used. Sampling results will be used to properly designate disposition for waste materials. Laboratory reports will be included in the final closure documents prepared after all work is complete.

## **9. SOIL AND GROUNDWATER SAMPLING**

No soil or groundwater sampling will be conducted during the D&D of the HWMF facility structures. The RFI/Corrective Action Program for soil and groundwater at the site is currently being conducted as outlined in the 2007 COCA and 2010 AOC issued by DTSC to DOE. As a result of these Orders, any information regarding and pertinent to soil or groundwater at ETEC will be discussed in detail in the documents associated with regulatory programs having authority over these activities.

## **10. ANALYTICAL TEST METHODS**

Analytical test methods associated with the collection and analysis of any verification samples as discussed in Chapter 8 will be thoroughly discussed in the Quality Assurance Project Plan that will be developed as part of the D&D Work Package documents, prior to D&D activities.

Analytical test methods associated with soil and/or groundwater sampling are not relevant to this Closure Report; as there will be no soil and groundwater collected during the closure and demolition of the HWMF structures. Analytical test methods associated with media collection will be addressed in the work plans and documents associated with the Corrective Action Programs managed under the 2007 COCA and the 2010 AOC.

## **11. PERFORMANCE STANDARDS**

The goal of this Closure Plan is to achieve clean closure of the HWMF structures by demonstrating that: 1) all hazardous waste and hazardous constituent residues have been removed; or, 2) are left in place at levels that are protective of public health and the environment.

Since demolition of the HWMF, including building foundations and associated paved areas, is planned as well as offsite disposition of all debris generated during the demolition, it is anticipated that this intent will be met. After demolition is complete, site restoration activities will occur so as to leave each previous building location in a safe status, so that future characterization and remedial activities associated with the soil and groundwater programs can be continued.

## **12. CLOSURE COST ESTIMATE AND FINANCIAL RESPONSIBILITY**

The owner of the HWMF is the US DOE. In accordance with CCR Title 22, Section 66264.140(c), the owner is exempt from the requirements of CCR Title 22 Article 8 Financial Requirements. Therefore, a closure cost estimate and financial assurance are not included in this Closure Plan.

### **13. FINANCIAL ASSURANCE**

Financial assurance requirements for Interim Status facilities are located in 22 CCR, Chapter 15, Article 8. However, 22 CCR 66265.140(c) stipulates that States and federal government are exempt from Article 8.

The HWMF is owned by the United States Department of Energy and is exempt from the requirement to provide financial assurance for closure.

## **14. CLOSURE IMPLEMENTATION SCHEDULE**

No schedule has been identified at this time for the D&D activities at ETEC. D&D activities were suspended in Area IV, including ETEC, in May 2007 until DOE completes the SSFL Area IV EIS, anticipated to be completed in late calendar year 2016.

Development of a schedule will be conducted concurrently with the preparation of all D&D Work Package documents after approval of the D&D process.

## 15. CLOSURE CERTIFICATION

### 15.1 Closure Records

Upon closure of the permitted hazardous waste treatment and storage units, the following records will be maintained onsite and will be made available to DTSC upon request:

- The Closure Plan as approved by DTSC;
- Copies of the independent professional engineer's field observation reports;
- Documentation to demonstrate that relevant Quality Assurance/Quality Control (QA/QC) procedures were properly employed during closure;
- Copies of manifests showing disposition of the waste inventory, demolition debris, and wastes generated during closure;
- The Closure Certification Report;
- Other documentation that may be pertinent to demonstrate proper closure of the HWMF Buildings T029 and T133.

### 15.2 Closure Certification Report

A Closure Report for the structure associated with T029 and T133 will be prepared and submitted to the DTSC. The report will summarize all activities performed for Closure of the HWMF structures, as described in this Closure Plan and as implemented in the field. The report will also include certification by an independent registered California Professional Engineer as required by CCR Title 22 Section 66264.115.

A general outline of the Closure Report is provided below.

- A description of closure procedures followed by all contractors;
- Modifications and amendments to the closure plan, where necessary (and approved by DTSC);
- A description of the Supervisory personnel;
- A summary of closure activities;
- Field engineer observation reports;
- A summary of the total quantities of wastes removed/disposed (by waste type), how, and where each was disposed;

- Copies of hazardous waste manifests showing the disposition of the waste;
- Copies of any analytical data generated from decontamination activities;
- A written discussion and evaluation of the analytical results;
- Photographs where necessary and appropriate; and
- Manifests showing disposition of the waste
- Field observation of the Professional Engineer overseeing closure activities
- Photographs
- A signed statement certifying that each unit has been fully decommissioned in accordance with the approved closure plan. Since post closure activities will be conducted at each site consisting of the implementation of the soil and groundwater RFI programs, each site will be left in a safe configuration so that further work can continue. Site restorative measures will be outlined in the D&D Work Plan packages.

## 16. PERSONAL PROTECTIVE EQUIPMENT (WORKER SAFETY AND HEALTH)

North Wind, Inc. will be responsible for the health & safety of all personnel performing work onsite during closure and D&D activities. The Safety and Health Plan will be prepared as part of the D&D Work Package documents, as discussed in Section 6.3.1., and will require all personnel, including subcontractors, to follow the requirements contained in all controlled documents prepared by North Wind, including the Safety and Health Plan. Project activities will comply with 10 CFR 835 (Occupational Radiation Protection), 10 CFR 851 (Worker Safety and Health Program), DOE Order 450.4, Safety Management System Policy.

North Wind will prepare all controlled documents that will govern the closure and D&D activities for the HWMF. These plans will be submitted to DOE for review and approval prior to the start of work. The Safety and Health Plan must describe precautions to be taken during the execution of specific work activities. Activity Hazard Analyses (AHA) will be prepared for separate work activities as supplements to the Safety and Health Plan. The Safety and Health Plan will address, at a minimum:

- Hazard identification and evaluation;
- Required personal protective and safety equipment;
- Designated site work and exclusion zones;
- Emergency procedures;
- Confined spaces;
- Ambient air monitoring procedures;
- Procedures and action levels for upgrading levels of protection;
- On-site safety orientation and training meetings;
- Personnel and equipment decontamination procedures;
- Designated site safety officer requirements;
- Limitations from access to work zones;
- Physical examinations and training for field staff required under 29 CFR 1910.120;
- A map showing the address and location of the nearest hospital.
- The controlled copy of the approved Safety and Health Plan will be maintained at the site until closure activities have been completed.

## **17. SITE SECURITY**

Entry to the SSFL is restricted, and only authorized personnel can enter the complex. In addition, access to the HWMF Building T029 and Building T133 areas is currently restricted. A fence with locked access gate is present at each area. During implementation of the closure activities, these fences will be removed. However, the road leading to each building area will be cordoned off. Placards indicating that the area is restricted to authorized personnel only will be maintained at the site until the completion of closure activities.

## **18. CONTINGENT POST CLOSURE PLAN FOR TANK T-1**

In accordance with the proposed closure plan for Tank T-1, DOE will prepare correspondence for submittal to DTSC discussing the provision of a variance option for Tank T-1 removing the requirements for a post closure plan.

In lieu of conforming to the provisions of 22 CCR 66264.197 (c) and associated 66264.228, DOE is currently conducting soil and groundwater investigation and remediation in accordance with the enforceable 2007 COCA and the 2010 AOC which will, by definition, be as protective of human health and the environment as the provisions contained in 22 CCR 66264.197 (c) and associated 66264.228.

As part of initial characterization surveys that will be performed during closure activities, feature tracking will be utilized, as discussed in Section 6.3.3.1, to ensure that areas of concern (i.e. historical spills, etc.) and the residual outline of the buildings and units are defined so that areas with the potential for residual contamination can be adequately investigated during soil and groundwater remedial programs.

## 19. REFERENCES

- Abrahms, G. Letter from Mr. G Abrahms of the DTSC to Mr. M. Sullivan of Boeing, SRAM.
- Chandler, P., 1998: Letter from Mr. P Chandler of the DTSC to Mr. S. Lafflam of Boeing, Concentration of Inorganic Constituents in Imported Soil for Use as Fill Material at the Former Sodium Disposal Facility, Department of Energy, The Boeing Company, Santa Susana Field Laboratory, Simi Hill, California, EPA ID Number CAD000629972, September 9.
- I. P. Colburn, L. R. Saul and A. A. Almgren, "The Chatsworth Formation: A New Formation for the Upper Cretaceous Strata of the Simi Hills, California," in M. H. Link, R. L. Squires and I. P. Colburn eds., Simi Hills Cretaceous Turbidites, Southern California, Pacific Section, Society of Economic Paleontologists and Mineralogists, 1981.
- Department of Toxic Substances Control (DTSC), 1997. Selecting Inorganic Constituents as Chemicals of Potential Concern at Risk Assessments at Hazardous Waste Sites and Permitted Facilities. February 2003.
- DTSC, 2002. Permit Writer Instructions for Closure of Treatment and Storage Facility, October 2002.
- Groundwater Resources Consultants, Inc. (GRC), 1990. Assessment of Potential Soil Contamination in the Vicinity of Building T-133 Hazardous Waste Treatment Facility at the Rockwell International Corporation, Rocketdyne Division, Santa Susana Field Laboratory, Ventura County, California, July 27.
- GRC, 1992: Results of Collection and Analysis of Rock Cores, Santa Susana Field Laboratory, Rockwell International Corporation, Rocketdyne Division, Canoga Park, California, May 4.
- GRC, 1998: Annual Groundwater Monitoring Report, Santa Susana Field Laboratory, 1997, Boeing North American, Inc., Rocketdyne Propulsion & Power, Ventura County, California, February 25.
- Montgomery Watson Harza (MWH), 2003a. Spring and Seep Sampling and Analysis Report, Santa Susana Field Laboratory, Ventura County, California, March 2003.
- MWH, 2003b. Perchlorate Characterization Work Plan, Revision I, Santa Susana Field Laboratory, Ventura County, California, December 5.

**APPENDIX A**  
**VENTURA COUNTY AIR POLLUTION CONTROL DISTRICT PERMIT TO**  
**OPERATE, NO. 0271, EMERGENCY HAZARDOUS WASTE PERMIT**  
**AND PART A APPLICATION**



December 8, 2014

Mark Malinowski, PG  
Branch Chief  
Santa Susana Field Lab & Northern Calif. Schools  
Brownfields & Environmental Restoration  
Department of Toxic Substances Control  
8800 Cal Center Drive  
Sacramento, CA 95826

**Subject: Santa Susanna Field Laboratory, Area IV  
Simi Hills, Ventura County  
CAD000629972 – Permit No. 93-3-TS-002  
Class 1\* Permit Modification for Change of Operator**

Dear Mr. Malinowski:

In response to the email received from Matt Wetter dated 10/14/14, regarding SSFL-DTSC Comments Re: Class 1\* Permit Mod, HWMF, EPA ID No. CAD000629972, (Regional Permit Number 93-3-TS-002); Dated 10/7/14, North Wind, Inc. (NWI) is resubmitting a revised Part A Application.

In accordance with Title 22 of the California Code of Regulations (CCR), Section 66270.40(b), North Wind Inc. (NWI) is filing this Class 1\* Permit Modification request to be identified as the operator of record for the Area IV Building 29 and Building 133 which are covered under Permit No. 93-3-TS-002. As you know, there are no hazardous waste storage or treatment activities currently occurring at this facility and it is undergoing closure. Under contract with the owner of the facilities, the United States Department of Energy, NWI will be the operator for the limited activities remaining through closure.

Attached is the Part A, EPA Forms 8700-12 and 8700-23, and Written Agreement for the Operations of the HWMF. As no other changes to the current activities are being requested, no supplemental information required under 22 CCR 66270.10 through 22 CCR 66270.63 is being provided.

If you require further information please contact Brad Frazee, North Wind ETEC Program Manager at (208) 557-7891 or [bfrazee@northwindgrp.com](mailto:bfrazee@northwindgrp.com).

Thank you,



Bradley Trost  
Chief Financial Officer



Copies:

Michael Dudasko  
Principal Engineer I  
Yorke Engineering, LLC  
7665 Redwood Blvd., Suite 210  
Novato, CA 94945

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<b>SEND COMPLETED FORM TO:</b> The Appropriate State or Regional Office.	<b>United States Environmental Protection Agency          RCRA SUBTITLE C SITE IDENTIFICATION FORM</b>		
<b>1. Reason for Submittal</b>  MARK ALL BOX(ES) THAT APPLY	<b>Reason for Submittal:</b> <input type="checkbox"/> To provide an Initial Notification (first time submitting site identification information / to obtain an EPA ID number for this location) <input type="checkbox"/> To provide a Subsequent Notification (to update site identification information for this location) <input type="checkbox"/> As a component of a First RCRA Hazardous Waste Part A Permit Application <input checked="" type="checkbox"/> As a component of a Revised RCRA Hazardous Waste Part A Permit Application (Amendment # <u>Unknown</u> ) <input type="checkbox"/> As a component of the Hazardous Waste Report (If marked, see sub-bullet below)  <input type="checkbox"/> Site was a TSD facility and/or generator of $\geq 1,000$ kg of hazardous waste, $>1$ kg of acute hazardous waste, or $>100$ kg of acute hazardous waste spill cleanup in one or more months of the report year (or State equivalent LQG regulations)		
<b>2. Site EPA ID Number</b>	<b>EPA ID Number</b>   C   A   D   0   0   0   6   2   9   9   7   2		
<b>3. Site Name</b>	<b>Name:</b> Santa Susana Field Laboratory, Area IV, Buildings 29 and 133		
<b>4. Site Location Information</b>	<b>Street Address:</b> Top of Woolsey Canyon Road <b>City, Town, or Village:</b> Simi Hills <b>County:</b> Ventura <b>State:</b> CA <b>Country:</b> United States <b>Zip Code:</b> 93063		
<b>5. Site Land Type</b>	<input type="checkbox"/> Private <input type="checkbox"/> County <input type="checkbox"/> District <input checked="" type="checkbox"/> Federal <input type="checkbox"/> Tribal <input type="checkbox"/> Municipal <input type="checkbox"/> State <input type="checkbox"/> Other		
<b>6. NAICS Code(s) for the Site (at least 5-digit codes)</b>	<b>A.</b>   5   6   2   9   1   0   <b>C.</b>             <b>B.</b>             <b>D.</b>		
<b>7. Site Mailing Address</b>	<b>Street or P.O. Box:</b> 1425 Higham Street <b>City, Town, or Village:</b> Idaho Falls <b>State:</b> ID <b>Country:</b> United States <b>Zip Code:</b> 83402		
<b>8. Site Contact Person</b>	<b>First Name:</b> Brad <b>MI:</b> <b>Last:</b> Frazee <b>Title:</b> North Wind Group Chief Operating Officer <b>Street or P.O. Box:</b> RMHF Bldg 4034, 5800 Woolsey Canyon Rd. <b>City, Town or Village:</b> Canoga Park <b>State:</b> CA <b>Country:</b> USA <b>Zip Code:</b> 91304-1145 <b>Email:</b> bfrazee@northwindgrp.com <b>Phone:</b> (805) 587-0691 <b>Ext.:</b> <b>Fax:</b> (208) 528-8714		
<b>9. Legal Owner and Operator of the Site</b>	<b>A. Name of Site's Legal Owner:</b> US Department of Energy <b>Date Became Owner:</b> 03/22/1989 <b>Owner Type:</b> <input type="checkbox"/> Private <input type="checkbox"/> County <input type="checkbox"/> District <input checked="" type="checkbox"/> Federal <input type="checkbox"/> Tribal <input type="checkbox"/> Municipal <input type="checkbox"/> State <input type="checkbox"/> Other <b>Street or P.O. Box:</b> 4100 Guardian Street, Suite 160 <b>City, Town, or Village:</b> Simi Valley <b>Phone:</b> 805-416-0992 <b>State:</b> CA <b>Country:</b> United States <b>Zip Code:</b> 93063 <b>B. Name of Site's Operator:</b> North Wind Inc. <b>Date Became Operator:</b> 10/01/2014 <b>Operator Type:</b> <input checked="" type="checkbox"/> Private <input type="checkbox"/> County <input type="checkbox"/> District <input type="checkbox"/> Federal <input type="checkbox"/> Tribal <input type="checkbox"/> Municipal <input type="checkbox"/> State <input type="checkbox"/> Other		

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**10. Type of Regulated Waste Activity (at your site)**  
 Mark "Yes" or "No" for all current activities (as of the date submitting the form); complete any additional boxes as instructed.

**A. Hazardous Waste Activities; Complete all parts 1-10.**

- |  |   |
|--|---|
| <p><input checked="" type="checkbox"/> <input type="checkbox"/> <b>1. Generator of Hazardous Waste</b><br/>         If "Yes", mark only one of the following - a, b, or c.</p> <p><input checked="" type="checkbox"/> a. LQG: Generates, in any calendar month, 1,000 kg/mo (2,200 lbs./mo.) or more of hazardous waste; or Generates, in any calendar month, or accumulates at any time, more than 1 kg/mo (2.2 lbs./mo) of acute hazardous waste; or Generates, in any calendar month, or accumulates at any time, more than 100 kg/mo (220 lbs./mo) of acute hazardous spill cleanup material.</p> <p><input type="checkbox"/> b. SQG: 100 to 1,000 kg/mo (220 - 2,200 lbs./mo) of non-acute hazardous waste.</p> <p><input type="checkbox"/> c. CESQG: Less than 100 kg/mo (220 lbs./mo) of non-acute hazardous waste.</p> <p>If "Yes" above, indicate other generator activities in 2-4.</p> <p><input checked="" type="checkbox"/> <input type="checkbox"/> <b>2. Short-Term Generator</b> (generate from a short-term or one-time event and not from on-going processes). If "Yes", provide an explanation in the Comments section.</p> <p><input type="checkbox"/> <input checked="" type="checkbox"/> <b>3. United States Importer of Hazardous Waste</b></p> <p><input type="checkbox"/> <input checked="" type="checkbox"/> <b>4. Mixed Waste (hazardous and radioactive) Generator</b></p> | <p><input type="checkbox"/> <input checked="" type="checkbox"/> <b>5. Transporter of Hazardous Waste</b><br/>         If "Yes", mark all that apply.</p> <p><input type="checkbox"/> a. Transporter</p> <p><input type="checkbox"/> b. Transfer Facility (at your site)</p> <p><input checked="" type="checkbox"/> <input type="checkbox"/> <b>6. Treater, Storer, or Disposer of Hazardous Waste</b> Note: A hazardous waste Part B permit is required for these activities.</p> <p><input type="checkbox"/> <input checked="" type="checkbox"/> <b>7. Recycler of Hazardous Waste</b></p> <p><input type="checkbox"/> <input checked="" type="checkbox"/> <b>8. Exempt Boiler and/or Industrial Furnace</b><br/>         If "Yes", mark all that apply.</p> <p><input type="checkbox"/> a. Small Quantity On-site Burner Exemption</p> <p><input type="checkbox"/> b. Smelting, Melting, and Refining Furnace Exemption</p> <p><input type="checkbox"/> <input checked="" type="checkbox"/> <b>9. Underground Injection Control</b></p> <p><input type="checkbox"/> <input checked="" type="checkbox"/> <b>10. Receives Hazardous Waste from Off-site</b></p> |
|--|---|

**B. Universal Waste Activities; Complete all parts 1-2.**

- 1. Large Quantity Handler of Universal Waste** (you accumulate 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of universal waste managed at your site. If "Yes", mark all that apply.
- |                                 |                          |
|---------------------------------|--------------------------|
| a. Batteries                    | <input type="checkbox"/> |
| b. Pesticides                   | <input type="checkbox"/> |
| c. Mercury containing equipment | <input type="checkbox"/> |
| d. Lamps                        | <input type="checkbox"/> |
| e. Other (specify) _____        | <input type="checkbox"/> |
| f. Other (specify) _____        | <input type="checkbox"/> |
| g. Other (specify) _____        | <input type="checkbox"/> |
- 2. Destination Facility for Universal Waste**  
 Note: A hazardous waste permit may be required for this activity.

**C. Used Oil Activities; Complete all parts 1-4.**

- 1. Used Oil Transporter**  
 If "Yes", mark all that apply.
- a. Transporter
- b. Transfer Facility (at your site)
- 2. Used Oil Processor and/or Re-refiner**  
 If "Yes", mark all that apply.
- a. Processor
- b. Re-refiner
- 3. Off-Specification Used Oil Burner**
- 4. Used Oil Fuel Marketer**  
 If "Yes", mark all that apply.
- a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner
- b. Marketer Who First Claims the Used Oil Meets the Specifications

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**D. Eligible Academic Entities with Laboratories—Notification for opting into or withdrawing from managing laboratory hazardous wastes pursuant to 40 CFR Part 262 Subpart K**

❖ You can **ONLY** Opt into Subpart K if:

- you are at least one of the following: a college or university; a teaching hospital that is owned by or has a formal affiliation agreement with a college or university; or a non-profit research institute that is owned by or has a formal affiliation agreement with a college or university; AND
- you have checked with your State to determine if 40 CFR Part 262 Subpart K is effective in your state

Y  N  1. Opting into or currently operating under 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories  
**See the item-by-item instructions for definitions of types of eligible academic entities. Mark all that apply:**

a. College or University

b. Teaching Hospital that is owned by or has a formal written affiliation agreement with a college or university

c. Non-profit Institute that is owned by or has a formal written affiliation agreement with a college or university

Y  N  2. Withdrawing from 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories

---

**11. Description of Hazardous Waste**

**A. Waste Codes for Federally Regulated Hazardous Wastes.** Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if more spaces are needed.

D001	D002	D003	D007			

**B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes.** Please list the waste codes of the State-Regulated hazardous wastes handled at your site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed.

611	551	491	352	351	342	261

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<b>12. Notification of Hazardous Secondary Material (HSM) Activity</b>		
<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Are you notifying under 40 CFR 260.42 that you will begin managing, are managing, or will stop managing hazardous secondary material under 40 CFR 261.2(a)(2)(ii), 40 CFR 261.4(a)(23), (24), or (25)?</p> <p>If "Yes", you must fill out the Addendum to the Site Identification Form: Notification for Managing Hazardous Secondary Material.</p>		
<b>13. Comments</b>		
<p>8. Filing is to change facility operator from The Boeing Company to North Wind, Inc. North Wind, Inc. does not intend to process hazardous waste at this facility but change of operator is necessary since North Wind, Inc. will be working on site to facilitate closure. The Boeing Company will retain ownership of the land. See Below.</p> <p>5 &amp; 9. Although DOE owns facilities, the land has been owned by The Boeing Company since April 2, 1954. The Boeing Company remains the landowner:</p> <p>Steven L. Shestak, (818) 466-8822</p> <p>The Boeing Company</p> <p>5800 Woolsey Canyon Road</p> <p>MC T-487</p> <p>Canoga Park, CA 91304-1184</p> <p>9.0. As defined in the statement of 'Written Agreement for Operation of the Hazardous Waste Management Facility (HWMF) at the Santa Susana Field Laboratory[sic], Area IV' North Wind Inc. and DOE are acting as 'co-operators'</p> <p>10.2. Hazardous waste permitted facility is no longer treating waste, and is undergoing closure but not completed closure. North Wind, Inc.'s function as operator will be to perform required Part B unit inspections and to facilitate closure.</p> <p>See attached permitting history.</p>		
<b>14. Certification.</b> I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. For the RCRA Hazardous Waste Part A Permit Application, all owner(s) and operator(s) must sign (see 40 CFR 270.10(b) and 270.11).		
Signature of legal owner, operator, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
	Brad Frost, Chief Financial Officer, North Wind, Inc.	12-08-2014
	John Jones, Director, Energy Technology Engineering Center, US Department of Energy	12/8/14

#### **Hazardous Waste Management Facility – Permitting History**

The Hazardous Waste Management Facility (HWMF) began operation in 1978 and was fully permitted in 1983 as a Resource Conservation and Recovery Act (RCRA) hazardous waste treatment and storage facility for non-radiological chemical wastes generated on-site. The RCRA operating permit was renewed in 1988 and 1993, with the current permit (93-3-TS-002). The HWMF ceased operations in 1997. Permit 93-3-TS-002 was modified by the Class 2 Modification Request dated January 23, 2004 (which was issued to allow revisions to the incorporated Closure Plan, dated December 2003). The Class 2 modification was approved by DTSC in a letter dated February 16, 2006. DTSC does not have a record of additional modifications of substance.



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**7. Process Codes and Design Capacities - Enter information in the Section on Form Page 3**

**A. PROCESS CODE** - Enter the code from the list of process codes below that best describes each process to be used at the facility. If more lines are needed, attach a separate sheet of paper with the additional information. For "other" processes (i.e., D99, S99, T04 and X99), describe the process (including its design capacity) in the space provided in Item 8.

**B. PROCESS DESIGN CAPACITY** - For each code entered in Item 7.A; enter the capacity of the process.

- AMOUNT** - Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process.
- UNIT OF MEASURE** - For each amount entered in Item 7.B(1), enter the code in Item 7.B(2) from the list of unit of measure codes below that describes the unit of measure used. Select only from the units of measure in this list.

**C. PROCESS TOTAL NUMBER OF UNITS** - Enter the total number of units for each corresponding process code.

Process Code	Process	Appropriate Unit of Measure for Process Design Capacity	Process Code	Process	Appropriate Unit of Measure for Process Design Capacity
<b>Disposal</b>			<b>Treatment (Continued)</b>		
D79	Underground Injection Well Disposal	Gallons; Liters; Gallons Per Day; or Liters Per Day	T81	Cement Kiln	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; BTU Per Hour; Liters Per Hour; Kilograms Per Hour; or Million BTU Per Hour
D80	Landfill	Acre-foot; Hectares-meter; Acres; Cubic Meters; Hectares; Cubic Yards	T82	Lime Kiln	
D81	Land Treatment	Acres or Hectares	T83	Aggregate Kiln	
D82	Ocean Disposal	Gallons Per Day or Liters Per Day	T84	Phosphate Kiln	
D83	Surface Impoundment Disposal	Gallons; Liters; Cubic Meters; or Cubic Yards	T85	Coke Oven	
D99	Other Disposal	Any Unit of Measure Listed Below	T86	Blast Furnace	
<b>Storage</b>			T87	Smelting, Melting, or Refining Furnace	
S01	Container	Gallons; Liters; Cubic Meters; or Cubic Yards	T88	Titanium Dioxide Chloride Oxidation Reactor	
S02	Tank Storage	Gallons; Liters; Cubic Meters; or Cubic Yards	T89	Methane Reforming Furnace	
S03	Waste Pile	Cubic Yards or Cubic Meters	T90	Pulping Liquor Recovery Furnace	
S04	Surface Impoundment	Gallons; Liters; Cubic Meters; or Cubic Yards	T91	Combustion Device Used in the Recovery of Sulfur Values from Spent Sulfuric Acid	
S05	Drip Pad	Gallons; Liters; Cubic Meters; Hectares; or Cubic Yards	T92	Halogen Acid Furnaces	
S06	Containment Building Storage	Cubic Yards or Cubic Meters	T93	Other Industrial Furnaces Listed in 40 CFR 260.10	
S99	Other Storage	Any Unit of Measure Listed Below	T94	Containment Building Treatment	Cubic Yards; Cubic Meters; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; BTU Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Metric Tons Per Day; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million BTU Per Hour
<b>Treatment</b>			<b>Miscellaneous (Subpart X)</b>		
T01	Tank Treatment	Gallons Per Day; Liters Per Day	X01	Open Burning/Open Detonation	Any Unit of Measure Listed Below
T02	Surface Impoundment	Gallons Per Day; Liters Per Day	X02	Mechanical Processing	Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; Kilograms Per Hour; Gallons Per Day; Metric Tons Per Day; or Million BTU Per Hour
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Gallons Per Day; Metric Tons Per Day; or Million BTU Per Hour	X03	Thermal Unit	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; BTU Per Hour; or Million BTU Per Hour
T04	Other Treatment	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Short Tons Per Day; BTUs Per Hour; Gallons Per Day; Liters Per Hour; or Million BTU Per Hour	X04	Geologic Repository	Cubic Yards; Cubic Meters; Acre-foot; Hectare-meter; Gallons; or Liters
T80	Boiler	Gallons; Liters; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; or Million BTU Per Hour	X99	Other Subpart X	Any Unit of Measure Listed Below

Unit of Measure	Unit of Measure Code	Unit of Measure	Unit of Measure Code	Unit of Measure	Unit of Measure Code
Gallons	G	Short Tons Per Hour	D	Cubic Yards	Y
Gallons Per Hour	E	Short Tons Per Day	N	Cubic Meters	C
Gallons Per Day	U	Metric Tons Per Hour	W	Acres	B
Liters	L	Metric Tons Per Day	S	Acre-foot	A
Liters Per Hour	H	Pounds Per Hour	J	Hectares	Q
Liters Per Day	V	Kilograms Per Hour	X	Hectare-meter	F
		Million BTU Per Hour	X	BTU Per Hour	I

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**7. Process Codes and Design Capacities (Continued)**

EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below): A facility has a storage tank, which can hold 533,788 gallons.

Line Number	A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY		C. Process Total Number of Units	For Official Use Only			
				(1) Amount (Specify)	(2) Unit of Measure					
X 1	S	0	2	533.788	G	001				
1				See comments						
2										
3										
4										
5										
6										
7										
8										
9										
1 0										
1 1										
1 2										
1 3										

Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the line sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04, and X99) in Item 8.

**8. Other Processes (Follow instructions from Item 7 for D99, S99, T04, and X99 process codes)**

Line Number (Enter #s in sequence with Item 7)	A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY		C. Process Total Number of Units	For Official Use Only			
				(1) Amount (Specify)	(2) Unit of Measure					
X 2	T	0	4	100.00	U	001				
				See comments						

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**9. Description of Hazardous Wastes - Enter Information in the Sections on Form Page 5**

- A. **EPA HAZARDOUS WASTE NUMBER** – Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR Part 261, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.
- B. **ESTIMATED ANNUAL QUANTITY** – For each listed waste entered in Item 9.A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in Item 9.A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.
- C. **UNIT OF MEASURE** – For each quantity entered in Item 9.B, enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure, taking into account the appropriate density or specific gravity of the waste.

**D. PROCESSES**

**1. PROCESS CODES:**

**For listed hazardous waste:** For each listed hazardous waste entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all listed hazardous wastes.

**For non-listed waste:** For each characteristic or toxic contaminant entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

**NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:**

1. Enter the first two as described above.
  2. Enter "000" in the extreme right box of Item 9.D(1).
  3. Use additional sheet, enter line number from previous sheet, and enter additional code(s) in Item 9.E.
- 2. PROCESS DESCRIPTION:** If code is not listed for a process that will be used, describe the process in Item 9.D(2) or in Item 9.E(2).

**NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER** – Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in Item 9.A. On the same line complete Items 9.B, 9.C, and 9.D by estimating the total annual quantity of the waste and describing all the processes to be used to store, treat, and/or dispose of the waste.
2. In Item 9.A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In Item 9.D.2 on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.

**EXAMPLE FOR COMPLETING Item 9** (shown in line numbers X-1, X-2, X-3, and X-4 below) – A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operations. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES												
				(1) PROCESS CODES (Enter Code)						(2) PROCESS DESCRIPTION (If code is not entered in 9.D(1))						
X 1	K 0 5 4	900	P	T	0	3	D	8	0							
X 2	D 0 0 2	400	P	T	0	3	D	8	0							
X 3	D 0 0 1	100	P	T	0	3	D	8	0							
X 4	D 0 0 2															Included With Above



EPA ID Number **C A D 0 0 0 | 6 2 9 | 9 7 2**

OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes (Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)										
Line Number	A. EPA Hazardous Waste No. (Enter code)			B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES				
	S	E	E			(1) PROCESS CODES (Enter Code)				
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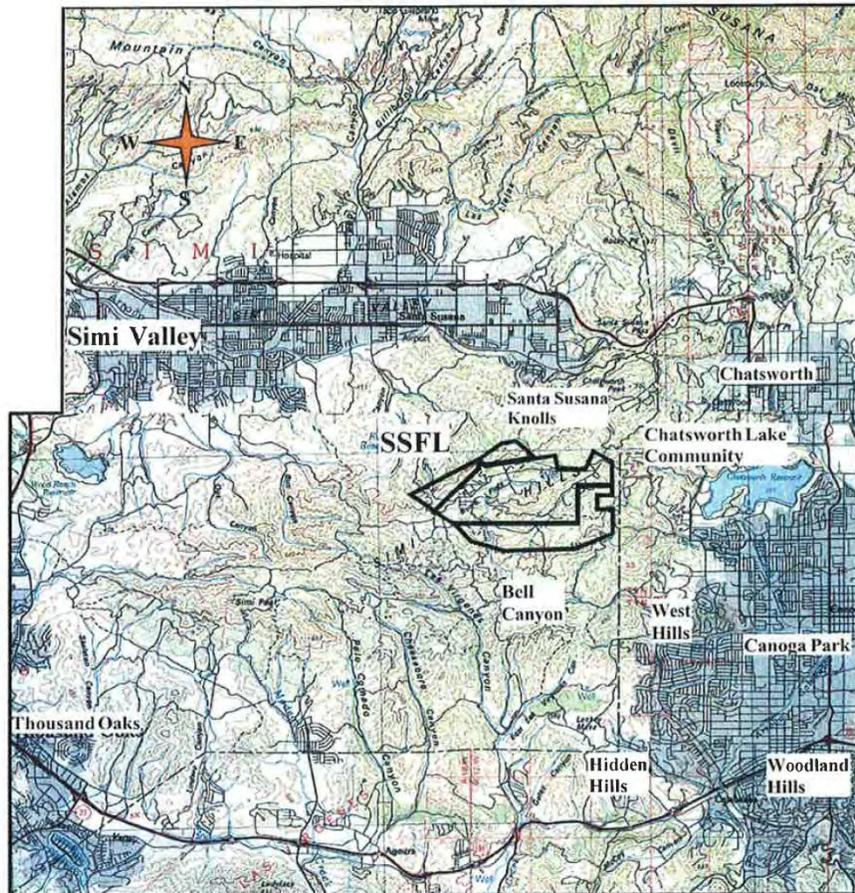


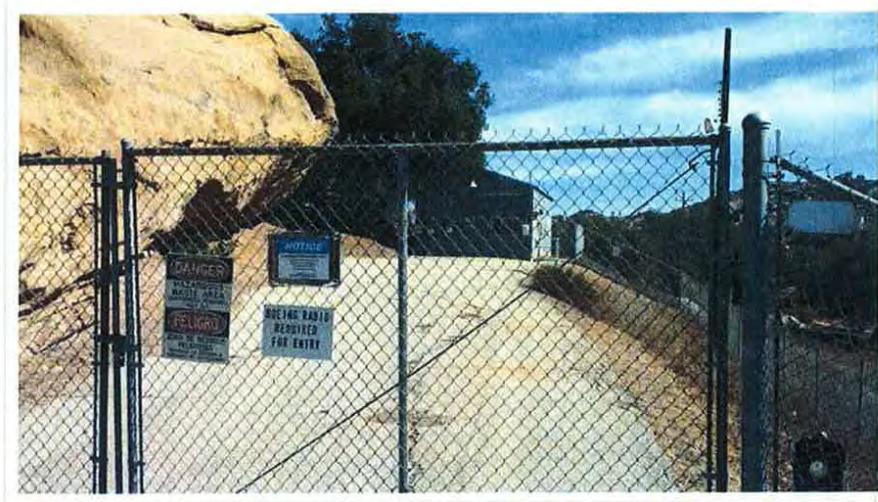
EPA ID Number **C | A | D | 0 | 0 | 0 | 6 | 2 | 9 | 9 | 7 | 2**

OMB#: 2050-0024; Expires 12/31/2014

<b>10. Map</b>
Attach to this application a topographical map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all spring, rivers, and other surface water bodies in this map area. See instructions for precise requirements.
<b>11. Facility Drawing</b>
All existing facilities must include a scale drawing of the facility (see instructions for more detail).
<b>12. Photographs</b>
All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, and disposal areas, and sites of future storage, treatment, or disposal areas (see instructions for more detail).
<b>13. Comments</b>
<p>4. Date the HWMF began operations per 2003 Closure Plan</p> <p>5. No other environmental permits are specifically identified as applicable to the RWHF</p> <p>7, 8, and 9. No storage or treatment codes or waste codes and quantities provided since facility has ceased processing hazardous waste and is undergoing closure. Operator responsibilities will include continuing required permitted unit inspections and facilitating closure.</p> <p>10-12. Map, drawings, and photos attached.</p>

Map Showing Location of SSFL





Hazardous Waste Management Facility (HWMF)

HAZARDOUS WASTE MANAGEMENT FACILITY (HWMF) ID #CAD000629972

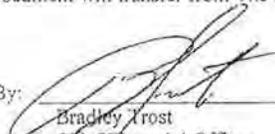
WRITTEN AGREEMENT FOR OPERATION OF THE  
HAZARDOUS WASTE MANAGEMENT FACILITY (HWMF)  
AT THE SANTA SUSSANNA FIELD LABORATORY, AREA IV  
PERMIT NUMBER 93-3-TS-002

The U.S. Department of Energy (Department) and its operating contractor, North Wind Inc. have jointly signed this application as the operator of the permitted facility. The Department owns the facilities with The Boeing Company owning the land. Under contract to the Department, North Wind Inc. will be the primary on-site operator. The Department has determined that dual signatures best reflect the actual apportionment of responsibility under which the Department's hazardous waste responsibilities are for policy, programming, funding, and scheduling decisions, as well as general overview, and the contractor's hazardous waste responsibilities are for day-to-day operations, including, but not limited to, the following responsibilities: waste analyses and handling, monitoring, record-keeping, reporting, and contingency planning. For purposes of the certification required by 22 CCR 66270.11 (d), the Department's and North Wind Inc. certify, to the best of their knowledge and belief, the truth, accuracy and completeness of the application for their respective areas of responsibility.

In accordance with the requirements of California Code of Regulations, Title 22, Sections 66270.72(a)(4), 66270.40(b), 66270.30(l)(3) and 66264.12(c), the Department and North Wind Inc. agree as follows:

Effective October 1, 2014, permit responsibilities, coverage, and liability under the Interim Status Document will transfer from The Boeing Company to North Wind Inc.

Signed By:

  
Bradley Frost  
Chief Financial Officer  
North Wind Inc.

Date: 12-4-14

Signed By:

  
John Jones  
Director, Energy Technology Engineering Center  
United States Department of Energy

Date: 12/4/14

Attachment AEMERGENCY  
HAZARDOUS WASTE FACILITY PERMITENERGY TECHNOLOGY ENGINEERING CENTER B/133  
ROCKWELL ROCKETDYNE DIVISION  
ROCKWELL INTERNATIONAL  
SANTA SUSANA FIELD LABORATORY  
VENTURA COUNTY, CALIFORNIA  
(CAD000629972)INTRODUCTION

The Solid Waste Disposal Act, as amended by the Resources Conservation and Recovery Act of 1976, as amended (42 USC 6901 *et seq.*, commonly known as RCRA) and regulations promulgated thereunder by the U. S. Environmental Protection Agency (EPA) (codified and to be codified in Title 40 of the Code of Federal Regulations, Part 270.61) and Section 66393, Title 22, Division 4, California Code of Regulations, authorize issuance of a temporary emergency permit in the event that an imminent and substantial endangerment of human health or the environment exists. On June 19, 1990, the California State Department of Health Services (Department) found that an imminent and substantial endangerment determination exists as it applies to a site located at APN 071-150-018, Lumpkin Road, between Nos. 1315 and 1394. A map showing the site is attached. The site is a vacant five-acre parcel located approximately one and one-half to two miles north of the Enterprise Bridge which spans that South Fork of the Feather River. The site is situated an estimated 500 feet above the lake on the north side of the South Fork. The land comprising the site is undeveloped property zoned for residential use.

An unknown responsible party illegally abandoned metallic sodium waste on this privately-owned five acre parcel in Butte County. Officials from Butte County discovered the waste on June 5, 1990. Seventy-five (75) thirty (30) - ounce containers of metallic sodium in their original containers have been found on site. Each thirty (30) ounce container holds six (6) 1"x1"x6" bars of metallic sodium submerged in oil.

Metallic sodium is a reactive substance which presents an explosion hazard. It reacts violently when exposed to moisture in any form. When metallic sodium is reacted with water, it will produce hydrogen gas which is explosive. Metallic sodium emits sodium oxide fumes when heated in air.

HDMS P00036023

The Department has determined that the Rockwell/Rocketdyne Treatment facility in Santa Susana, California possesses a permitted metallic sodium treatment facility that offers the most desirable means for treating this particular waste stream. The Department is unable to locate an alternative treatment facility that will accept this waste stream in a short time under emergency conditions.

Based on the foregoing findings of fact and conclusions of law, the Department hereby determines that removal or remedial action is necessary at the Site because there may be an imminent and substantial endangerment to the public health or welfare or to the environment.

This emergency permit authorizes Rockwell International Corporation, Energy Technology Engineering Center B/133 to accept the aforementioned waste for treatment in the Alkali Metal Thermal Treatment Facility, Building 133, Area IV, EPA ID# CAD000629972. Within 90 days of receipt of the wastes they shall be treated. Rockwell International Corporation is required to comply with all permit conditions established with the permit issued under EPA# CAD000629972 on December 30, 1983.

HDMSPP00036024

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY

GEORGE DEUKMEJIAN, GOVERNOR

DEPARTMENT OF HEALTH SERVICES  
TOXIC SUBSTANCES CONTROL PROGRAM (REGION 3)  
1405 N. SAN FERNANDO BOULEVARD, SUITE 300  
SUNBURBANK, CA 91504  
567-3000



JUL 02 1990

S. R. Lafflam, Manager  
Environmental Unit  
Facilities and Plant Operations  
Rockwell International Corporation  
6633 Canoga Avenue  
Canoga Park, California 91303

EMERGENCY PERMIT - ONE TIME TREATMENT OF OFF-SITE WASTES, EPA ID NO. CAD000629972, ENERGY TECHNOLOGY ENGINEERING CENTER, ROCKWELL ROCKETDYNE DIVISION, ROCKWELL INTERNATIONAL, SANTA SUSANA FIELD LABORATORY, VENTURA COUNTY, CALIFORNIA

Dear Mr. Lafflam:

The Department of Health Services (Department) has determined that an imminent and substantial endangerment to human health or the environment exists due to the illegal disposal of approximately seventy-five 30-ounce containers of sodium metal in Butte County on or about June 5, 1990 (Enclosure A). Each of the 30-ounce containers holds approximately six 1" x 1" x 6" bars of sodium metal packed in oil. The containers have been repacked into twenty 5-gallon plastic pails with packing material as filler. Sodium metal is a reactive material that can cause a severe fire risk in contact with water and can spontaneously ignite in dry air when heated, it is also a caustic irritant to tissue.

The Department is issuing this emergency permit for the Energy Technology Engineering Center B/133, Rockwell Rocketdyne Division (CAD000629972) to accept and treat waste sodium metal wastes described in the above paragraph. In consideration of the acceptance and treatment of this waste by Rockwell and the Department of Energy as an accommodation to the Department and without any obligation to do so, the Department agrees that it will identify itself as generator on the uniform hazardous waste manifest under the Department EPA ID number and that it will hold Rockwell and the Department of Energy harmless from any damage the waste may cause until it is delivered to and accepted by Rockwell at Rockwell's Santa Susana Field Laboratory Energy Technology Engineering Center.

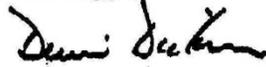
The wastes are to be treated in the Alkali Metal Thermal Treatment Facility (B/133) within 90 days of receipt of the wastes. This facility is currently operating under a Hazardous Waste Facility permit issued on December 30, 1983

HDMS00036025

by this Department. Rockwell must comply with all the permit conditions of the December 30, 1983 permit. Rockwell shall maintain the manifest documentation and this emergency permit document as part of the facility's operating record.

Please contact Florence Pearson with any questions or comments you may have on this matter (818) 567-3100.

Sincerely,



Dennis Dickerson, Regional  
Administrator  
Region 3, Burbank

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY

GEORGE DEUKMEJIAN, GOVERNOR

DEPARTMENT OF HEALTH SERVICES  
TOXIC SUBSTANCES CONTROL PROGRAM (REG. 3)  
1405 N. SAN FERNANDO BOULEVARD, SUITE 300  
BURBANK, CA 91504  
567-3000



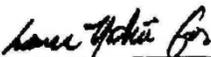
EMERGENCY PERMIT  
FOR A HAZARDOUS WASTE MANAGEMENT FACILITY

Permittee: Rocketdyne Division  
Rockwell International Corporation  
Energy Technology Engineering Center  
B/133  
Santa Susana Field Laboratory  
Ventura County, California

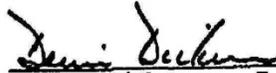
Facility Identification  
Number CAD000629972

Pursuant to the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 USC 6901 et seq., commonly known as RCRA) and regulations promulgated thereunder by the U.S. Environmental Protection Agency (EPA) (codified and to be codified in Title 40 of the Code of Federal Regulations, Part 270.61) and Section 66393, Title 22, Division 4, California Code of Regulations, a temporary Emergency Permit is issued to Rocketdyne Division, Rockwell International Corporation subject to the conditions set forth in Attachment A which by this reference is incorporated herein. All Permit conditions established in the permit issued on December 30, 1983 for EPA ID # CAD 00629972 are incorporated herewith. This Emergency Permit allows Rockwell International Corporation to treat seventy-five (75) thirty (30) - ounce containers of metallic sodium in the Sodium Burn Facility (B/133), Santa Susana Field Laboratory. The containers were illegally disposed at a site located at APN 071-150-018, Lumpkin Road, between Nos. 1315 and 1394, Butte County, California on or about June 5, 1990.

This Emergency Permit is effective immediately and shall expire in 90 days from the date given above.

  
Jeffery Zelikson, Director  
Hazardous Waste Management  
Division  
U.S. Environmental Protection  
Agency

6.26.90  
Date

  
Dennis Dickerson, Regional Hazardous  
Administrator  
Region 3, Burbank  
Toxic Substances Control Division  
CA Department of Health Services

7/2/90  
Date

HDMSPO0036027



Ventura County  
Air Pollution  
Control District

669 County Square Drive  
Ventura, California 93003

tel 805/645-1400  
fax 805/645-1444

Richard H. Baldwin  
Air Pollution Control Officer

**PERMIT TO OPERATE**  
Number 0271

Valid January 1, 1997 to December 31, 1997

**This Permit Has Been Issued To The Following:**

**Company Name / Address:**

Rockwell Int'l Rocketdyne Div.  
P.O. Box 7922 MS 5514  
Canoga Park, CA 91309-7922

**Facility Name / Address:**

Rocketdyne Division  
Energy Technology Eng. Center  
Simi Valley, CA 93065

**Permission Is Hereby Granted To Operate The Following:**

**Sodium Component Test Installation consisting of:**

- 1 - Babcock and Wilcox Sodium Component Testing Heater (H-1), 200 MMBTU/Hr Capacity (excluding the pilot burners), that includes Five (5) 40.0 MMBTU/Hr Low NOx Todd Variflame Main Burners, and Five (5) 0.53 - 2.63 MMBTU/Hr Coen Co. Hurricane II Pilot Burners, with Flue Gas Recirculation, fired on natural gas only. The exhaust from the H-1 Heater is routed to the Kalina Plant duct. The carbon monoxide emissions at the exhaust of the H-1 Heater are continuously monitored by an Automated Custom System Model 3300 CEM.
- 1 - Coen Sodium Component Testing Heater (H-2), Model 260-FYR-COMPAK, 240 MMBTU/Hr capacity (excluding the pilot burners), that includes Two (2) 120 MMBTU/Hr Low NOx Todd Variflame Main Burners, and Two (2) 2.10 - 7.88 MMBTU/Hr Coen Co. Hurricane II Pilot Burners, with Flue Gas Recirculation, fired on natural gas only, equipped with a combustion air preheater, a low excess air system, and staged air lances. The carbon monoxide emissions at the exhaust of the H-2 Heater are continuously monitored by an Automated Custom System Model 3300 CEM.
- 1 - Keeler Steam Boiler (H-101), Model DS20, 25.2 MMBTU/Hr capacity, that includes One (1) 25.2 MMBTU/Hr Low NOx Coen Co. DAF Burner, with Flue Gas Recirculation, fired on natural gas only
- 1 - York Shipley Boiler, Model 5PHP-150-N-209201, 6.3 MMBTU/Hr derated to 4.9 MMBTU/Hr, fired on propane only, equipped with an Alzeta Pyrocore Burner (Saber Facility)

**Sodium Treatment Facility (Bldg 133) consisting of:**

- 1 - Burn Room with 6.25 square foot Sodium Burn Pan heated on a natural gas fired hearth
- 2 - Sodium Oxide Fume Exhaust and Control System with:
  - 1 - Buffalo 5,000 cfm Exhaust Blower and Silencer
  - 1 - Peabody Variable Throat Venturi Scrubber and Spray Tower

**Molten Salt Test Facility consisting of:**

- 1 - Bench Scale Molten Salt Oxidation Unit with exhaust routed to HEPA filters

VCAPCD Permit to Operate Number 0271  
Issued To Rocketdyne Division  
Valid January 1, 1997 to December 31, 1997

**Kalina Plant consisting of:**

- 1 - Turbine Generator, ABB Model G16, 3410 KW, powered by superheated vapor
- 1 - Heat Recovery Vapor Generator, Entec No. 6730-88, 38.3 MMBTU/Hr
- 1 - Low Pressure Condenser, Yuba No. QE88-4843, 32.4 MMBTU/Hr SWECOMEX
- 1 - High Pressure Condenser, Yuba No. QE88-4843, 11.8 MMBTU/Hr SWECOMEX
- 1 - Falling Film Evaporator with Flash Drum, Yuba No. QE89-5081, 2.96 MMBTU/Hr with 2500 gallon flash drum SWECOMEX
- 2 - Liquid/Liquid Exchangers, Spec. 334-MS-2067, 0.7 and 6.1 MMBTU/Hr Brown Fintube Co.
- 1 - Make-up Tank, Ross Engineering DSF265-01, 21 feet high x 10 feet diameter
- 1 - Feed Pump, Wilson Snyder Model 63-12R, 102 gpm
- 2 - Boost Pumps, Gould Model 3196, 95 gpm each
- 2 - Condensation Pumps, Gould Model 3196, 396 gpm each
- 1 - Make-up Pump, Gould Model 3196, 100 gpm
- 2 - Flash Drum Bottom Pumps, Gould Model 3196, 323 gpm each
- 1 - Recycle Spray Pump, Gould Model 3196, 44 gpm
- 1 - Storage Tank and Ammonia Evaporator, No. 334-MS-3030, 3000 gallon
- 1 - Filtration Skid comprised of two Consler Model LFHH 153-040FL/SP cartridge filters, one Consler Model LST 220-040/SP Sorbent Test Vessel, and ancillary instruments and piping
- 1 - Blow Down Tank, Ross Engineering No. DSF265-05, 16 feet high by 10 feet diameter

**Component Test Lab III (CTL-III) consisting of:**

- 1 - Pressure Recovery System equipped with a chemical Scrubber. The Pressure Recovery System uses HFC-134a as a chlorine simulant.

Wipe Cleaning Operations (conducted throughout the facility)

Components Flushing Operations that include a 33,000 Gallon Capacity Fixed Roof Ethanol Storage Tank. The Ethanol Storage Tank is equipped with a Submerged Fill Pipe and a Pressure Relief Valve.

**This Permit Has Been Issued Subject To The Following Conditions:**

1. Permitted Emissions:	Tons/Year	Pounds/Hour
Reactive Organic Compounds	9.94	18.20
Nitrogen Oxides	51.42	22.62
Particulate Matter	4.80	4.40
Sulfur Oxides	0.81	1.08
Carbon Monoxide	97.74	40.42
Ammonia	51.00	80.00
Halogenated Hydrocarbons	0.50	40.00

- 2. Permitted emissions are based on the following limits. The limits shall not be exceeded.

VCAPCD Permit to Operate Number 0271  
Issued To Rocketdyne Division  
Valid January 1, 1997 to December 31, 1997

a) Sodium Component Test Installation:

The permitted emissions from the sodium component test installation are based on the following fuel throughputs.

- 1) Babcock and Wilcox Sodium Component Testing Heater (H-1) - 1016.6 MMscf of natural gas per year (inclusive of the fuel used by the pilot burners)
- 2) Coen Sodium Component Testing Heater (H-2) - 933.1 MMscf of natural gas per year (inclusive of the fuel used by the pilot burners)
- 3) The annual fuel use in the pilot burners of the Babcock and Wilcox Sodium Component Testing Heater (H-1) and the Coen Sodium Component Testing Heater (H-2) shall not exceed 6.97 MMscf of natural gas.
- 4) Keeler Boiler (H-101) - 82.9 MMscf of natural gas per year
- 5) York Shipley Boiler - 42,600 gallons of propane per year

b) Sodium Treatment Facility:

The permitted emissions from the sodium treatment facility are based on a sodium burning rate of 62.5 lbs/hr and 2,500 hrs/yr.

c) Molten Salt Test Facility:

The permitted emissions from the molten salt test facility are based on the processing of virgin materials (non wastes) such as kerosene/diesel oil and/or kerosene/diesel oil with chlorinated additives in the bench scale molten salt oxidation unit. The permitted emissions from the bench scale molten salt oxidation unit shall not exceed the following baseline limits:

ROC = less than 0.01 tons/year and less than 0.01 pounds/hour  
NOx = 0.08 tons/year and 0.29 pounds/hour  
CO = 0.20 tons/year and 1.11 pounds/hour  
SOx = 0.17 tons/year and 0.73 pounds/hour  
PM = 0.50 tons/year and 2.06 pounds/hour

In order to comply with Condition No. 2.c, permittee shall monitor the ROC, NOx, CO, and SOx (if sulfur containing materials are present in the virgin materials) emissions using analyzers approved by the Ventura County Air Pollution Control District to determine the emissions and emission factors for each type of material processed, and shall control any particulate emissions using HEPA filters whenever the molten salt unit is in operation. Emissions should be determined in units of pounds per hour and pounds per pound of material processed for the aforementioned pollutants and any other pollutants as appropriate. The emission data (including emission factors, hours of operation, amounts of materials processed, type of material processed, resulting emissions, and any operational parameters that ensure that the permitted emissions are not exceeded) shall be compiled into monthly reports. The amounts of materials processed and corresponding emissions shall be summed for the previous 12 months. Emission totals for any of these twelve month periods in excess of the above baseline limits shall be considered a violation of this condition, and the source shall be subject to Ventura County Air

VCAPCD Permit to Operate Number 0271  
Issued To Rocketdyne Division  
Valid January 1, 1997 to December 31, 1997

Pollution Control District Rule 26, New Source Review.

d) Wipe Cleaning Operations:

ROC Solvents: 86 gallons/year with resulting ROC emissions not to exceed 573.4 pounds per year.

Usage of acetone is not limited by this permit and is exempt from permit and recordkeeping requirements. This is due to the re-classification of acetone as an exempt ROC due to low reactivity, and to the re-classification of acetone as a non-hazardous air pollutant.

Note that cleaning products may be used for janitorial services and for routine janitorial maintenance, including graffiti removal, but the quantity used does not apply towards this limit since these materials are exempt from permit requirements (APCD Rule 23.F.8).

Also note that cleaning activities using cleaning agents that contain two percent or less organic solvents, as applied by weight are not limited by this permit and are exempt from permit requirements and recordkeeping requirements (Rule 23.F.10.a and Rule 74.6.C.1.a).

Nonrefillable aerosol cleaning products are also exempt from permit requirements and recordkeeping requirements (Rule 23.F.10.b).

e) Ethanol Storage Tank and Component Flushing Operations:

Net loss of 400 pounds per year of ethanol from the ethanol storage tank and the flushing operations.

In order to comply with Condition No. 2.e, permittee shall maintain records as required by Condition No. 24.

f) Component Test Lab III (CTL-III):

The emissions of HFC-134a shall not exceed 40 pounds per hour and 1,000 pounds per year.

In order to comply with Condition No. 2.f, permittee shall maintain records as required by Condition No. 24.

3. Except as provided in Condition Nos. 5 & 6 below, the oxides of nitrogen emissions from the main burners of the Babcock and Wilcox Sodium Component Testing Heater (H-1) and the oxides of nitrogen emissions from the main burners of the Coen Sodium Component Testing Heater (H-2) shall not exceed 40 ppmvd (parts per million by volume on a dry basis) corrected to three (3) percent volume stack gas oxygen, averaged over fifteen (15) consecutive minutes, per VCAPCD Rule 74.15.B.1.
4. Except as provided in Condition No. 6 below, the carbon monoxide emissions from the Babcock and Wilcox Sodium Component Testing Heater (H-1) and the carbon monoxide emissions from the Coen Sodium Component Testing Heater (H-2) shall not exceed 400 ppmvd (parts per million by volume on a dry

VCAPCD Permit to Operate Number 0271  
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basis) corrected to three (3) percent volume stack gas oxygen, averaged over fifteen (15) consecutive minutes, per VCAPCD Rule 74.15.B.1.

5. Pursuant to VCAPCD Rule 74.15.B.3, in lieu of compliance with the 40 ppmvd oxides of nitrogen limit, the pilot burners associated with the Babcock and Wilcox Sodium Component Testing Heater (H-1) and the Coen Sodium Component Testing Heater (H-2) shall meet an alternate nitrogen oxides emission limit of 90 ppmvd (parts per million by volume on a dry basis) corrected to three (3) percent volume stack gas oxygen, averaged over fifteen (15) consecutive minutes.
6. Pursuant to VCAPCD Rule 74.15.C.4, the nitrogen oxides and carbon monoxide emission limits of Condition Nos. 3 & 4 (Rule 74.15.B.1) shall not apply to the Babcock and Wilcox Sodium Component Testing Heater (H-1) and to the Coen Sodium Component Testing Heater (H-2) during cold startup, provided that the duration of cold startup does not exceed three (3) hours. Pursuant to VCAPCD Rule 74.15.C.5, the nitrogen oxides and carbon monoxide emission limits of Condition Nos. 3 & 4 shall not apply to the Babcock and Wilcox Sodium Component Testing Heater (H-1) and to the Coen Sodium Component Testing Heater (H-2) during excess emission occurrences associated with the ramp-up and ramp-down procedures used for transition between the pilot burners and the main burners, provided that the cumulative periods of exemption shall not exceed three (3) hours, for each ramp-up or ramp-down event.
7. The oxides of nitrogen emissions from the Keeler Steam Boiler (H-101) shall not exceed 40 ppmvd (parts per million by volume on a dry basis) corrected to three (3) percent volume stack gas oxygen, averaged over fifteen (15) consecutive minutes. The carbon monoxide emissions from the Keeler Steam Boiler (H-101) shall not exceed 400 ppmvd (parts per million by volume on a dry basis) corrected to three (3) percent volume stack gas oxygen, averaged over fifteen (15) consecutive minutes. This condition is applied as VCAPCD Rule 74.15.B.1 compliance.
8. The oxides of nitrogen emissions from the York Shipley Boiler shall not exceed 30 ppmvd (parts per million by volume on a dry basis) corrected to three (3) percent volume stack gas oxygen, averaged over fifteen (15) consecutive minutes. This condition is applied as Best Available Control Technology (BACT).
9. The carbon monoxide emissions from the York Shipley Boiler shall not exceed 400 ppmvd (parts per million by volume on a dry basis) corrected to three (3) percent volume stack gas oxygen, averaged over fifteen (15) consecutive minutes, pursuant to VCAPCD Rule 74.15.B.1.
10. The York Shipley boiler shall comply with all applicable requirements of VCAPCD Rule 74.15.1, Boilers, Steam Generators, and Process Heaters.

In order to comply with this condition, the York Shipley boiler shall be tuned as detailed in Rule 74.15.1.B.2 as long as the boiler maintains an annual heat input of equal to or greater than 300 MMBTU and less than 1,800 MMBTU. If the boiler operates at an annual heat input of equal to or greater than 1,800 MMBTU during any rolling twelve (12) month period,

VCAPCD Permit to Operate Number 0271  
Issued To Rocketdyne Division  
Valid January 1, 1997 to December 31, 1997

the boiler shall comply with the source testing provisions of Rule 74.15.1.B.1.

11. The carbon monoxide emissions from the Babcock and Wilcox Sodium Component Testing Heater (H-1) and the Coen Sodium Component Testing Heater (H-2) shall be continuously monitored. Each monitor shall include a measuring device or sensing element and a continuous recorder that complies with the specifications of 40CFR, Part 51, Appendix P, Sections 3.0 through 3.9.5, or equivalent. The monitors shall be installed, calibrated, operated, and maintained in accordance with the specifications in 40CFR, Part 51, Appendix P. Permanent records from the CEMs shall be maintained in a form suitable for inspection, for a period of at least two years. Such records shall be made available to the Air Resources Board or the District upon request. The records shall include:
  - a) Occurrence and duration of any startup, shutdown or malfunction in the operation of heaters H-1 and H-2.
  - b) Performance testing, evaluations, calibrations, checks, adjustments, and maintenance of the continuous emission monitors.
  - c) Emission measurements.
  - d) Rockwell shall submit a written report for each calendar quarter to the VCAPCD. This report is due by the 30th day following the end of the calendar quarter and shall include the time intervals, date and magnitude of excess emissions; nature and cause of the excess (if known), corrective actions taken and preventive measures adopted; an explanation if the data averaging period is other than 15 minutes; time and date of each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of system repairs and adjustments; and a negative declaration when no excess emissions occurred.
  - e) Rockwell shall report any violation of any emission standard, as indicated by the records of the monitoring device, to the District within 48 hours after such occurrence. Any breakdown or shutdown of the monitoring equipment shall be reported as a breakdown consistent with the requirements of Rule 32.
12. The Coen Sodium Component Testing Heater (H-2) shall be continuously monitored for emissions of NO<sub>x</sub> (measured as nitrogen dioxide ppmv corrected to 3% oxygen) during any period the main burners are being fired. The monitoring device calibration procedures and data reporting requirements shall comply with APCD Rule 103.
13. The Keeler boiler (H-101) shall not be operated during periods of time when the Babcock and Wilcox Sodium Component Testing Heater (H-1) and the Coen Sodium Component Testing Heater (H-2) are operating at a total capacity greater than 414.8 MMBTU/Hr.
14. Permittee has leased 0.30 tons per year of nitrogen oxides (NO<sub>x</sub>) emission reduction credits from Chevron U.S.A. Inc. (ERC Certificate No. 1001) for the York Shipley Boiler to satisfy the emission offset requirements of VCAPCD Rule 26 (as it existed prior to October 22, 1991). Effective January 31, 1998, the York Shipley Boiler shall be removed from service or the lease shall be extended. The current lease expires on January 31,

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1998.

Upon cessation of activities involving the York Shipley Boiler, the emission offsets obtained for the York Shipley Boiler may be eligible for rebanking. In order to rebank these emissions, an application shall be submitted that details the amount of offsets eligible for banking pursuant to Rule 26.4, "New Source Review - Emission Banking".

15. All fuel fired equipment shall be limited to the use of the fuel or fuels listed in the equipment list above.
16. On the afternoon prior to operation of the Babcock and Wilcox Sodium Component Testing Heater (H-1), the Air Quality Reporting Section of the APCD shall be contacted to determine if a Stage 1 Episode or greater is predicted to occur at the facility or any receptor area in Ventura County. If a Stage 1 Episode or greater is predicted the testing shall be postponed.
17. During sodium burning at the sodium treatment facility, the exhaust blower is to be operated at all times with a pressure drop across venturi scrubber/spray tower control system of at least 34 inches of water.
18. At the Kalina plant, no line or vessel containing ammonia, except the sparge tank, shall be vented in any manner directly to the atmosphere. All process lines and vessels containing ammonia shall have their sumps, drains, and relief valves vented to the make-up water (sparge) tank. The ammonia concentration in the sparge tank shall be maintained at or below 15% by weight.
19. The ammonia emissions from the Kalina plant shall not exceed 80 pounds per hour and 51 tons per year. In addition, the ammonia concentration at the property line shall not exceed the TLV-TWA value (as defined by the American Conference of Governmental Industrial Hygienists) of 25 ppmv and the TLV-STEL value (as defined by the American Conference of Governmental Industrial Hygienists) of 35 ppmv. In order to assure that ammonia emissions are maintained below 80 pounds per hour and 51 tons per year, and that the ammonia concentration at the property line does not exceed the TLV-TWA and the TLV-STEL, permittee shall follow the inspection and maintenance procedure (Enclosure D, dated October 1, 1991) submitted to the VCAPCD, as a part of Permit to Operate Application No. 0271-101; shall measure and record the ammonia concentration at the property line at least once per shift when the plant is in operation and any time a plant upset causes an unexpected increase in ammonia emissions; and shall maintain records of ammonia deliveries, and concentration and volume of recycled ammonium hydroxide.
20. This condition applies to the Pressure Recovery System at CTL-III. Chlorine concentrations shall not exceed 1 ppm, averaged over 15 minutes, at any point at or beyond the property line. Hydrogen peroxide concentrations shall not exceed 1 ppm, averaged over 15 minutes, at any point at or beyond the property line. This condition is applied as VCAPCD Rule 51 compliance.

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21. The ethanol storage tank shall comply with all applicable requirements of APCD Rule 71.2, Storage of Reactive Organic Compound Liquids.

22. Effective July 9, 1997, wipe cleaning operations not associated with aerospace assembly and component manufacturing operations shall comply with all applicable provisions of APCD Rule 74.6, "Surface Cleaning and Degreasing", including, but not limited to, the following material requirements:

- a) Any materials used for repair or maintenance cleaning shall have an ROC composite partial pressure no greater than 20 mm Hg at a temperature of 20 degrees Celsius and shall have an ROC content no greater than 900 grams per liter of material (Rule 74.6.B.1).

Repair cleaning means it is carried out during a repair process. Maintenance cleaning is carried out to keep tools, machinery, molds, forms, jigs, equipment, or general work areas in clean and good operational condition.

- b) Any materials used for cleanup, including cleanup of application equipment, shall have an ROC composite partial pressure no greater than 35 mm Hg at 20 degrees Celsius and shall have an ROC content no greater than 950 grams per liter of material (Rule 74.6.B.1).

Cleanup is defined as the removal of uncured coating, adhesive or ink from any surface, including coating application equipment, oversprayed surfaces, and hands. Application equipment is used to clean inks, or adhesives, and includes but is not limited to: spray guns, rollers, brushes, and printing presses.

- c) Any materials used for manufacturing cleaning or surface preparation shall have an ROC content no greater than 70 grams per liter of material (Rule 74.6.B.1).

Manufacturing cleaning is the cleaning of parts or components in a process of making goods or articles by hand or by machinery from those parts or components.

Surface preparation is the removal of contaminants prior to coating, adhesive, or ink application.

- d) Items a) and c) do not apply to the cleaning of electronic components or medical devices. For the cleaning of electronic components or medical devices, the solvent shall have an ROC content of 900 grams per liter or less and shall have an ROC composite partial pressure no greater than 33 mm Hg at 20 degrees Celsius. The use of isopropyl alcohol shall be deemed in compliance with this requirement (Rule 74.6.C.3.a). For a definition of electronic components or medical devices, refer to Subsections G.14 and G.29 of Rule 74.6.

- e) Items a), b), and c) do not apply to:

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Cleaning activities using cleaning agents that contain two percent or less organic solvent, as applied by weight (Rule 74.6.C.1.a);

Cleaning activities using solvents which are purchased in, and applied from, manufacturer- or distributor-labeled containers of one liter or less in volume, including aerosol products (Rule 74.6.C.1.b);

Janitorial cleaning, including graffiti removal (Rule 74.6.C.1.c); and

- f) Items a), b), and c) do not apply to facility-wide use of less than 1 gallon per week of non-compliant solvent where compliant solvents are not available. Any person claiming this exemption shall maintain records of the volume and formulation of non-compliant solvent used on a weekly basis (Rule 74.6.C.3.h).
- g) Items a), b), and c) do not apply to cleaning in laboratory tests and analyses, or bench scale or short term research and development programs (Rule 74.6.C.3.c).
- h) Items a), b), and c) do not apply to the cleaning of solar cells, laser hardware, scientific instruments, or high-precision optics (Rule 74.6.C.3.b).
23. Effective July 9, 1997, wipe cleaning operations not associated with aerospace assembly and component manufacturing operations shall comply with all applicable provisions of APCD Rule 74.6, "Surface Cleaning and Degreasing". Accordingly, no person shall perform solvent cleaning unless one of the following cleaning devices or methods is used (Rule 74.6.B.2):
- a) Wipe cleaning where solvent is dispensed to wipe cleaning materials from containers that are kept closed to prevent evaporation, except while dispensing solvent or replenishing the solvent supply;
- b) Application of solvent from a hand-held spray bottle, squirt bottle or other closed container with a capacity of one liter or less;
- c) Non-atomized solvent flow, dip, or flush method where pooling is prevented or drained, and all solvent runoff is collected in a manner that enables solvent recovery or disposal. The collection system shall be kept closed to prevent evaporation except while collecting solvent runoff or emptying the collection system;
- d) A properly used enclosed gun washer or low emission spray gun cleaner.

No person shall atomize any solvent into open air or allow liquid cleaning solvent to leak from any equipment or container (Rule 74.6.B.3).

This condition does not apply to: cleaning activities using cleaning agents that contain two percent or less organic solvent, as applied by

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Issued To Rocketdyne Division  
Valid January 1, 1997 to December 31, 1997

weight; and janitorial cleaning, including graffiti removal.

24. Permittee shall maintain records of the following information. All records shall be maintained on a monthly basis. The records shall be maintained for at least two years and shall be made available to the APCD upon request.

**Sodium Component Test Installation:**

The amount of natural gas used in the main burners of Babcock and Wilcox Sodium Component Testing Heater (H-1), in the main burners of the Coen Sodium Component Testing Heater (H-2), in the pilot burners of H-1 and H-2, and the Keeler boiler, and the amount of propane used in the York Shipley boiler.

**Sodium Treatment Facility:**

The amount of time that the sodium burn room is operated and the amount of sodium burned per hour when the burn room is operated.

**Molten Salt Test Facility:**

The emission data (including emission factors, hours of operation, amounts of materials processed, type of material processed, resulting emissions, and any operational parameters that ensure that the permitted emissions are not exceeded).

**Kalina Plant:**

Records of the ammonia concentration in the sparge tank; the daily and periodic inspection data sheets; the ammonia concentration measurements at the property site; and based on mass balance, the amount of ammonia emitted to the atmosphere.

**Wipe Cleaning Operations:**

The permittee shall maintain a current material list showing each ROC-containing material used in wipe cleaning activities. The list shall summarize the following information for wipe cleaning operations:

- a) Material name and manufacturer's description;
- b) The ROC content (and ROC composite partial pressure, if applicable) of the material;
- c) If the material is a mix of materials blended by the operator, record the mix ratio; and
- d) All intended uses of the material at the facility;

If cleaning is not associated with aerospace assembly and component manufacturing, use of the material shall be classified as follows for Rule 74.6: repair or maintenance cleaning; cleanup, including

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application equipment cleaning; manufacturing or surface preparation cleaning; or material used pursuant to an exemption in Section C of the rule (specify the exemption claimed).

If cleaning is associated with aerospace assembly and component manufacturing, specify the type of use and corresponding Subsection in Rule 74.13 that applies.

On a monthly basis, the permittee shall record the net quantity of each ROC-containing material used (usage minus recycle and disposal) for wipe cleaning and the corresponding emissions.

**Ethanol Storage Tank and Component Flushing Operations:**

The type of liquid stored in the tank, the modified Reid vapor pressure of such liquid; the maintenance records required by APCD Rule 71.2.I.1.c and APCD Rule 71.2.I.1.d; and the amount of ethanol lost to the atmosphere, using material balance.

**Pressure Recovery System:**

The number of tests utilizing the pressure recovery system; and the hydrogen peroxide emissions, the chlorine emissions, and the HFC-134a emissions from the pressure recovery system.

Within ten days after receipt of this permit, the applicant may petition the Hearing Board to review any new or modified condition on the permit (Rule 22).

This permit, or a copy, shall be posted reasonably close to the subject equipment and shall be readily accessible to inspection personnel (Rule 19). This permit is not transferable from one location to another unless the equipment is specifically listed as being portable (Rule 20).

In reliance upon the statement of the applicant that operation of the equipment described herein shall meet the requirements as specified in the Rules and Regulations of the Air Pollution Control District, permission is hereby granted to operate; provided, however, the permission granted hereby shall not be construed to permit said equipment to operate in violation of any applicable State or Federal emission standard or Rules and Regulations of the District.

  
Karl E. Krause, Manager  
Engineering Section

For:

Richard H. Baldwin  
Air Pollution Control Officer

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved, OMB No. 2050-0034 Expires 10/31/99  
GSA No. 0248-EPA-01

For EPA Regional Use Only		 United States Environmental Protection Agency Washington, DC 20460 <b>Hazardous Waste Permit Application Part A</b> <i>(Read the Instructions before starting.)</i>	
Date Received Month Day Year			
<b>I. Installation's EPA ID Number (Mark 'X' in the appropriate box)</b>			
<input type="checkbox"/> A. First Part A Submission		<input checked="" type="checkbox"/> B. Part A Amendment # <u>Three</u>	
C. Installation's EPA ID Number		D. Secondary ID Number (If applicable)	
C A D 0 0 0 6 2 9 9 7 2			
<b>II. Name of Facility</b>			
T H E B O E I N G C O M P A N Y R P & P H W M F			
<b>III. Facility Location (Physical address not P.O. Box or Route Number)</b>			
A. Street			
T O P O F W O O L S E Y C A N Y O N R O A D			
Street (Continued)			
City or Town		State	Zip Code
S I M I H I L L S		C A	9 3 0 6 3 -
County Code #	County Name		
0 5 6	V E N T U R A		
B. Land Type	C. Geographic Location		D. Facility Existence Date
(Enter code)	LATITUDE (Degrees, minutes & seconds)	LONGITUDE (Degrees, minutes & seconds)	Month Day Year
P	3 4 1 3 4 6 N	1 1 8 4 2 3 0 W	0 1 0 6 1 9 7 8
<b>IV. Facility Mailing Address</b>			
Street or P.O. Box			
6 6 3 3 C A N O G A , P O B O X 7 9 2 2 T O 3 8			
City or Town		State	Zip Code
C A N O G A P A R K		C A	9 1 3 0 9 - 7 9 2 2
<b>V. Facility Contact (Person to be contacted regarding waste activities at facility)</b>			
Name (Last)		(First)	
L E E		M A J E L L E	
Job Title		Phone Number (Area Code and Number)	
P R O G R A M M A N A G E R		8 1 8 - 5 8 6 - 5 2 8 3	
<b>VI. Facility Contact Address (See Instructions)</b>			
A. Contact Address Location Mailing Other		B. Street or P.O. Box	
<input checked="" type="checkbox"/> <input type="checkbox"/>			
City or Town		State	Zip Code

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved, OMB No. 2050-0034 Expires 10/31/99  
GSA No. 0248-EPA-01

<b>EPA I.D. Number (Enter from page 1)</b>	<b>Secondary ID Number (Enter from page 1)</b>
C A D 0 0 0 6 2 9 9 7 2	

**XI. Nature of Business (Provide a brief description)**

The Hazardous Waste Management Facility (HWMF) is a hazardous waste treatment and storage facility which is no longer operated and has entered Final Closure. The HWMF is located at the former Energy Technology Engineering Center.

**XII. Process Codes and Design Capacities**

**A. PROCESS CODE:** Enter the code from the list of process codes below that best describes each process to be used at the facility. Thirteen lines are provided for entering codes. If more lines are needed, attach a separate sheet of paper with the additional information. For "Other" processes (i.e., D99, S99, T04 and X99), describe the process (including its design capacity) in the space provided in item XII.

**B. PROCESS DESIGN CAPACITY:** For each code entered in column A, enter the capacity of the process.

1. **AMOUNT:** Enter the design capacity in the appropriate unit of measure (such as in a table post-closure or enforcement action).

2. **UNIT OF MEASURE:** Enter the unit of measure code from the list of unit measure codes below that best describes the unit of measure used.

**C. PROCESS TOTAL NUMBER OF UNITS:** Enter the total number of units used with the corresponding process code.

PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY	PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
	<i>Disposal:</i>				
D79	Underground Injection	Gallons; Liters; Gallons Per Day; or Liters Per Day	T87	Smelting, Melting, Or Refining Furnace	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; or Btu's Per Hour
D80	Landfill	Acre-feet or Hectare-meter	T88	Thiolum Dioxide Chloride Process	
D81	Land Treatment	Acres or Hectares	T89	Oxidation Reactor	
D82	Ocean Disposal	Gallons Per Day or Liters Per Day	T90	Methane Reforming Furnace	
D83	Surface Impoundment	Gallons or Liters	T91	Pulping Liquor Recovery Furnace	
D89	Other Storage	Any Unit of Measure Listed Below	T92	Combustion Device Used In The Recovery Of Sulfur Values From Spent Sulfuric Acid	
S01	Container (Barrel, Drum, Etc.)	Gallons or Liters	T93	Halogen Acid Furnaces	
S02	Tank	Gallons or Liters	T94	Other Industrial Furnaces Listed In 40 CFR §260.10	
S03	Waste Pile	Cubic Yards or Cubic Meters	X01	Containment Building	
S04	Surface Impoundment	Gallons or Liters	X02	Miscellaneous (Subpart X):	
S05	Drip Pad	Gallons or Liters	X03	Open Burning/Open Detonation	Any Unit of Measure Listed Below Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; or Kilograms Per Hour
S06	Containment Building	Cubic Yards or Cubic Meters	X04	Mechanical Processing	
S99	Other Disposal	Any Unit of Measure Listed Below	X09	Thermal Unit	
T01	Tank	Gallons Per Day or Liters Per Day	X99	Other Subpart X	
T02	Surface Impoundment	Gallons Per Day or Liters Per Day			
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; or Btu's Per Hour			
T04	Other Treatment	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; or Btu's Per Hour			
T80	Boiler	Gallons or Liters			
T81	Cement Kiln	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; or Btu's Per Hour			
T82	Lime Kiln	Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; or Btu's Per Hour			
T83	Aggregate Kiln	Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; or Btu's Per Hour			
T84	Phosphate Kiln	Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; or Btu's Per Hour			
T85	Coke Oven	Tons Per Hour; Short Tons Per Day; or Btu's Per Hour			
T86	Blast Furnace	Day; or Btu's Per Hour			

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
Gallons .....	G	Short Tons Per Hour .....	D	Cubic Yards .....	Y
Gallons Per Hour .....	E	Metric Tons Per Hour .....	W	Cubic Meters .....	C
Gallons Per Day .....	U	Short Tons Per Day .....	N	Acres .....	B
Liters .....	L	Metric Tons Per Day .....	S	Acre-feet .....	A
Liters Per Hour .....	H	Pounds Per Hour .....	J	Hectares .....	Q
Liters Per Day .....	V	Kilograms Per Hour .....	R	Hectare-meter .....	F
				Btu's Per Hour .....	I

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GSA No. 0248-EPA-07

EPA I.D. Number (Enter from page 1)										Secondary ID Number (Enter from page 1)											
C	A	D	0	0	0	6	2	9	9	7	2										

**XII. Process Codes and Design Capabilities (Continued)**

EXAMPLE FOR COMPLETING ITEM XII (shown in line number X-1 below): A facility has a storage tank, which can hold 533,788 gallons.

Line Number	A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY		C. Process Total Number Of Units	For Official Use Only
		1. Amount (Specify)	2. Unit Of Measure (Enter code)		
X 1	S 0 2	533,788	G	001	
1	S 0 1	5500	G	100	
2	S 0 2	6600	G	003	
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					

NOTE: If you have a process that is not listed in the above table, you may use the "Other" process code (see page 1) to describe the process. The "Other" process code is listed in the table below.

**XIII. Other Processes**

Line Number (Enter on page 102)	A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY	C. Process Total Number Of Units	D. Description Of Process
X 1	T 0 4	62.5	1	Alkali metals (Na or Na-K) are heated in a treatment pan to produce oxide that is further treated with a hydroxide solution for recycle or disposal at an off-side facility.
2				
3				
4				



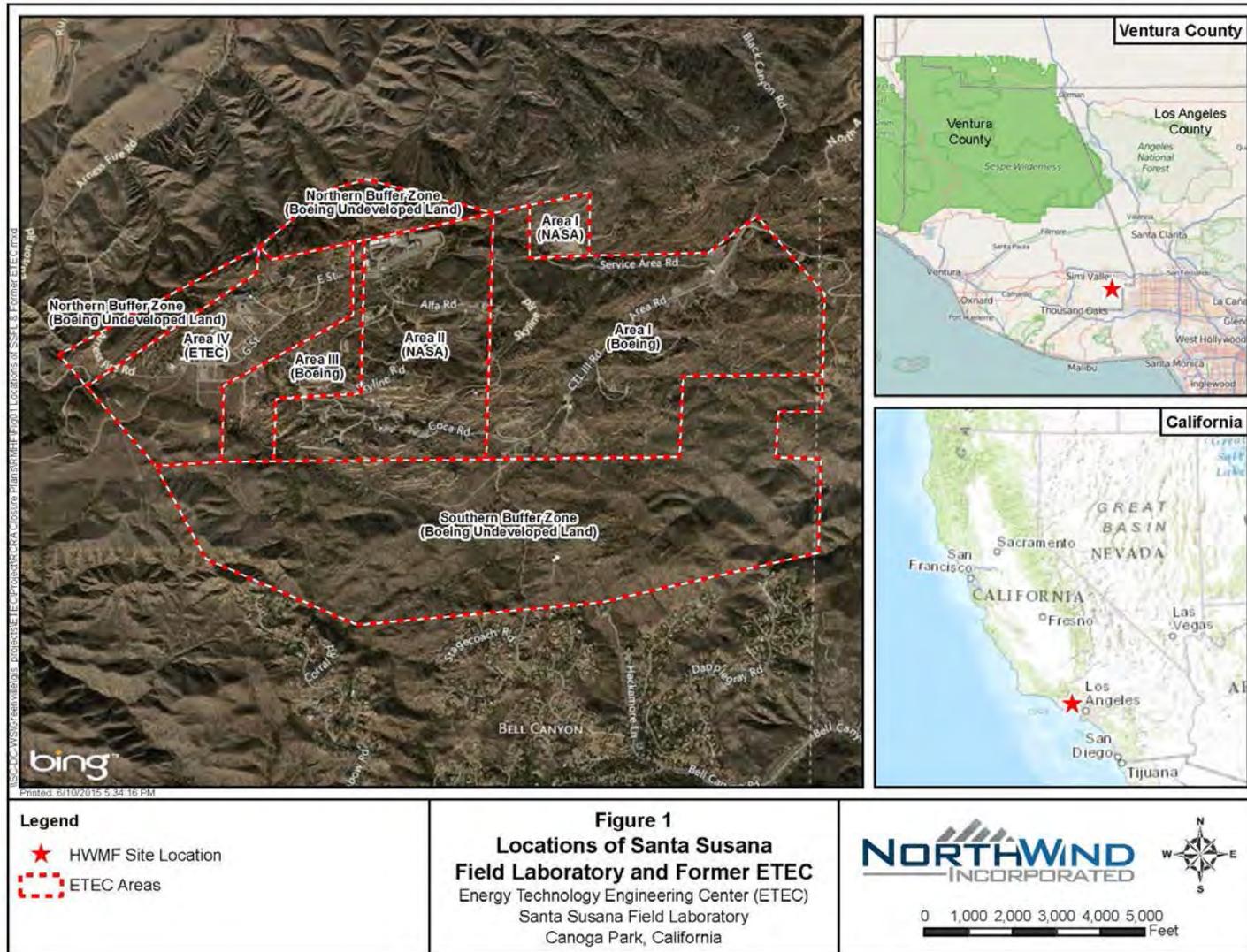
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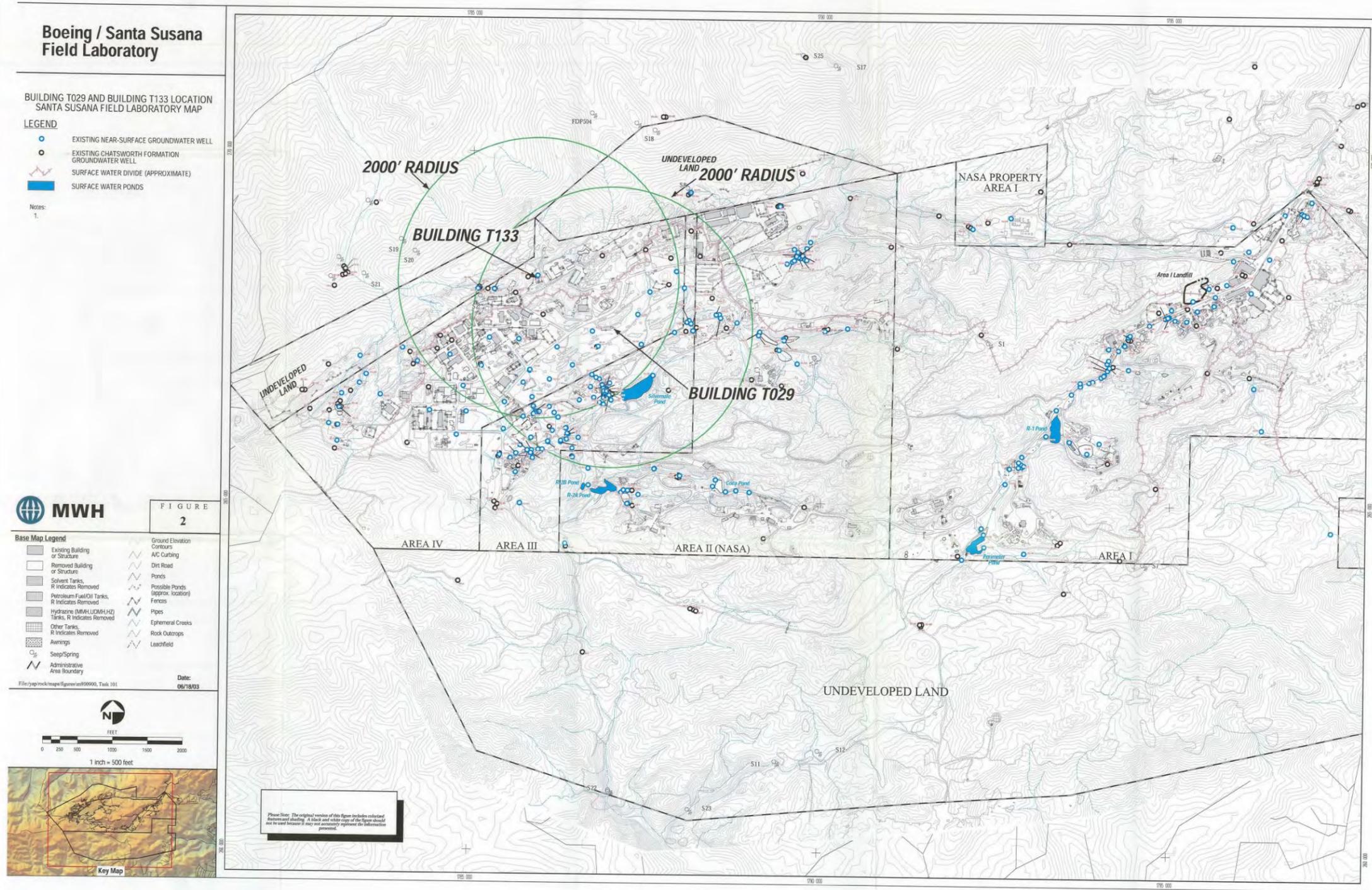
Form Approved, OMB No. 2050-0034 Expires 10/31/89  
GSA No. Q248-EPA-OT

EPA I.D. Number (Enter from page 1)							Secondary ID Number (Enter from page 1)									
C	A	D	0	0	0	6	2	9	9	7	2					
XIV. Description of Hazardous Wastes (Continued)																
Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES												
				(1) PROCESS CODES (Enter code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))								
1	D 0 0 1	10,000	P	S	0	1	T	0	4							
2	D 0 0 3											Included with above				
3												CWC 223 included with above				
4	D 0 0 1	1,000	P	S	0	2	T	0	4							
5	D 0 0 3											Included with above				
6	D 0 0 2	2,000,000	P	S	0	2										
7	D 0 0 7											Included with above				
8																
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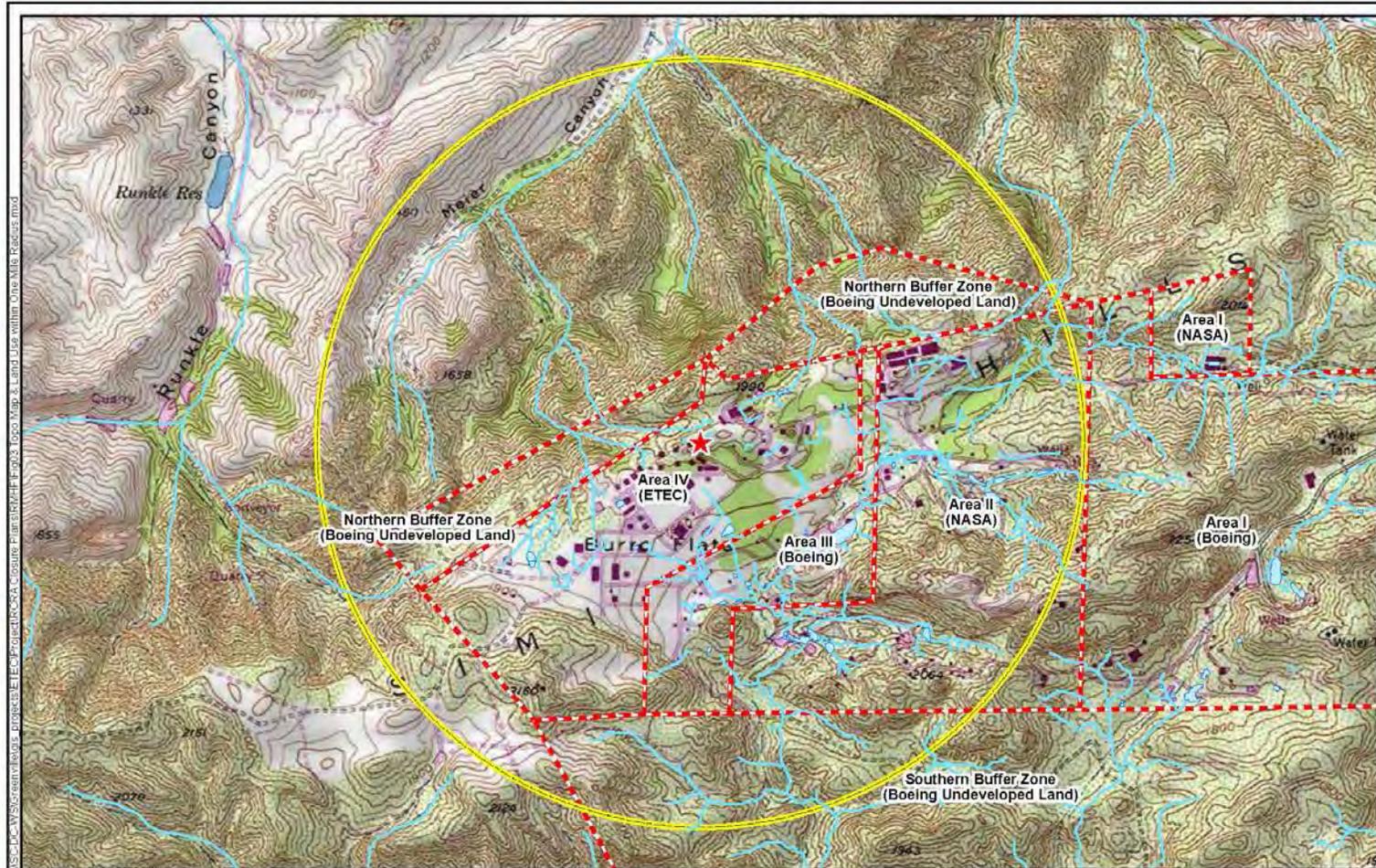


## **APPENDIX B FIGURES**





HDMSPP00035991



- Legend**
- ★ RMHF Site
  - Stream
  - ▭ Pond
  - ▭ 1 Mile Radius

**Figure 3**  
**Topographic Map & Land Use within One Mile Radius**  
Energy Technology Engineering Center (ETEC)  
Santa Susana Field Laboratory  
Canoga Park, California

**NORTHWIND**  
INCORPORATED

0 1,000 2,000 3,000 4,000 5,000 Feet

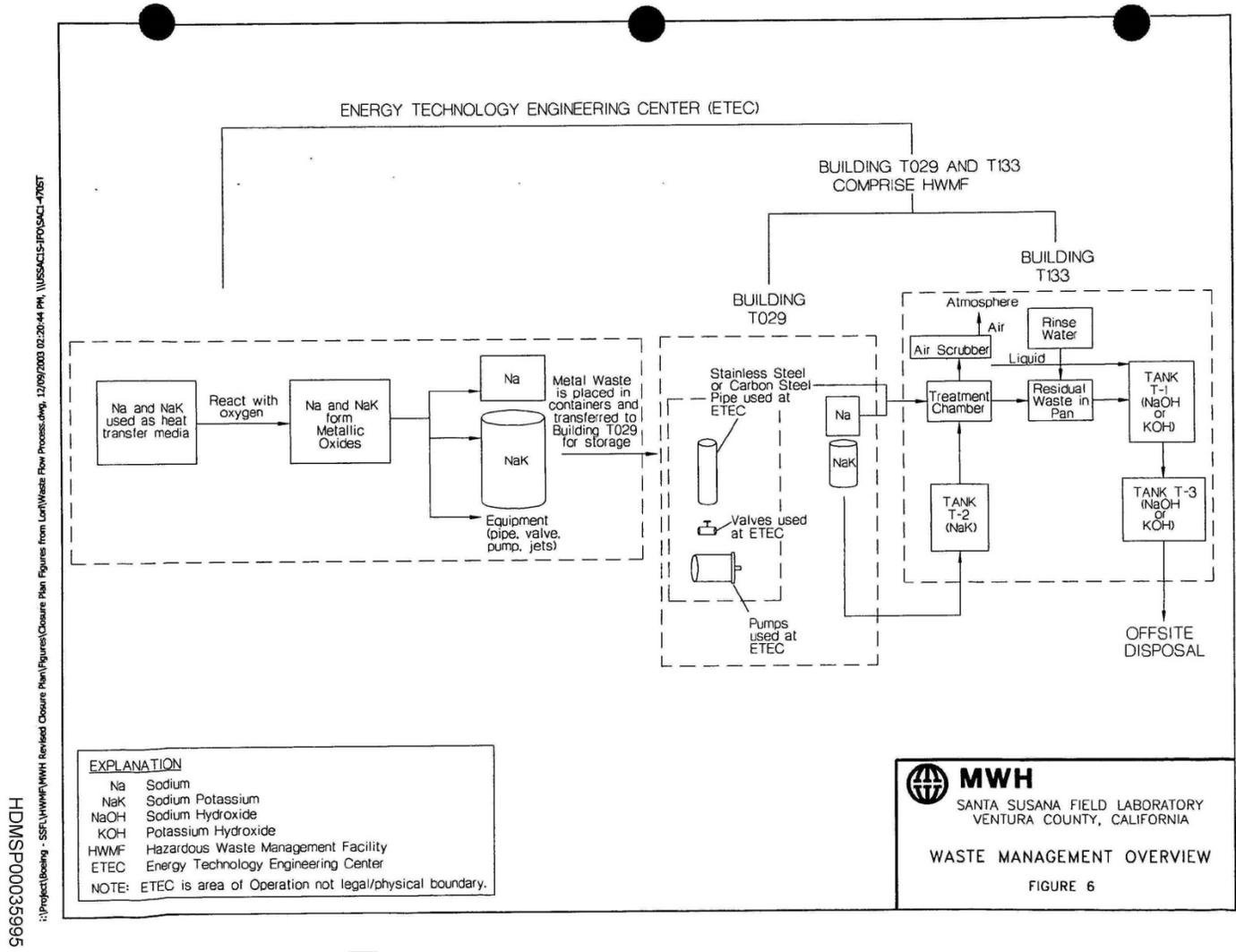
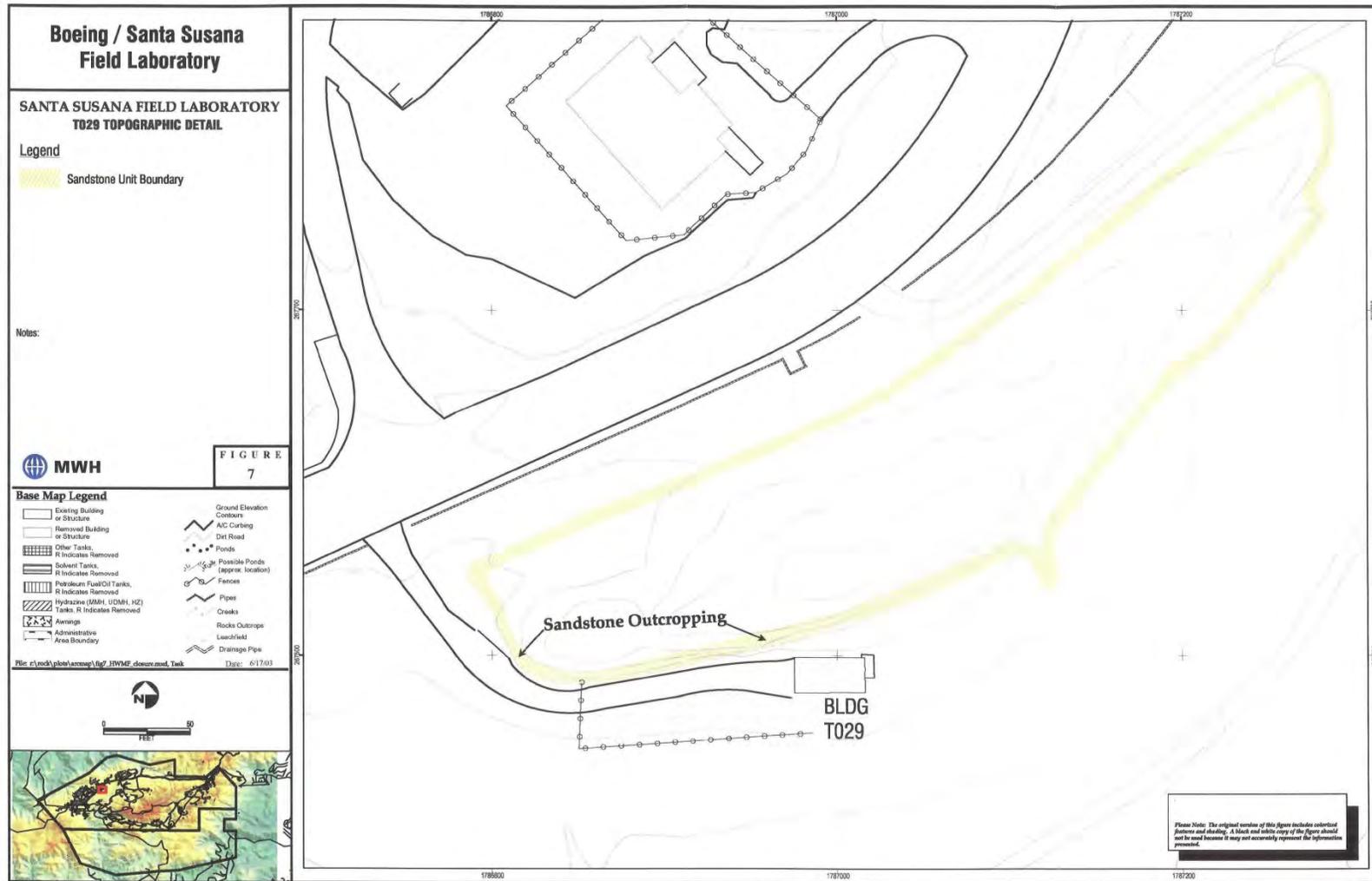


Figure 4 – Waste Management Overview (from 2003 HWMF Closure Plan)



HDMSF00035996

Figure 5-Building T029 Topographic Map (from 2003 HWMF Closure Plan)

**VERIFY THAT THIS IS THE CORRECT VERSION BEFORE USE**  
<http://sharepoint.lataenv.com/ETEC/default.aspx/>

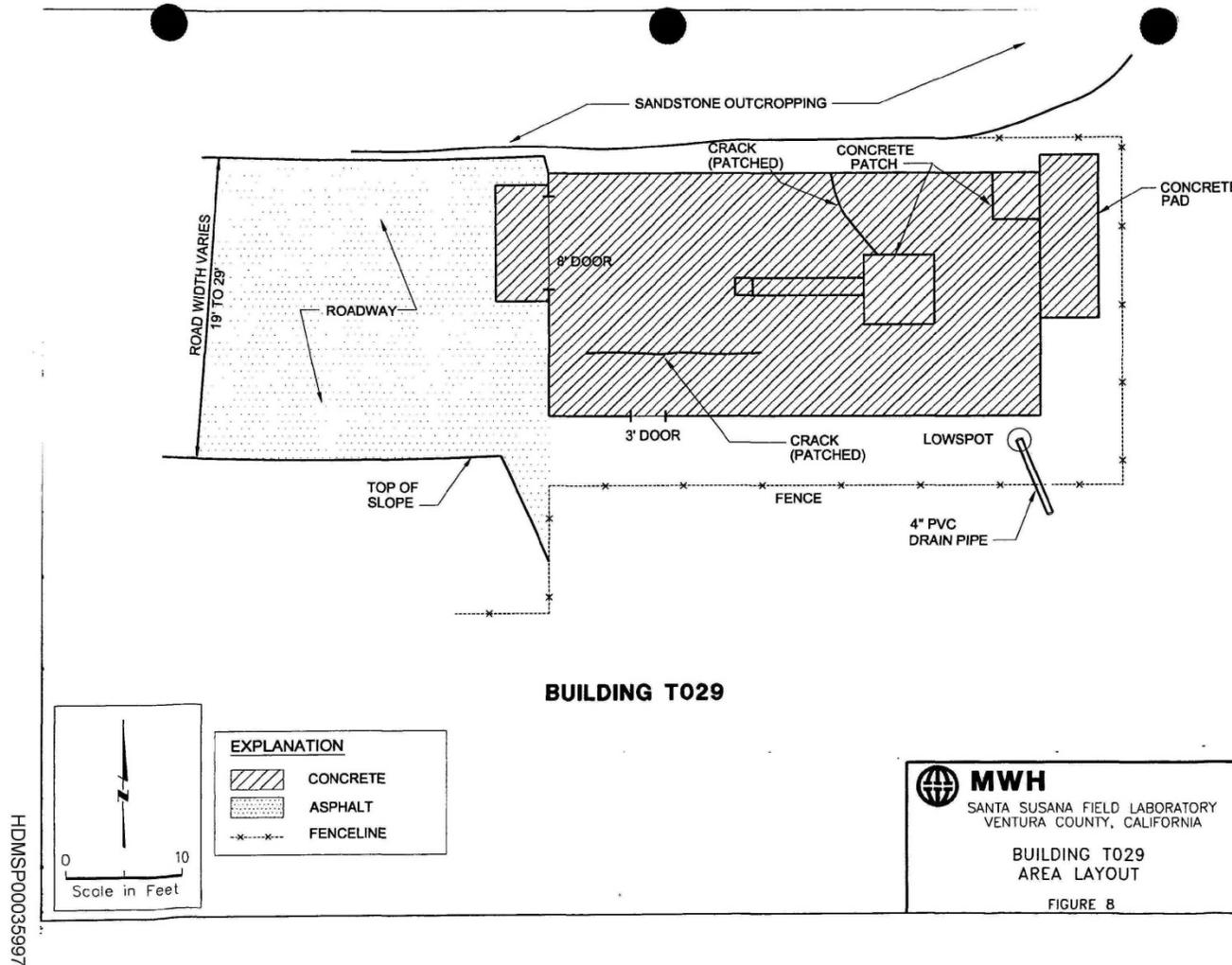


Figure 6-Building T029 Area Layout (from 2003 HWMF Closure Plan)



Photo 1 (Above): View of Building T029, note concrete loading pad at entrance, looking East. Concrete loading pad is 10 ft x 4 ft, in front of the 8 ft loading door.

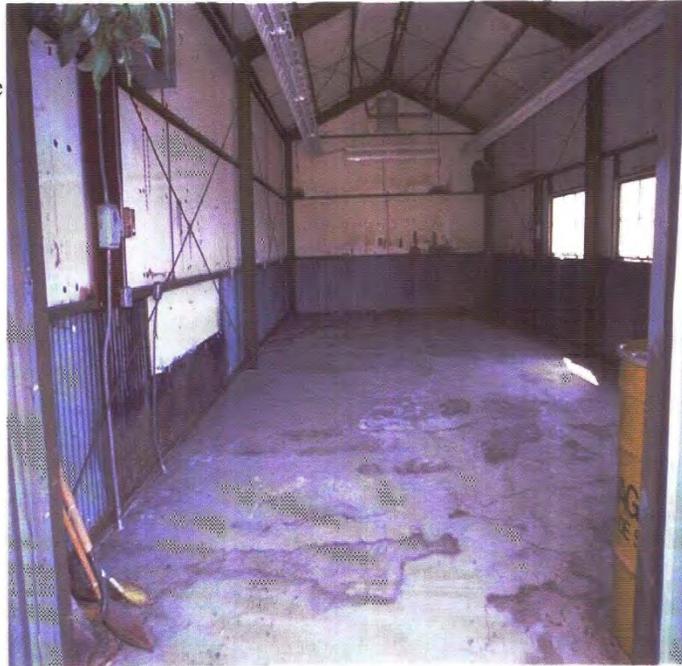


Photo 2 (Right): View inside Building T029, looking East. Size of building is 20 ft x 40 ft.

Figure 7- Photos for HWMF-T029 Area

(from 2003 HWMF Closure Plan)

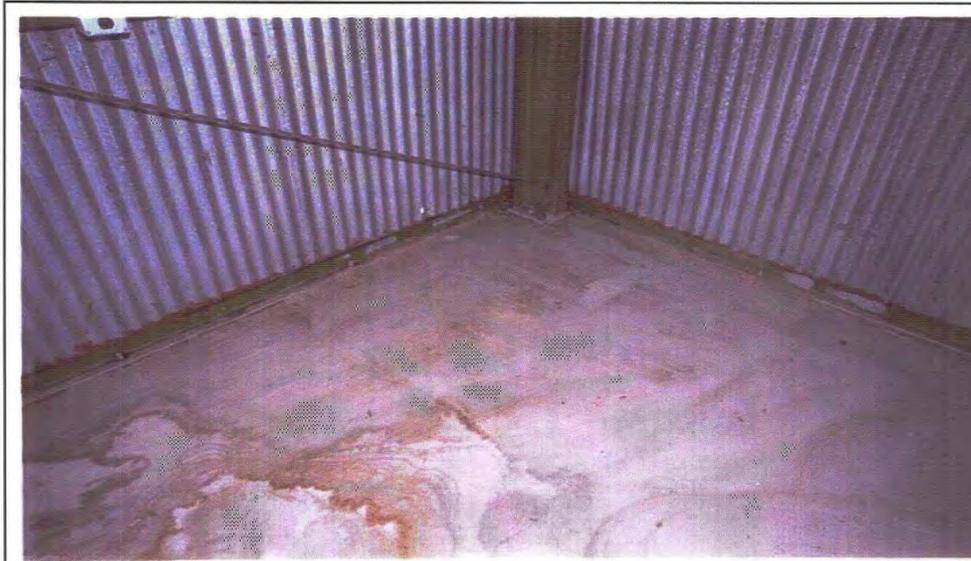


Photo 3 (Above): Patched concrete area (approximately 4 ft x 4 ft) on North-Eastern corner of floor in Building T029.



Photo 4 (Left): View of South-Western area of Building T029, including pedestrian entrance.

Figure 8 Photos for HWMF-T029 Area  
(from 2003 HWMF Closure Plan)

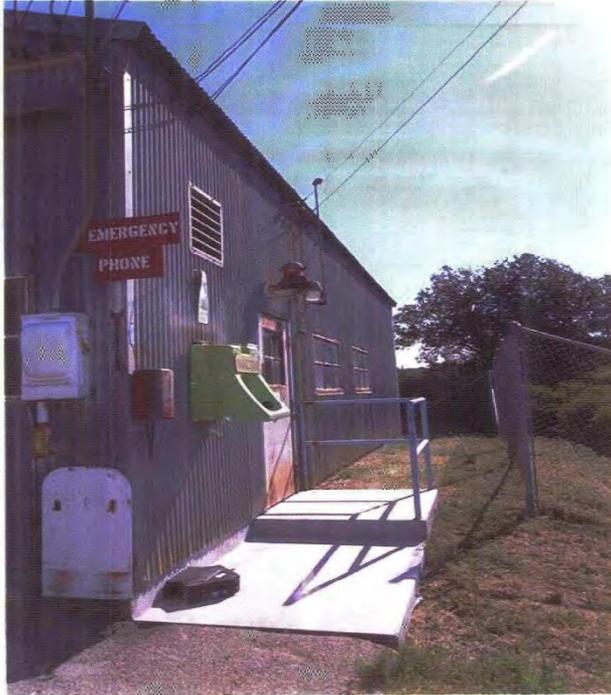


Photo 5 (Left): View of southern side of Building T029, looking East. Pedestrian entrance to building on south side.

Photo 6 (Below): Drainage pipe on South-Eastern corner of Building T029. Total length of drainage pipe is approximately 6 ft. Purpose of pipe is for drainage of rainfall from south side of the building, including rainfall from the roof of the building.

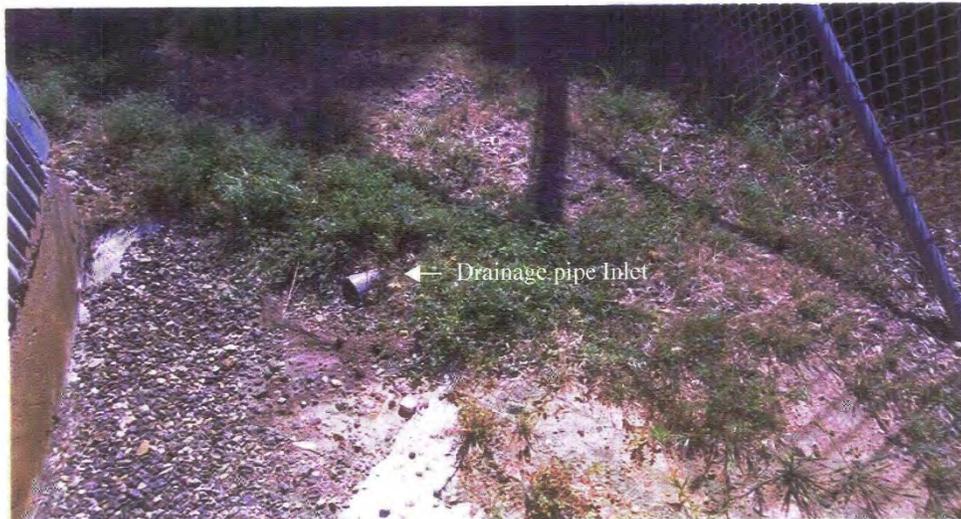


Figure 9 Photos for HWMF-T029 Area  
(from 2003 HWMF Closure Plan)

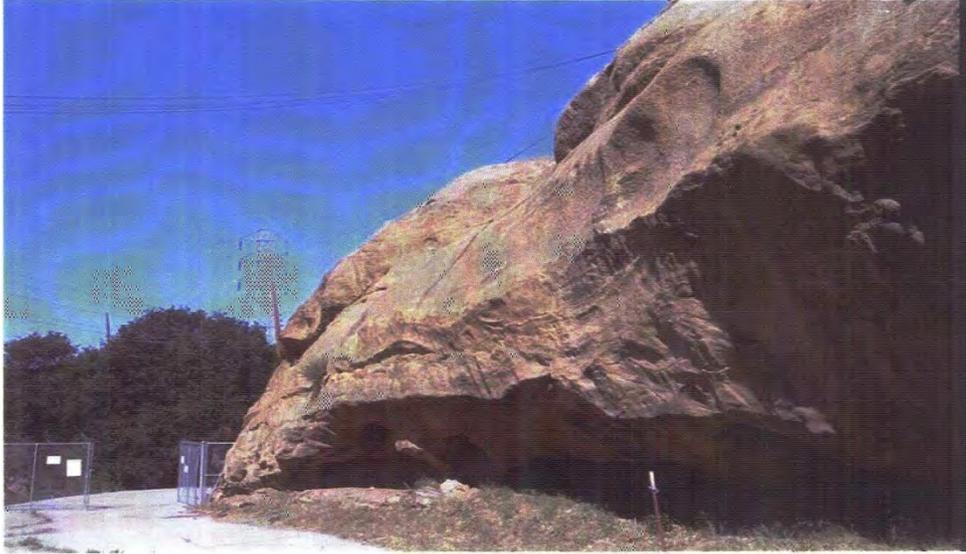


Photo 7 (Above): Sandstone outcropping and gate at Building T029.



Photo 8 (Left): Behind Building T029.

Figure 10 Photos for HWMF-T029 Area  
(from 2003 HWMF Closure Plan)

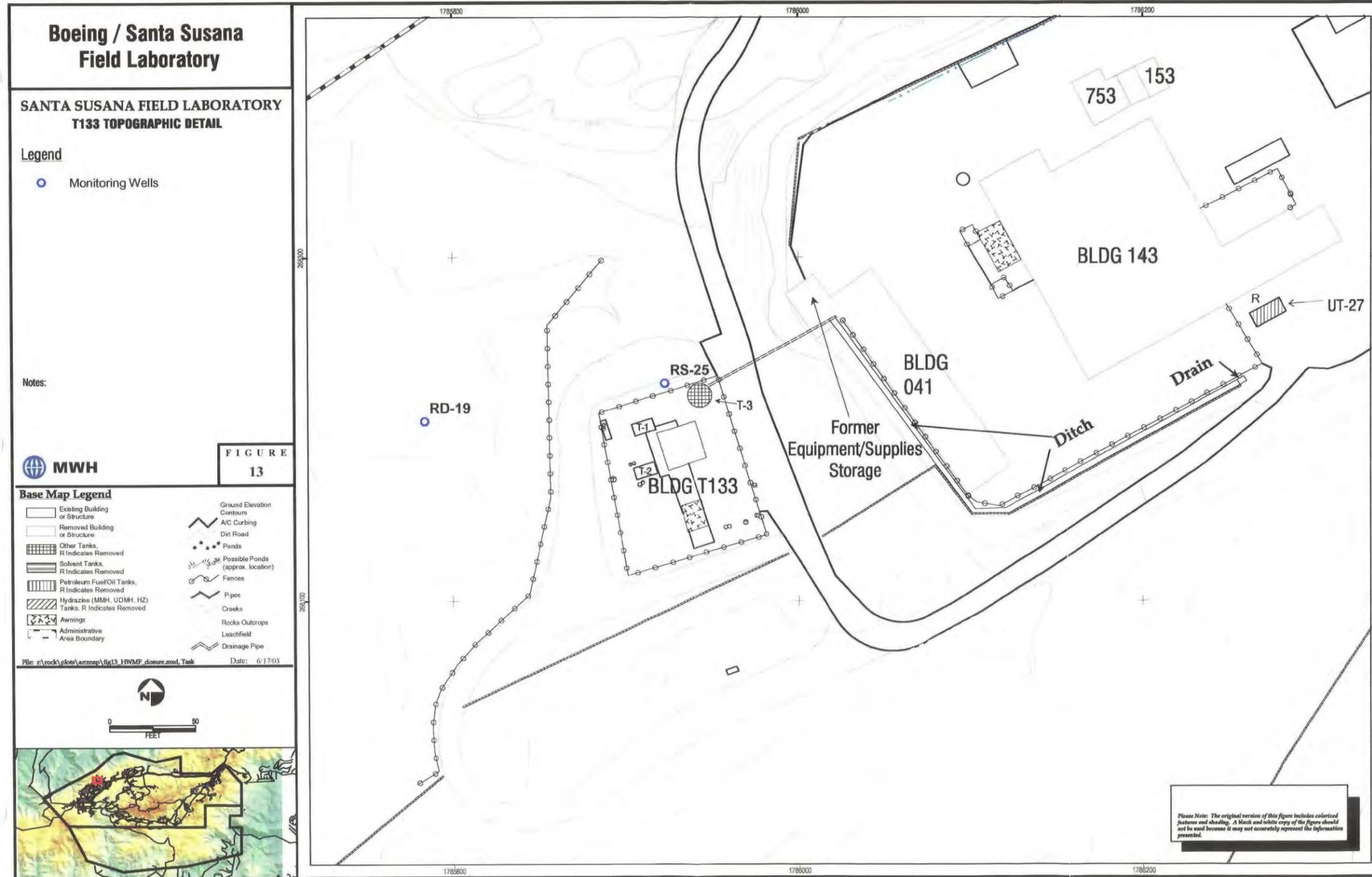
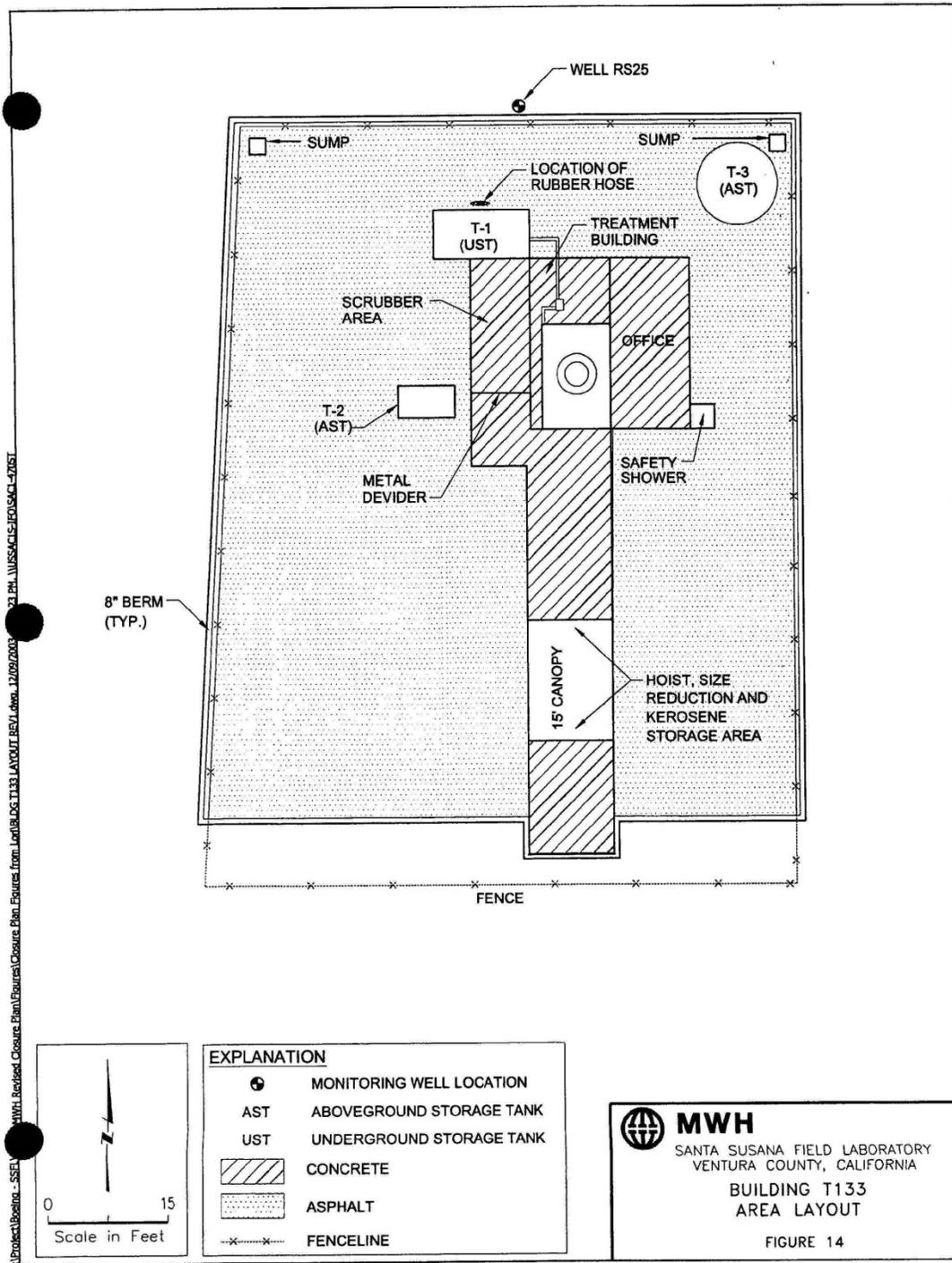


Figure 11 T133 Topographic Detail  
 (from 2003 HWMF Closure Plan)



HDMSF00036003

Figure 12 Building T133 Area Layout  
(from 2003 HWMF Closure Plan)



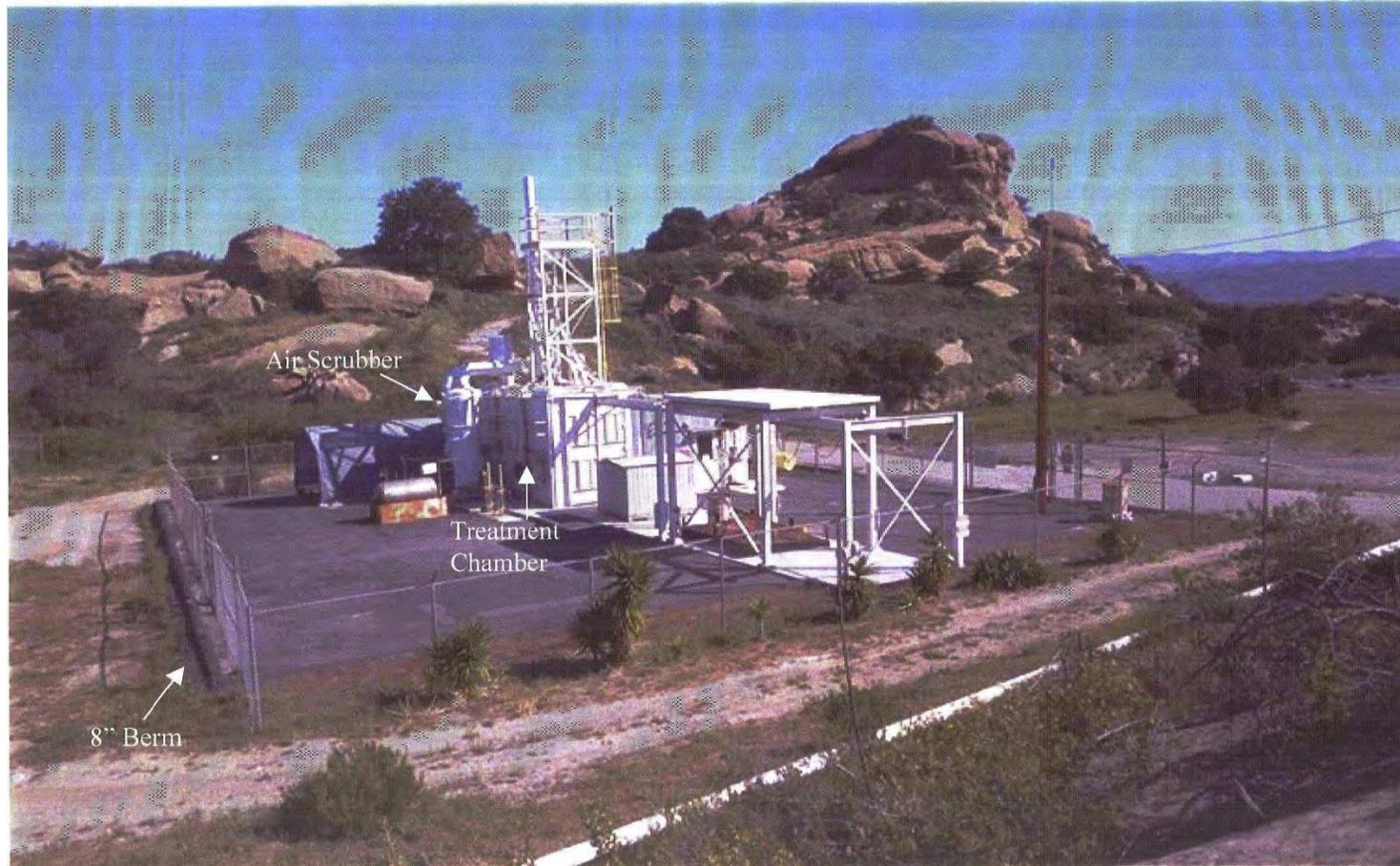


Photo 1: View of Building T133 (looking north). Fenced area is approximately 70 ft wide (i.e. east-west direction) x 85 ft long (i.e. north-south direction).

Figure 14 Photos for HWMF-T133 Area  
(from 2003 HWMF Closure Plan)

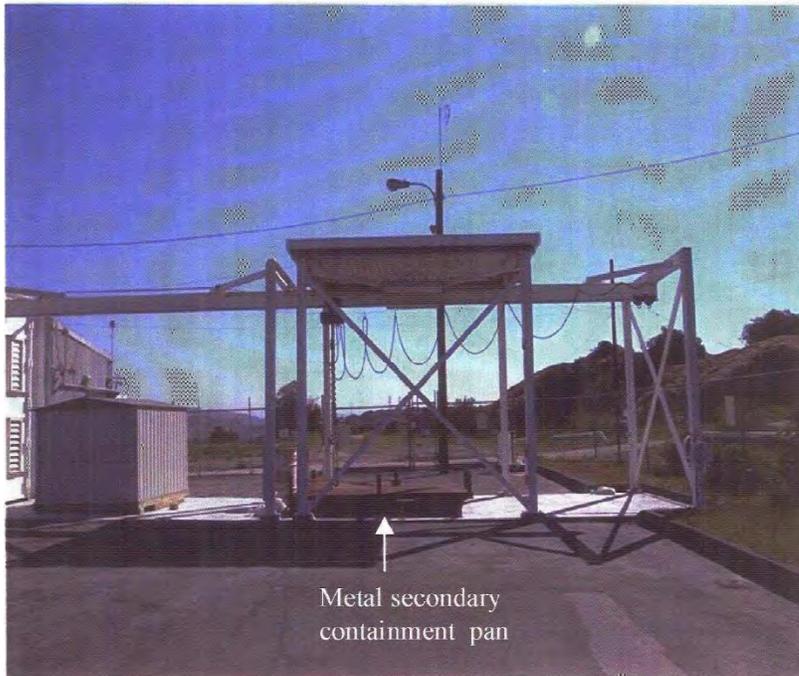


Photo 2: Size reduction area with concrete floor and overhead lift (looking east). Size reduction performed under canopy (about 15 ft x 10 ft) within a metal secondary containment pan placed on the concrete.

Photo 3: View of treatment chamber, Tank T-2, and air scrubber (looking north). Treatment chamber on west side of building, about 10 ft wide x 10 ft long. Air scrubber located on west side of building. Tank T-2 shown within secondary containment, to the west of the scrubber. Cover to Tank T-1 seen in background.

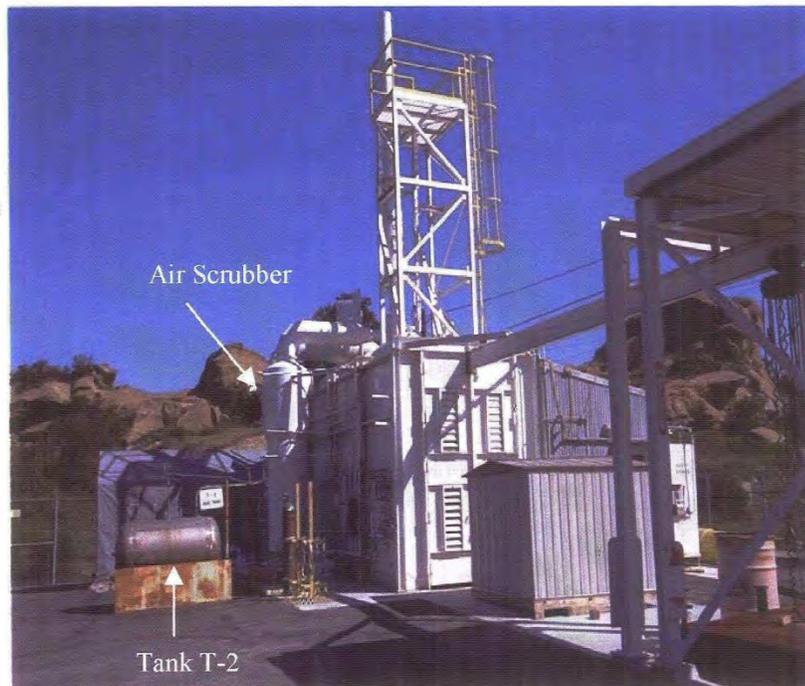


Figure 15-Photos for HWMF-T133 Area  
(from 2003 HWMF Closure Plan)

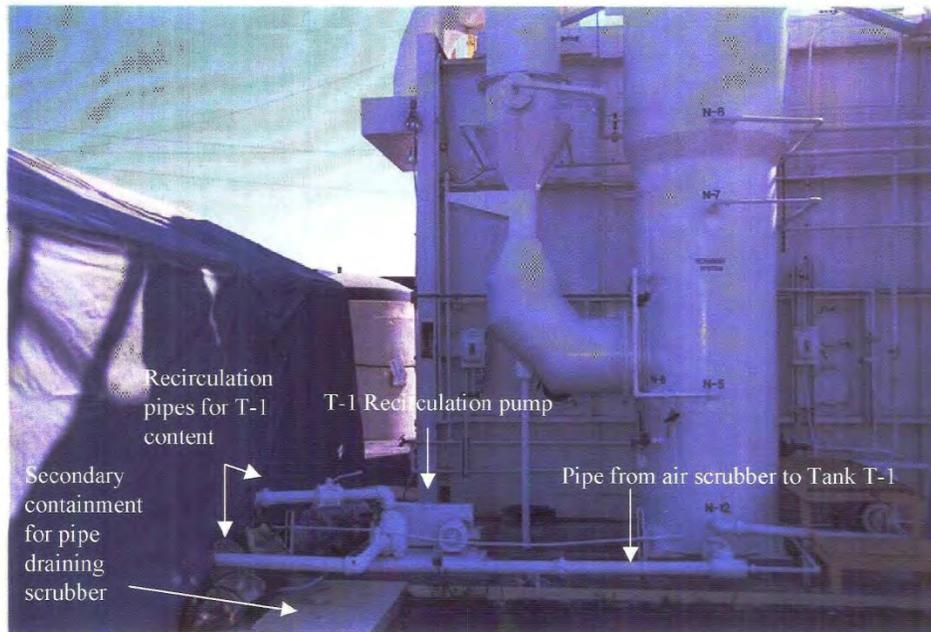


Photo 4 (Above):  
Detail of scrubber area  
looking east.

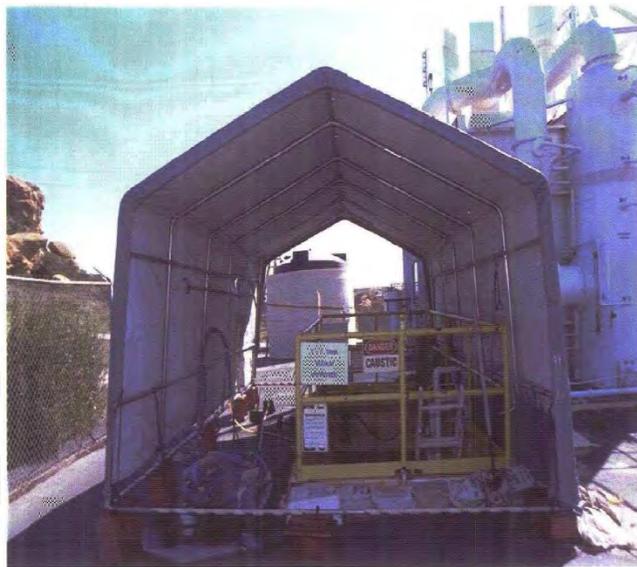


Photo 5 (Left): View of  
Tank T-1 area, looking  
East. Tank size about 5  
ft wide x 10 ft long, and  
6 ft deep. Tank T-3  
seen in background.

Figure 16 Photos for HWMF – T133 Area  
(from 2003 HWMF Closure Plan)

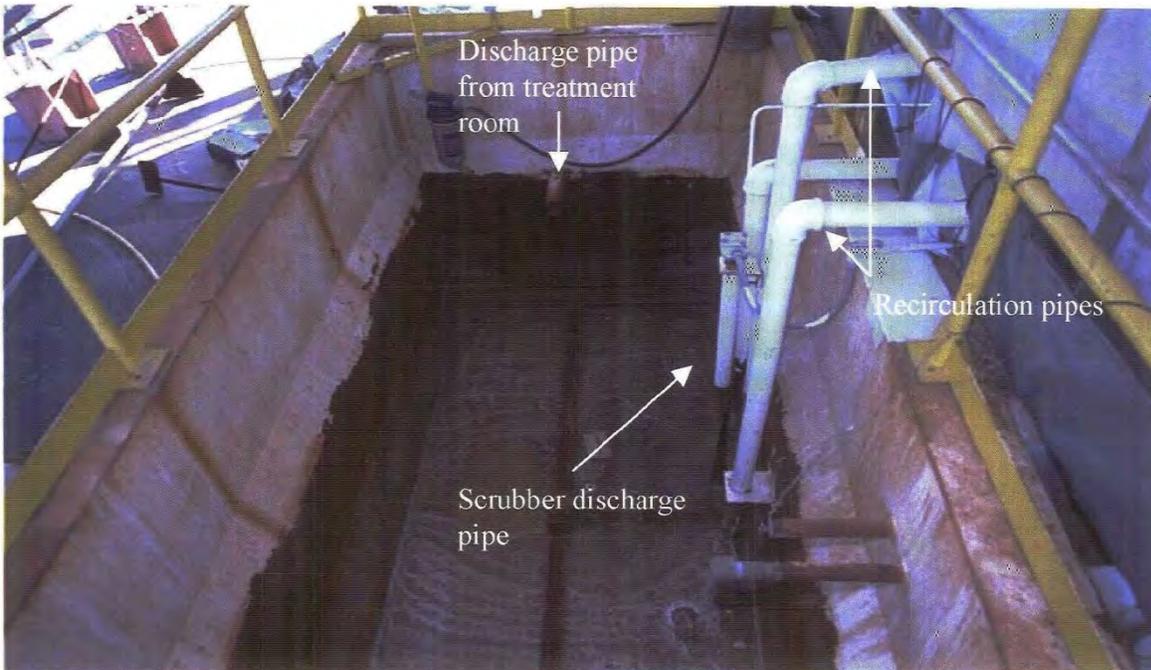


Photo 6 (Above): Detail of metal-lined tank T-1.

Photo 7 (Below): Area to the North of T133. Note topography slopes to the north.



Figure 17 Photos for HWMF-T133 Area  
(from 2003 HWMF Closure Plan)

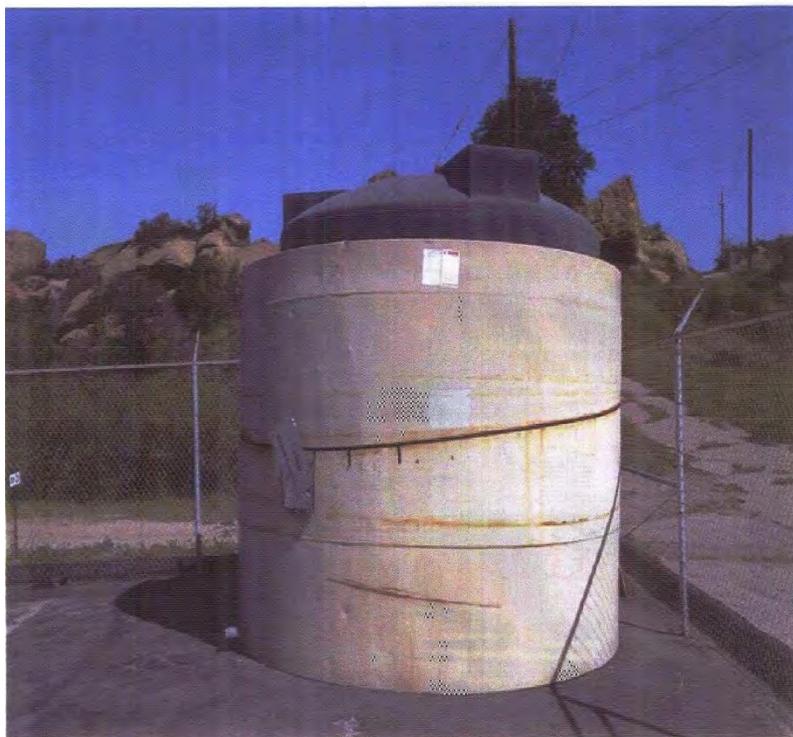
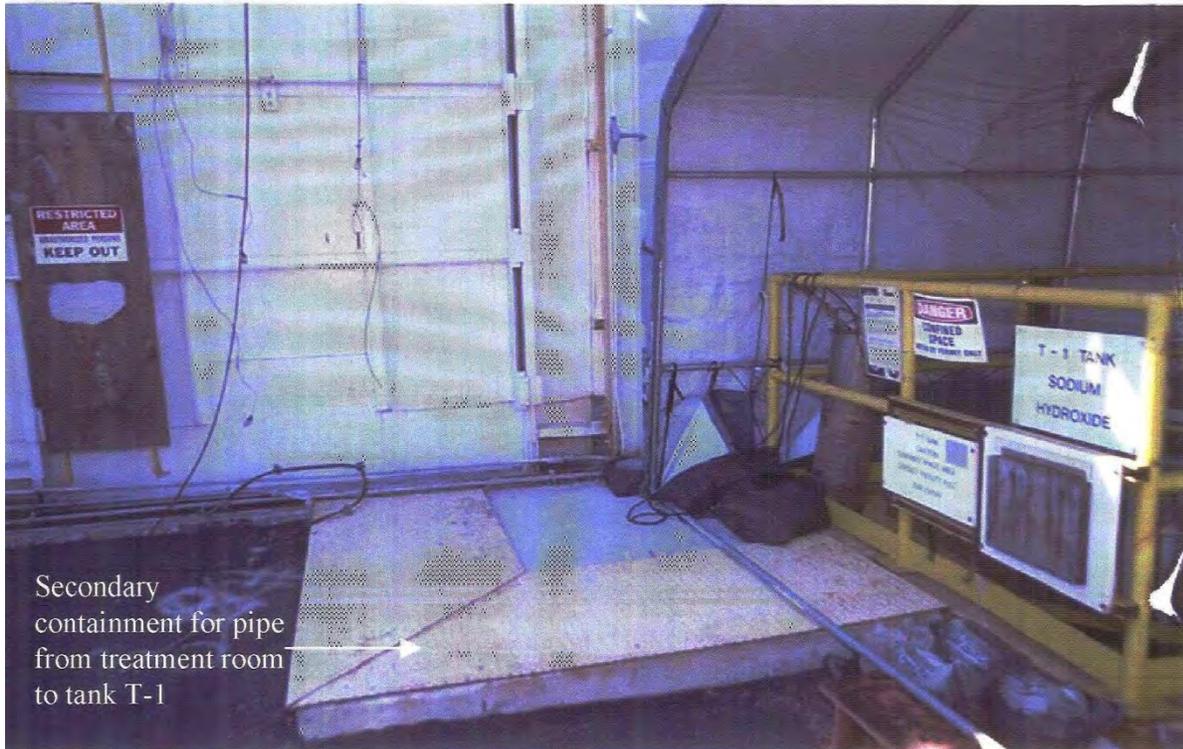


Photo 8 (Above):  
Secondary containment for pipe from treatment chamber to tank T-1 (looking south).

Photo 9 (Left): View of tank T-3 (tank and secondary containment, looking north).

Figure 18 Photos for HWMF-T133 Area  
(from 2003 HWMF Closure Plan)



Photo 10 (Left): View inside treatment chamber. Note that for examination of the area, the items located in the treatment room, such as burners, treatment bowl, and the metal liner have been moved from their original locations. The treatment bowl is presented upside down.

Photo 11 (Right): Sump towards northwestern area of treatment chamber. Size of sump is 16 inches x 21 inches and 27 inches deep.



Figure 19 Photos for HWMF-T133 Area  
(from 2003 HWMF Closure Plan)

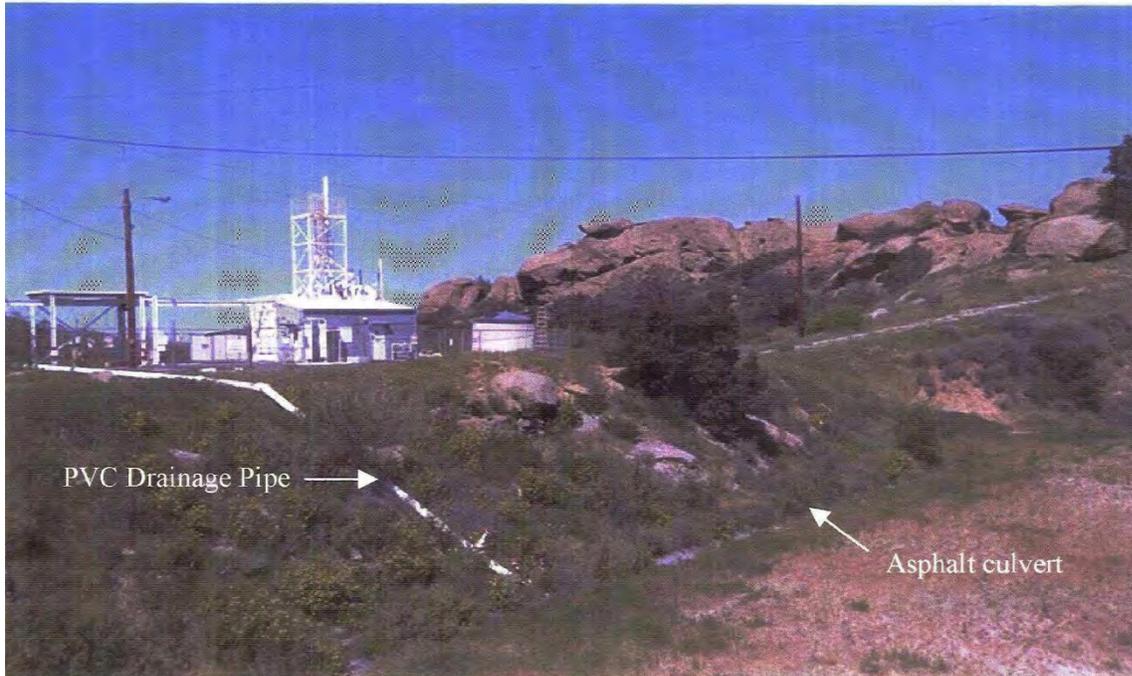


Photo 12 (Above): Area East of building T133, drainage line and drainage ditch looking west.

Photo 13 (Below): Culvert, East of building T133.

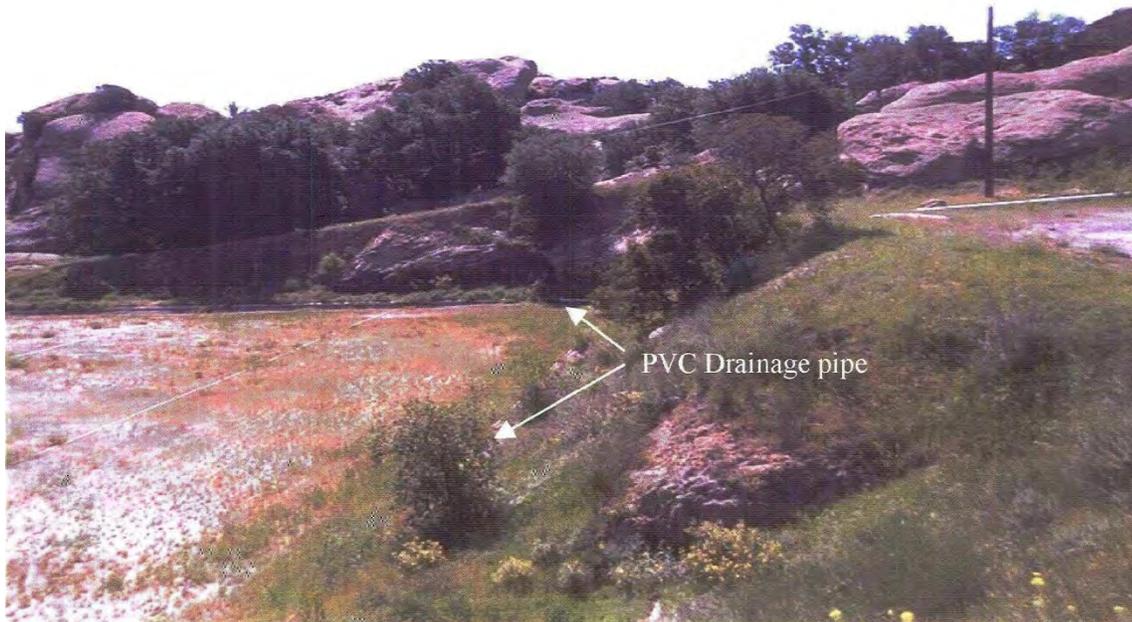
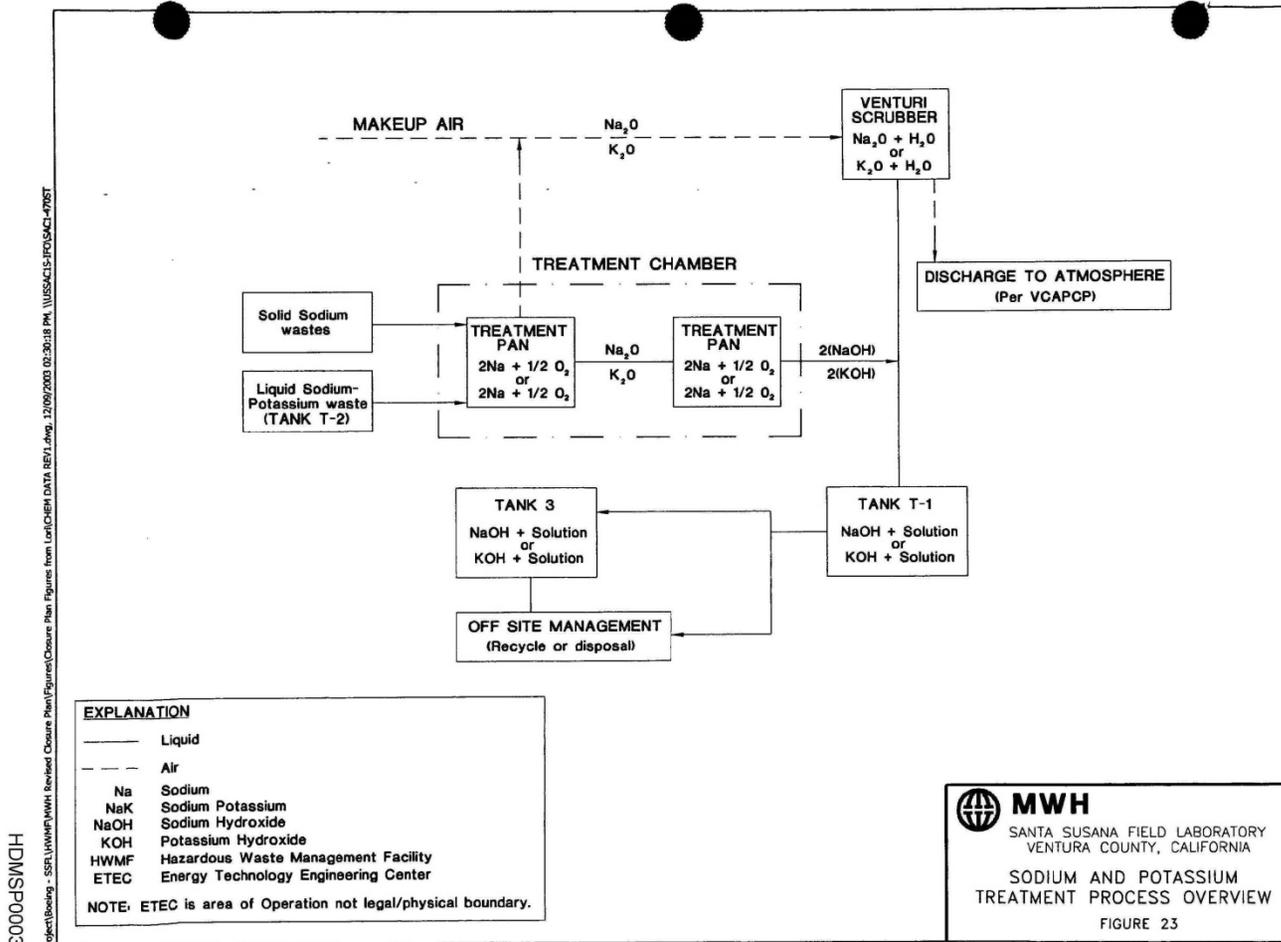
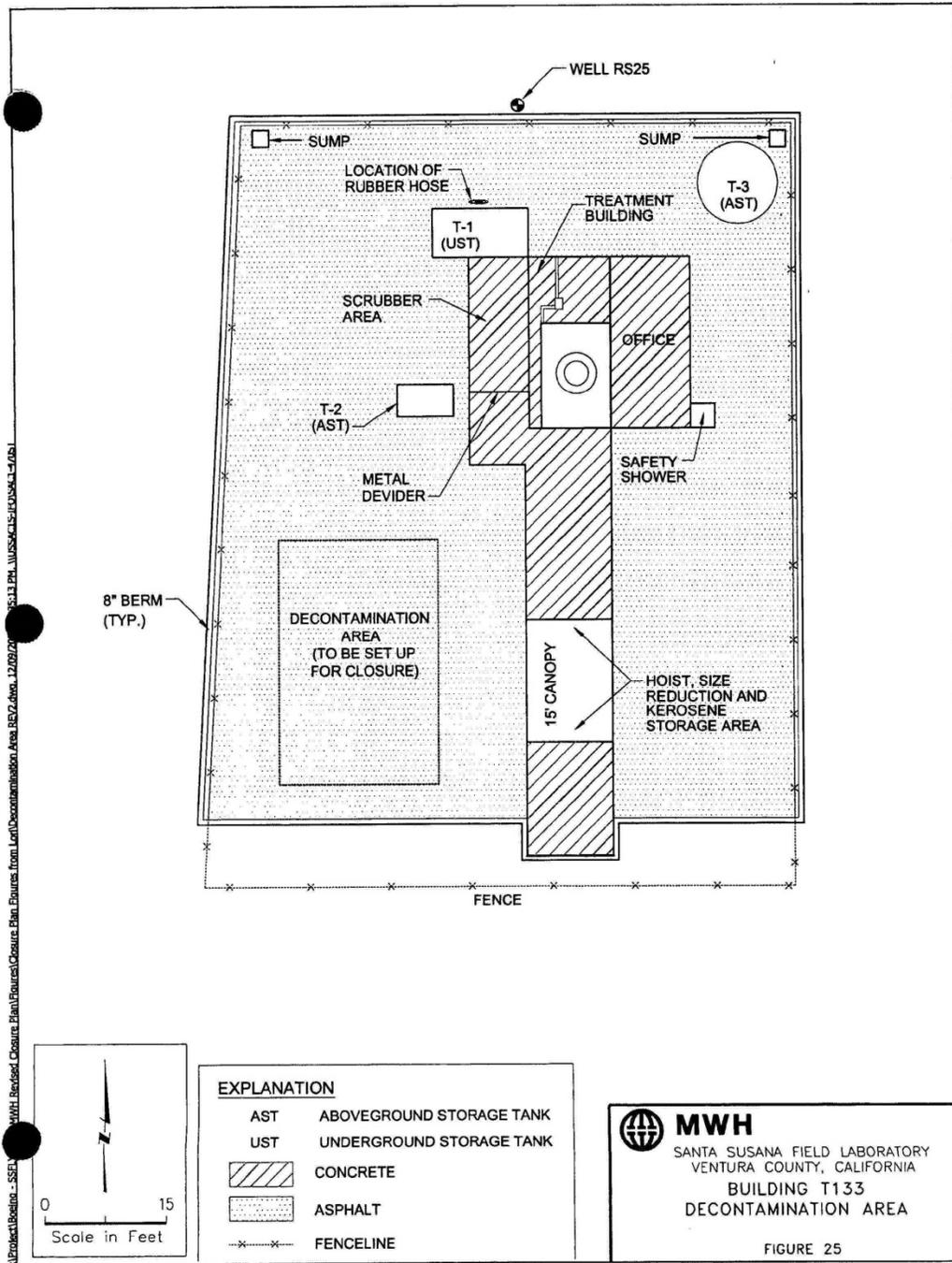


Figure 20 Photos for HWMF-T133 Area  
(from 2003 HWMF Closure Plan)



HDM/SP00036011  
 \\Project\Boring - SSF\SSF\HWMF\MWH\Review\Closure Plan\Figures from Leri\CHEM DATA REV1.dwg, 12/09/2003 03:30:18 PM, \\SSAC15-PROD\SAC1-4767

Figure 21 Sodium and Potassium Treatment Process Overview  
(from 2003 HWMF Closure Plan)



HDMSPO0036015

Figure 22-Building T133 Decontamination Area  
(from 2003 HWMF Closure Plan)

**APPENDIX C  
TABLES**

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**TABLE 1**  
**HWMF SPILL HISTORY**  
**HWMF Closure**  
**Santa Susana Field Laboratory Ventura County, California**

History of Spills at T133 Area				
Date	Release Description	Material Released	Estimated Volume (gallons)	Cleanup Response/Investigations
Oct-90	Faulty Flange at Tank T-3 . A release onto the ground surface occurred when solution was pumped from T-1 to T- 3. At the time T-3 was located outside the bermed area, just to the north of T133.	caustic solution	5 to 10	Contaminated soil was removed and transported off-site . T- 3 has since been placed inside the bermed area at the location noted on figure 18 (photo 9). This area will be further characterized under the 2007 COCA and 2010 AOC
16-Feb-89	Pin-hole leak from Tank T-3 (I assume from the Oct 90 description that the tank was located outside the bermed area).	caustic solution	10 to 230	This area will be further characterized under the 2007 COCA and 2010 AOC.
1-Sep-88	A PVC drain line between the treatment room and hydroxide tank (T-1) failed, releasing sodium hydroxide into a temporary drainage ditch on the north side of T133.	caustic solution	60	A cast iron pipe replaced the PVC drainage line . This area will be further characterized under the 2007 COCA and 2010 AOC.
Feb-May 1988				Soil and groundwater Investigation was conducted to address the previous releases. Well RS-25 was installed to evaluate shallow groundwater impact .
27-Nov-87	A spill occurred in the area immediately north of the HWMF 0 This area is proposed to be further characterized as part of bermed area as a result of a temporary tank placed at that location was used while tank T-1 was being refurbished .	caustic solution	6 to 30	This area will be further characterized under the 2007 COCA and 2010 AOC.
Apr-87	During the replacement of Tank T-3 soil samples were collected and pH measured between 10 to 11. (I assume from the Oct 90 description that the tank was located outside the bermed area).	caustic solution	Unknown	This area will be further characterized under the 2007 COCA and 2010 AOC.
Feb-86	An expandable plug worked loose from it's housing releasing 2 .4% hydroxide solution from an underground drain pipe into an asphalt paved 300-foot long flood control culvert. The culvert is located on the west side of Building 041 and south side of Building 043?	caustic solution	1,000	The culvert was flushed with additional water and vacuumed. This resulted in a recovered 2,500-gallons of 0 .02% solution. The drainage pipe was plugged at T133 after this incident. The culvert area will be further characterized as part of the 2007 COCA and 2010 AOC.
27-Sep-85	A spill occurred due to a faulty drain line. The exact location of this spill was not determined from the records reviewed. However, the likely areas for such a release to have occurred would be T-1, T-3 or the area between the treatment chamber and the tank T-1.	caustic solution	100- gallons	These areas will be further characterized as part of the closure plan.
13-Apr-84	A spill occurred due to a faulty drain line. The exact location of this spill was not determined from the records reviewed. The volume of material released suggests that the spill must have occurred near a caustic solution tank (T -1 or T- 3). At this time T-1 consisted of the concrete lined sump pit and T-3 was located north of the bermed area.	caustic solution	1,500- gallons	These areas will be further characterized as part of the closure plan.

Note : No spills were documented to have occurred at the T029 area as a result of operation as containerized storage for the HWMF .

**TABLE 2**  
**List of Chemicals of Concern (COC)**  
**Hazardous Waste Management Facility HWMF Closure**  
**Santa Susana Field Laboratory Ventura County, California**

Compound of Concern	Building T029 Waste Storage	Building T133 Waste Treatment	Comment
Sodium, potassium, pH	X	X	Caustic waste metals (Na and K) storage and treatment.
Metals : Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc	X	X	California Code of Regulations, Title 22 Metals List , to address storage and treatment of waste metals and potential corrosion of metal components of the treatment system .
Hexavalent Chromium		X	Detected in caustic solution at levels exceeding hazardous waste levels of 5 .0 mg/L.
Lithium	X	X	Documentation indicates lithium hydride was treated d at T133, therefore storage at T029 must also be considered
Zirconium	X	X	Documentation indicated zirconium was stored at T029 therefore treatment at T133 must also be considered .
Total Petroleum Hydrocarbons (TPH)		X	Due to use of kerosene and mineral oil as cutting g fluid at Building T133 only .
Polyaromatic Hydrocarbons (PAHs)		X	As part of kerosene and mineral oil, to be analyze d on TPH trigger basis T133 .
Aromatic Volatile Organics : Benzene, Toluene, Ethylbenzene and Xylenes (BTEX)		X	BTEX are part of TPH compounds . To be analyzed on TPH trigger basis .
Fluoride	X	X	Due to inclusion in Operation Plan, not withstanding g use, analyze on less frequent basis (10% of samples )

Compound of Concern	Building T029 Waste Storage	Building T133 Waste Treatment	Comment
Volatile Organic Compounds (VOCs)	X	X	Due to inclusion in Operation Plan, not withstanding g use, analyze on less frequent basis (10% of samples )
Semi- Volatile Organic Compounds (SVOCs)	X	X	Due to inclusion in Operation Plan, not withstanding g use, analyze on less frequent basis (10% of samples )

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**TABLE 3**  
**ANALYTICAL RESULTS SUMMARY FOR TANK T-1 AND TANK T-3 CONTENTS**  
**HWMF - Building T133 Tanks**  
**Santa Susana Field Laboratory Ventura County, California**

Analytes	1995 Tank Sludge Sampling		1997 Tank Water Sampling		
	Results	Units	Tank T-1	Tank T-3	Units
pH	12.8	pH Unit	---	---	---
Sodium Hydroxide	0.36	% by weight	---	---	---
Chloride	39	mg/L	---	---	---
Nitrate	4.5	mg/L	---	---	---
Antimony	6.3	mg/kg	<0.25	<0.25	mg/L
Arsenic	ND	mg/kg	<0.025	0.046	mg/L
Barium	57	mg/kg	5.4	<0.1	mg/L
Beryllium	ND	mg/kg	<0.025	<0.025	mg/L
Cadmium	14	mg/kg	0.88	<0.025	mg/L
Chromium	1500	mg/kg	110	81	mg/L
Cobalt	9.6	mg/kg	12	0.07	mg/L
Copper	180	mg/kg	13	0.81	mg/L
Lead	100	mg/kg	4.9	<0.25	mg/L
Mercury	16	mg/kg	0.034	<0.005	mg/L
Molybdenum	7.1	mg/kg	2.2	2.9	mg/L
Nickel	1400	mg/kg	390	0.98	mg/L
Selenium	ND	mg/kg	<0.025	<0.025	mg/L
Silver	29	mg/kg	0.37	<0.05	mg/L
Thallium	ND	mg/kg	<2	<0.5	mg/L
Vanadium	4.3	mg/kg	0.4	0.25	mg/L
Zinc	310	mg/kg	31	5.9	mg/L

mg/L = milligrams per liter

mg/kg = milligrams per kilogram

ND = not detected above reporting limit ; reporting limit not indicated on laboratory reports .

**TABLE 4**  
**CLOSURE AND SAMPLING OBJECTIVES**  
**T-029 - HAZARDOUS WASTE STORAGE BUILDING HWMF CLOSURE**  
**Santa Susana Field Laboratory Ventura County, California**

Wastes Potentially Managed : Sodium Metal (D003, D001), Sodium-Potassium-Alloy (D003, D001), Lithium Metal/Lithium Hydride (D002), Zirconium Hydride (D002), Sodium Hydroxide Solution (D002), Potassium Hydroxide Solution (D002), Mineral oil or Kerosene, Sodium Oxide (D003), Potassium Oxide (D003).

Materials/Media of Concern	Decontamination/Waste Characterization	Release Verification	Closure Objective	Sampling
<b>DECON WATER / RESIDUALS</b>				
Decontamination Water	X		Characterize decontamination water for waste disposal.	Water samples will be collected and analyzed for waste characterization criteria per methods presented in the site specific D&D work plan.
<b>EQUIPMENT STRUCTURES</b>				
Concrete Floor of Building and Concrete Pads Outside of Building	X	X	Analyze concrete samples for confirmation of decontamination, release verification and characterization for waste disposal.	Concrete samples will be collected. Exact locations and characterization criteria will be presented in site specific D&D work plan.
Building Walls	X		Characterize wall samples for confirmation of decontamination and for waste characterization.	Collect one wipe sample from each wall of the T029 building. Characterization criteria will be presented in site specific D&D work plan.
Asphalt Roadways		X	Characterization of this area on a random grid to determine if any releases of COCs have occurred due to storage of contained wastes outside of the building.	Borings will be cored along the roadway to provide asphalt samples at random and biased locations. Characterization criteria will be presented in site specific D&D work plan.

Note : \* VOCs and fluoride were identified in the Operations Plan, however , they have not been identified as COCs through use.

**TABLE 5  
 CLOSURE AND SAMPLING OBJECTIVES  
 T133 - HAZARDOUS WASTE TREATMENT BUILDING HWMF CLOSURE  
 Santa Susana Field Laboratory Ventura County, California**

Wastes Potentially Managed: Sodium Metal (D003, D001), Sodium-Potassium-Alloy (D003, D001), Lithium Metal/Lithium Hydride (D002), Zirconium Hydride (D002), Sodium Hydroxide Solution (D002), Potassium Hydroxide Solution (D002), Mineral Oil or Kerosene, Sodium Oxide (D003), Potassium Oxide (D003)

Materials/Media of Concern	Decontamination/Waste Characterization	Release Verification	Closure Objective	Sampling
<b>DECON WATER / RESIDUALS</b>				
Decontamination Water	X		Characterize decontamination water for waste disposal.	Water samples will be collected and analyzed for waste characterization criteria per methods presented in the site specific D&D work plan.
<b>EQUIPMENT STRUCTURES</b>				
Treatment Chamber Treatment Pan Steel Lining/Drain Pan Sump Lining	X		Decontamination Verification	Wipe samples will be collected from each wall and the ceiling of the treatment chamber; wipe samples will be collected from each of the other units - i.e. treatment pan, steel lining and sump lining.
Venturi Scrubber	X		Decontamination Verification	Collect one water sample from the venturi scrubber after it has been decontaminated.
Tank T-1	X		Characterize samples collected from T-1 for confirmation of decontamination and classification for waste disposal.	Collect one wipe sample from T-1.
Tank T-2	X		Characterize samples collected from T-2 for confirmation of decontamination and classification for waste disposal.	Collect one wipe sample from T-2.
Tank T-3	X		Characterize samples collected from T-3 for confirmation of decontamination and classification for waste disposal.	Collect one wipe sample from T-3.

Materials/Media of Concern	Decontamination/Waste Characterization	Release Verification	Closure Objective	Sampling
Miscellaneous Piping	X		Characterize samples collected from piping for confirmation of decontamination and classification for waste disposal.	Collect one wipe sample for each 50 ft. of linear pipe.
Concrete	X		Characterize samples collected from T-3 for confirmation of decontamination and classification for waste disposal.	Concrete samples will be collected. Exact locations and characterization criteria will be presented in site specific D&D work plan.

Note : \* VOCs and fluoride were identified in the Operations Plan, however , they have not been identified as COCs through use.

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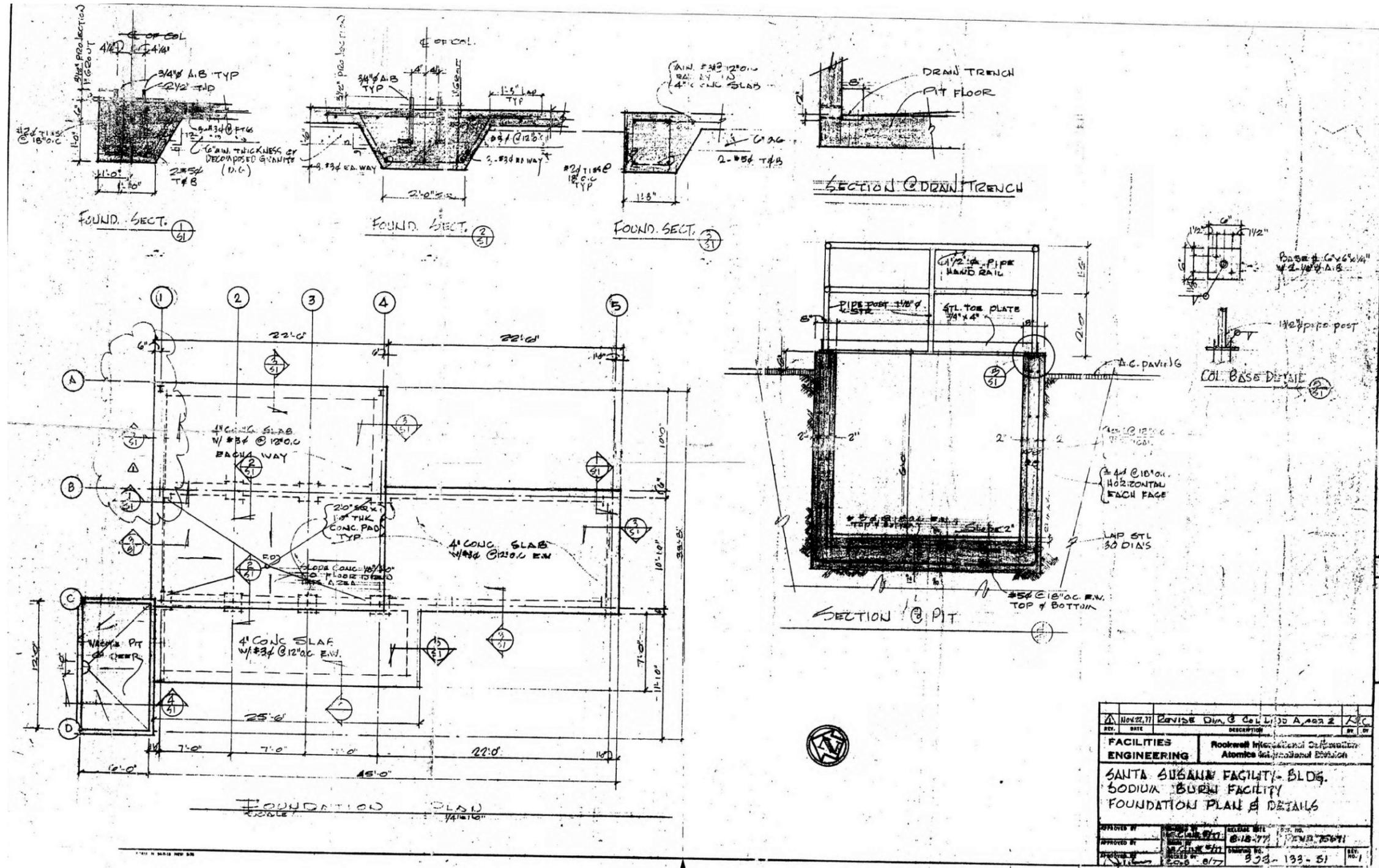
**APPENDIX D**  
**BUILDING T029 AND T133 CONSTRUCTION DRAWINGS,**  
**TANK T-1 SPECIFICATIONS AND PHOTOGRAPH OF TANK T-1**  
**INSTALLATION IN FORMER SUMP PIT EXCAVATION**

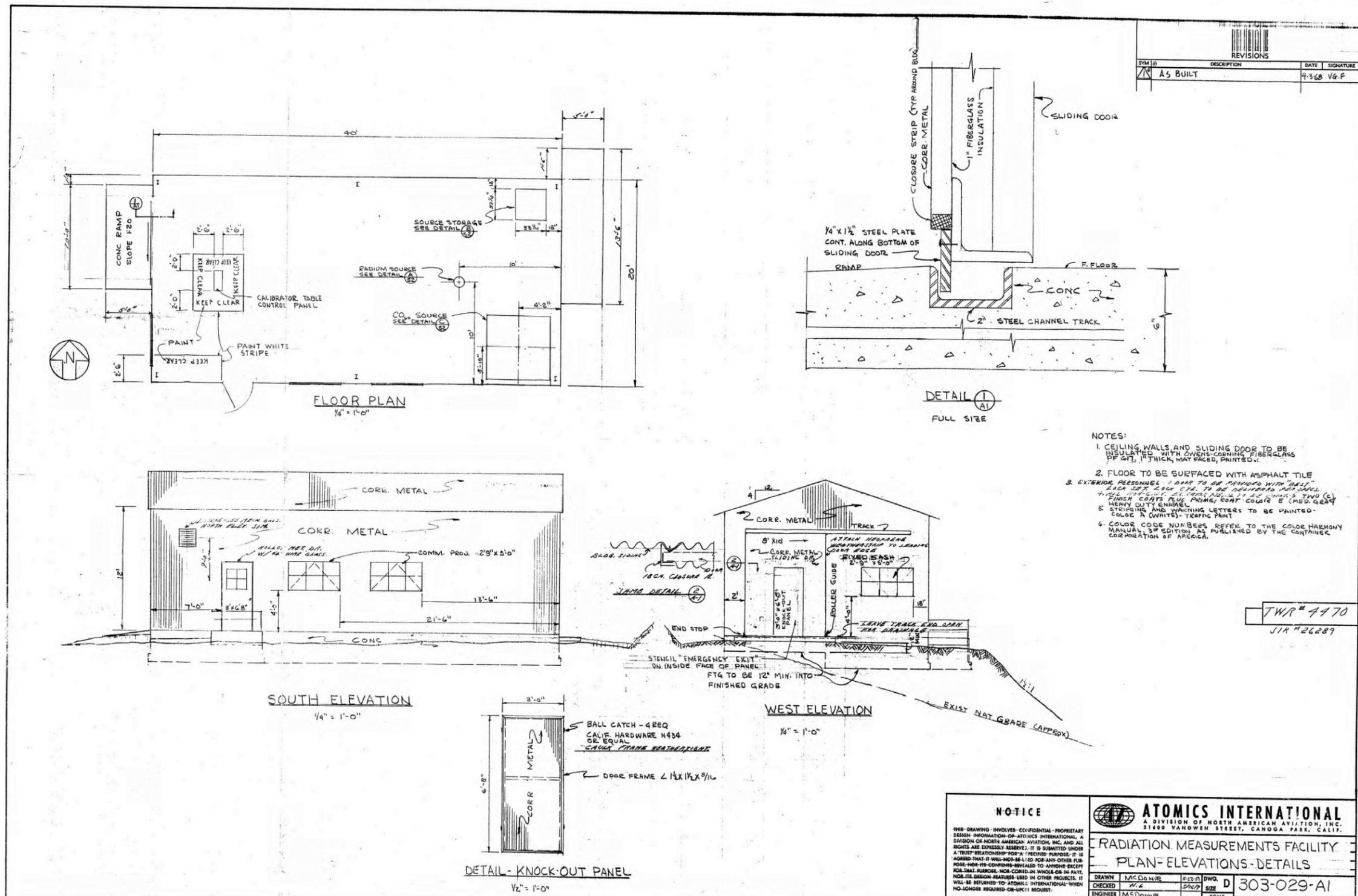
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HWMF Building T133 Tank T-1 Installation and Former Sump Pit Excavation  
(from 2003 HWMF Closure Plan)







**APPENDIX E**  
**BUILDING T133 CAUSTIC STORAGE TANK SLUDGE AND**  
**LIQUID ANALYSIS LABORATORY REPORTS**

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report



**Client:** Rocketdyne Div. of Boeing  
**Project:** Bld 133 Storage Tank/TAS# F-039  
**Sample Matrix:** Water

**Service Request:** L9702951  
**Date Collected:** 9/2/97  
**Date Received:** 9/3/97

Metals

**Sample Name:** 97090006-T3 TANK  
**Lab Code:** L9702951-002  
**Test Notes:**

**Units:** mg/L (ppm)  
**Basis:** NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes
Antimony, Total	EPA 3010	6010	0.05	5	9/8/97	9/9/97	<0.25	*
Arsenic, Total	EPA 3020	7060	0.005	5	9/8/97	9/9/97	0.046	
Barium, Total	EPA 3010	6010	0.02	5	9/8/97	9/9/97	<0.1	*
Beryllium, Total	EPA 3010	6010	0.005	5	9/8/97	9/9/97	<0.025	*
Cadmium, Total	EPA 3010	6010	0.005	5	9/8/97	9/9/97	<0.025	*
Chromium, Total	EPA 3010	6010	0.01	5	9/8/97	9/9/97	81	
Cobalt, Total	EPA 3010	6010	0.01	5	9/8/97	9/9/97	0.07	
Copper, Total	EPA 3010	6010	0.01	5	9/8/97	9/9/97	0.81	
Lead, Total	EPA 3010	6010	0.05	5	9/8/97	9/9/97	<0.25	*
Mercury, Total	METHOD	7470	0.001	5	9/9/97	9/9/97	<0.005	*
Molybdenum, Total	EPA 3010	6010	0.02	5	9/8/97	9/9/97	2.9	
Nickel, Total	EPA 3010	6010	0.04	5	9/8/97	9/9/97	0.98	
Selenium, Total	EPA 3020	7740	0.005	5	9/8/97	9/8/97	<0.025	*
Silver, Total	EPA 3010	6010	0.01	5	9/8/97	9/9/97	<0.05	*
Thallium, Total	EPA 3010	6010	0.1	5	9/8/97	9/9/97	<0.5	*
Vanadium, Total	EPA 3010	6010	0.01	5	9/8/97	9/9/97	0.25	
Zinc, Total	EPA 3010	6010	0.02	5	9/8/97	9/9/97	5.9	

\* MRL is elevated because of matrix interferences and because the sample required diluting.

Approved By:  
1544021397

*Eydie Schwartz*

Date: 9/16/97

6925 Canoga Avenue ■ Canoga Park, CA 91303 ■ (818) 587-5550 ■ Fax (818) 587-5555

HDMSP00036395

DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
DIVISION OF HAZARDOUS SUBSTANCES REGULATION  
**HAZARDOUS WASTE MANIFEST**  
P.O. Box 12820, Albany, New York 12212

Form Approved, OMB No. 2050-0039. Ex

Please print or type. Do not staple.

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA No. CA 3 8 9 0 0 19 0 10 0 1 9 8 0 0 4	Manifest Document No.	2. Page 1 of 1	Information in the S is not required by F
3. Generator's Name and Mailing Address U.S. DOE c/o Boeing NA, Rocketdyne 6633 Canoga Ave. P. O. Box 7922 Canoga Park, CA 91309			State Manifest Document No. NY 8717938	4. Generator's Phone (818) 586-6043 MS/T038	
5. Transporter 1 (Company Name) Franks Vacuum Truck Service, INC.			6. US EPA ID Number NY D 9 8 2 1 7 9 2 8 4 1	7. Transporter 2 (Company Name)	
9. Designated Facility Name and Site Address Laidlaw Env. Services (BDT) 4256 Research Pkwy. Clarence, N. Y. 14031			10. US EPA ID Number NY D 0 0 0 1 6 3 2 3 7 2	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)			12. Containers	13. Total Quantity	14. Unit (Wt/Vol)
a. <del>Waste</del> Waste Alkali metal alloys, liquid, n.o.s., 4.3, UN 1421, I, (metal articles containing sodium potassium) D003 RQ			0 0 2	DIM	0 0 2 9 2 P
b. Waste sodium mixture, 4.3, UN 1428, I, (calcium carbonate and sodium), D003 RQ			0 0 3	DIM	0 0 1 2 2 P
c. Waste sodium mixture, 4.3, (9), UN 1428, I, (sodium, asbestos), D003 RQ			0 0 2	DIM	0 0 5 9 4 P
J. Additional Descriptions for Materials listed Above			K. Handling Codes for Wastes		
a. #2153-2			c. #2153-4		
b. #2153-3			d.		
15. Special Handling Instructions and Additional Information Wear proper personal protective equipment when handling. 24 hours emergency telephone number: (818) 586-2351 - Contact: Brian Sujata DOT Emergency Response Guidebook # a) 138; b) 138; c) 138					
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national regulations and state laws and regulations. If I am a large quantity generator, I certify that I have program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method treatment, storage, or disposal currently available to me which minimizes the present and future health and the environment; OR if I am a small generator, I have made a good faith effort to minimize waste and select the best waste management available to me and that I can afford.					
Printed/Typed Name TIMOTHY A. DAVIS			Signature <i>Timothy A. Davis</i>		
17. Transporter 1 (Acknowledgement of Receipt of Materials) Printed/Typed Name MARQUIS, JAMES V.			Signature <i>James V. Marquis</i>		
18. Transporter 2 (Acknowledgement of Receipt of Materials) Printed/Typed Name			Signature		
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. Printed/Typed Name					
Signature					

In case of emergency or spill immediately call the National Response Center (800) 424-8802 and the N.Y. Dept. of Environmental Conservation (518) 457-7362.

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

COPY 1—Disposer State—Mailed by TSD Facility

HDMSP00036394

Rockwell International, Rocketdyne Div.  
(818) 586-5827 D/392 SS21

Log Number  
**95010362**

TO: Gilbert Fuentes D/025-000 T133 382-5039

Report Date: 02/03/95

**SAMPLE INFORMATION FOR 95010362**

Sample Description: Sodium Hydroxide Sludge

Requested Analysis: Title 22 Metals

Sampler: V. Murphy

Sampler ID#: 13311895T1

Received: 01/18/95

Sampled: 01/18/95

ANALYTE	RESULT	UNITS	METHOD/SOURCE
Antimony	6.3	mg/kg	6010, SW-846
Arsenic	ND	mg/kg	6010, SW-846
Barium	57	mg/kg	6010, SW-846
Beryllium	ND	mg/kg	6010, SW-846
Cadmium	14	mg/kg	6010, SW-846
Chromium	1500	mg/kg	6010, SW-846
Cobalt	9.6	mg/kg	6010, SW-846
Copper	180	mg/kg	6010, SW-846
Lead	100	mg/kg	6010, SW-846
Mercury	16	mg/kg	7471, SW-846
Molybdenum	7.1	mg/kg	6010, SW-846
Nickel	1400	mg/kg	6010, SW-846
Selenium	ND	mg/kg	6010, SW-846
Silver	29	mg/kg	6010, SW-846
Thallium	ND	mg/kg	6010, SW-846
Vanadium	4.3	mg/kg	6010, SW-846
Zinc	310	mg/kg	6010, SW-846

FAX 5035  
58  
TO: Gil Fuentes

SPECIFICATION: Title 22 (Hazardous Waste for TFLC, ICP)

SPECIAL NOTES: Inorganic Persistent and Bioaccumulative Toxic Substances, Sec. 66699

COMMENTS:

APPROVED: MDP  
Rocketdyne SSFL Analytical Chemistry

SIGNED: AS  
Rocketdyne SSFL Analytical Chemistry

HDMSP00036393

**SSFL ANALYTICAL CHEMISTRY, EPA #CA183**  
Rockwell International, Rocketdyne Div.  
(818) 586-5827 D/392 SS21

Log Number  
95010363

TO: Gilbert Fuentes D/025-000 T133 382-5039

Report Date: 01/30/95

SAMPLE INFORMATION FOR 95010363

Sample Description: Sodium Hydroxide Sludge \*  
Requested Analysis: pH, Chloride, Nitrate, & NaOH  
Sampler: V. Murphy Sampler ID#: 13311895T1  
Received: 01/18/95  
Sampled: 01/18/95

ANALYTE	RESULT	UNITS	METHOD/SOURCE
Chloride	39	mg/L	Ion Chromatography
Nitrate	4.5	mg/L	Ion Chromatography
pH	12.8	pH unit	std meth 16ed #423
Sodium Hydroxide	0.36	% by wt.	acid-base titration

SPECIFICATION: DNA (Hazardous Waste)  
SPECIAL NOTES: Limits not specified by requester

COMMENTS:

APPROVED: A. C. Han  
Rocketdyne SSFL Analytical Chemistry

SIGNED: S. N. [Signature]  
Rocketdyne SSFL Analytical Chemistry

HDMSP00036392

**SSFL ANALYTICAL CHEMISTRY, EPA #CA183**

Rockwell International, Rocketdyne Div.  
(818) 586-5827 D/392 SS21



Log Number  
97040223

TO: Rocketdyne Environmental Protection  
Requester: Brian Sujata D/543-000 SS14 586-6043

Report Date: 04/25/97

SAMPLE INFORMATION FOR 97040223

Sample Description: Tank 206, Bldg 361

Requested Analysis: pH

Sampler: P. Pollock

Sampler ID#: PP4987

Received: 04/23/97

Sampled: 04/23/97

ANALYTE	RESULT	UNITS	MDL	METHOD/SOURCE
pH	8.8	pH unit	DNA	std meth 18ed #4500H

SPECIFICATION: DNA

SPECIAL NOTES: Limits not specified by requester

COMMENTS:

APPROVED: A.C. Han  
Rocketdyne SSFL Analytical Chemistry

SIGNED: S. N. de la Rosa  
Rocketdyne SSFL Analytical Chemistry

HDMSP00036391

Rockwell International, Rocketdyne Div.  
(818) 586-5827 D/392 SS21

Log Number  
**95010362**

TO: Gilbert Fuentes D/025-000 T133 382-5039

Report Date: 02/03/95

**SAMPLE INFORMATION FOR 95010362**

Sample Description: Sodium Hydroxide Sludge

Requested Analysis: Title 22 Metals

Sampler: V. Murphy

Sampler ID#: 13311895T1

Received: 01/18/95

Sampled: 01/18/95

ANALYTE	RESULT	UNITS	METHOD/SOURCE
Antimony	6.3	mg/kg	6010, SW-846
Arsenic	ND	mg/kg	6010, SW-846
Barium	57	mg/kg	6010, SW-846
Beryllium	ND	mg/kg	6010, SW-846
Cadmium	14	mg/kg	6010, SW-846
Chromium	1500	mg/kg	6010, SW-846
Cobalt	9.6	mg/kg	6010, SW-846
Copper	180	mg/kg	6010, SW-846
Lead	100	mg/kg	6010, SW-846
Mercury	16	mg/kg	7471, SW-846
Molybdenum	7.1	mg/kg	6010, SW-846
Nickel	1400	mg/kg	6010, SW-846
Selenium	ND	mg/kg	6010, SW-846
Silver	29	mg/kg	6010, SW-846
Thallium	ND	mg/kg	6010, SW-846
Vanadium	4.3	mg/kg	6010, SW-846
Zinc	310	mg/kg	6010, SW-846

FAX 5035  
58  
TO: Gil Fuentes

SPECIFICATION: Title 22 (Hazardous Waste for TTLC, ICP)

SPECIAL NOTES: Inorganic Persistent and Bioaccumulative Toxic Substances, Sec. 66699

COMMENTS:

APPROVED: MD [Signature]  
Rocketdyne SSFL Analytical Chemistry

SIGNED: [Signature]  
Rocketdyne SSFL Analytical Chemistry

HDMSP00036390

**SSFL ANALYTICAL CHEMISTRY, EPA #CA183**

Rockwell International, Rocketdyne Div.  
(818) 586-5827 D/392 SS21

Log Number  
**95010363**

TO: Gilbert Fuentes D/025-000 T133 382-5039

Report Date: 01/30/95

SAMPLE INFORMATION FOR 95010363

Sample Description: Sodium Hydroxide Sludge \*  
Requested Analysis: pH, Chloride, Nitrate, % NaOH  
Sampler: V. Murphy Sampler ID#: 13311895T1  
Received: 01/18/95  
Sampled: 01/18/95

ANALYTE	RESULT	UNITS	METHOD/SOURCE
Chloride	39	mg/L	Ion Chromatography
Nitrate	4.5	mg/L	Ion Chromatography
pH	12.8	pH unit	std meth 16ed #423
Sodium Hydroxide	0.36	% by wt.	acid-base titration

SPECIFICATION: DNA (Hazardous Waste)  
SPECIAL NOTES: Limits not specified by requester

COMMENTS:

APPROVED: A. C. Han  
Rocketdyne SSFL Analytical Chemistry

SIGNED: S. N. Lopez  
Rocketdyne SSFL Analytical Chemistry

HDMSP00036389

**SSFL ANALYTICAL CHEMISTRY, EPA #CA183**

Rockwell International, Rocketdyne Div.  
(818) 586-5827 D/392 SS21



Log Number  
97040223

TO: Rocketdyne Environmental Protection  
Requester: Brian Sujata D/543-000 SS14 586-6043

Report Date: 04/25/97

SAMPLE INFORMATION FOR 97040223

Sample Description: Tank 206, Bldg 361

Requested Analysis: pH

Sampler: P. Pollock

Sampler ID#: PP4987

Received: 04/23/97

Sampled: 04/23/97

ANALYTE	RESULT	UNITS	MDL	METHOD/SOURCE
pH	8.8	pH unit	DNA	std meth 18ed #4500H

SPECIFICATION: DNA

SPECIAL NOTES: Limits not specified by requester

COMMENTS:

APPROVED: A.C. [Signature]  
Rocketdyne SSFL Analytical Chemistry

SIGNED: S.P. [Signature]  
Rocketdyne SSFL Analytical Chemistry

HDMSP00036388

**SSFL ANALYTICAL CHEMISTRY, EPA #CA183**

Rockwell International, Rocketdyne Div.  
(818) 586-5827 D/392 SS21

Log Number  
97040219

TO: Rocketdyne Environmental Protection  
Requester: Brian Sujata D/543-000 SS14 586-6043

Report Date: 04/25/97

SAMPLE INFORMATION FOR 97040219

Sample Description: Tank 207, Bldg 361

Requested Analysis: pH

Sampler: P. Pollock

Sampler ID#: PP4991

Received: 04/23/97

Sampled: 04/23/97

ANALYTE	RESULT	UNITS	MDL	METHOD/SOURCE
pH	9.1	pH unit	DNA	std meth 18ed#4500H

SPECIFICATION: DNA

SPECIAL NOTES: Limits not specified by requester

COMMENTS:

APPROVED: A. C. [Signature]  
Rocketdyne SSFL Analytical Chemistry

SIGNED: S. P. [Signature]  
Rocketdyne SSFL Analytical Chemistry

HDMSPP00036387

**SSFL ANALYTICAL CHEMISTRY, EPA #CA183**

Rockwell International, Rocketdyne Div.  
(818) 586-5827 D/392 SS21



Log Number  
97040219

TO: Rocketdyne Environmental Protection  
Requester: Brian Sujata D/543-000 SS14 586-6043

Report Date: 04/25/97

SAMPLE INFORMATION FOR 97040219

Sample Description: Tank 207, Bldg 361  
Requested Analysis: pH  
Sampler: P. Pollock

Sampler ID#: PP4991

Received: 04/23/97  
Sampled: 04/23/97

ANALYTE	RESULT	UNITS	MDL	METHOD/SOURCE
pH	9.1	pH unit	DNA	std meth 18ed#4500H

SPECIFICATION: DNA  
SPECIAL NOTES: Limits not specified by requester

COMMENTS:

APPROVED: A.C. [Signature]  
Rocketdyne SSFL Analytical Chemistry

SIGNED: S.P. [Signature]  
Rocketdyne SSFL Analytical Chemistry

HDMSP00036386

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Rocketdyne Div. of Boeing  
**Project:** Bld 133 Storage Tank/TAS# F-039  
**Sample Matrix:** Water

**Service Request:** L9702951  
**Date Collected:** 9/2/97  
**Date Received:** 9/3/97

Metals

**Sample Name:** 97090005-T1 TANK  
**Lab Code:** L9702951-001  
**Test Notes:**

**Units:** mg/L (ppm)  
**Basis:** NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Digested	Date Analyzed	Result	Result Notes
Antimony, Total	EPA 3010	6010	0.05	5	9/8/97	9/9/97	<0.25	*
Arsenic, Total	EPA 3020	7060	0.005	5	9/8/97	9/9/97	<0.025	*
Barium, Total	EPA 3010	6010	0.02	5	9/8/97	9/9/97	5.4	
Beryllium, Total	EPA 3010	6010	0.005	5	9/8/97	9/9/97	<0.025	*
Cadmium, Total	EPA 3010	6010	0.005	5	9/8/97	9/9/97	0.88	
Chromium, Total	EPA 3010	6010	0.01	5	9/8/97	9/9/97	110	
Cobalt, Total	EPA 3010	6010	0.01	5	9/8/97	9/9/97	12	
Copper, Total	EPA 3010	6010	0.01	5	9/8/97	9/9/97	13	
Lead, Total	EPA 3010	6010	0.05	5	9/8/97	9/9/97	4.9	
Mercury, Total	METHOD	7470	0.001	5	9/9/97	9/9/97	0.034	
Molybdenum, Total	EPA 3010	6010	0.02	5	9/8/97	9/9/97	2.2	
Nickel, Total	EPA 3010	6010	0.04	5	9/8/97	9/9/97	390	
Selenium, Total	EPA 3020	7740	0.005	5	9/8/97	9/8/97	<0.025	*
Silver, Total	EPA 3010	6010	0.01	5	9/8/97	9/9/97	0.37	
Thallium, Total	EPA 3010	6010	0.1	5	9/8/97	9/9/97	<2	*
Vanadium, Total	EPA 3010	6010	0.01	5	9/8/97	9/9/97	0.40	
Zinc, Total	EPA 3010	6010	0.02	5	9/8/97	9/9/97	31	

\* MRL is elevated because of matrix interferences and because the sample required diluting.

Approved By: *Epidie Schwarz*

Date: 9/10/97

6925 Canoga Avenue ■ Canoga Park, CA 91303 ■ (818) 587-5550 ■ Fax (818) 587-5555

HDMSP00036396

**APPENDIX F**  
**HAZARDOUS WASTE MANIFESTS FROM HWMF, 1997**

DRAFT

State of California—Environmental Protection Agency  
Form Approved OMB No. 2050-0039 (Expires 9-30-94)  
Please print or type. Form designed for use on elite (12-pitch) typewriter.

See Instructions on back of page 6. Department of Toxic Substances Sacramento

Information in the sh is not required by Fe

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. CA1D10100612919712	Manifest Document No. 91710011	2. Page 1 of 1
3. Generator's Name and Mailing Address BOEING NA ROCKET DYNE DIV 8633 CANOGA AVE P.O. BOX 7922 CANOGA PARK, CA 91309				
4. Generator's Phone (818) 586.6043 T436 5514				
5. Transporter 1 Company Name LAW KAW ENV CO.		6. US EPA ID Number CA907461A000008121		
7. Transporter 2 Company Name		8. US EPA ID Number		
9. Designated Facility Name and Site Address 21 ST. CENTURY EMI 2095 NEWLANDS DR. E FARLEY, NY 89408		10. US EPA ID Number NV10191810819151318		
11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)		12. Containers	13. Total	14. Unit
a. RD. WASTE CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. B, UN3267, UN3268, II (Sodium Hydroxide solution) (D002, D007)		No. Type	Quantity	Wt/Vol
			0011T	091500 G
b.				
c.				
d.				
15. Special Handling Instructions and Additional Information Wear proper personal protective equipment when handling. 24 HOUR EMERGENCY RESPONSE TELEPHONE NUMBER: 818.586.2351 EMERGENCY RESPONSE GUIDEBOOK NUMBER: 154 CONTACT: BRIAN SUJATA WAS # RDM-1002 PROFILE F90-0024				
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable federal, state and international laws.  If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present threat to human health and the environment, OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select waste management method that is available to me and that I can afford.				
Printed/Typed Name BRIAN SUJATA Co. Boeing NA Rocketdyne		Signature <i>Brian Sujata</i>		Month 01/21
17. Transporter 1 Acknowledgement of Receipt of Materials				
Printed/Typed Name Jack L Sheffield		Signature <i>Jack L Sheffield</i>		Month 01/21
18. Transporter 2 Acknowledgement of Receipt of Materials				
Printed/Typed Name		Signature		Month
19. Discrepancy Indication Space				
20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.				
Printed/Typed Name DEBRA L CURRIER		Signature <i>Debra L Currier</i>		Month 01/21

93046072  
GENERATOR  
IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802. WITHIN CALIFORNIA, CALL 1-800-852-7521

DO NOT WRITE BELOW THIS LINE.

DTSC 8022A (7/92)  
EPA 8700-22

Rec'd  
3/11/97  
JTB

Yellow: TSDF SENDS THIS COPY TO GENERATOR WITHIN 30 DAY (Generators who submit hazardous waste for transport out-of-state produce completed copy of this copy and send to DTSC with

HDMSPP00036398



48-14-1 (9/94)-71

STATE OF NEW YORK  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
DIVISION OF HAZARDOUS SUBSTANCES REGULATION  
**HAZARDOUS WASTE MANIFEST**  
P.O. Box 12820, Albany, New York 12212 Form Approved OMB No. 2050-00

Please print or type. Do not staple.

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA No. <b>CA004-13-0713</b>	2. Page 1 of 1	Information is not required
3. Generator's Name and Mailing Address		6. US EPA ID Number <b>CA0000003121</b>		
4. Generator's Phone		7. Transporter 1 (Company Name) <b>Light Environmental Services, TCA Inc</b>		
5. Transporter 1 (Company Name)		8. US EPA ID Number <b>NY0980769972</b>		
6. US EPA ID Number		9. Designated Facility Name and Site Address <b>HAZMAT ENVIRONMENTAL GP INC</b>		
7. Transporter 2 (Company Name)		10. US EPA ID Number <b>NY0000632372</b>		
8. US EPA ID Number				
9. Designated Facility Name and Site Address				
10. US EPA ID Number				
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)		12. Containers	13. Total Quantity	14. Unit
a. <b>RED WASTE 2 DUMMIES UN 178.5, DANGLE RIG WITH METAL (METAL) LUGS CONTAINING SODIUM WITH 458 SRMS LASKETS</b>		No. <b>001</b>	<b>DM203</b>	<b>57 P</b>
b.		Type		
c.				
d.				
15. Special Handling Instructions and Additional Information				
Emergency Contact (951) 576-2251				
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper name, classification, packing group, hazard class and ID number, and are in all respects in proper condition for transport by highway according to applicable international and national regulations and state laws and regulations.				
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be technically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future health and the environment; OR if I am a small generator, I have made a good faith effort to minimize my waste and select the best waste management available to me and that I can afford.				
Printed/Typed Name		Signature		
<b>Donald Carr</b>		<b>Donald Carr</b>		
17. Transporter 1 (Acknowledgement of Receipt of Materials)				
Printed/Typed Name		Signature		
<b>Donald Carr</b>		<b>Donald Carr</b>		
18. Transporter 2 (Acknowledgement or Receipt of Materials)				
Printed/Typed Name		Signature		
<b>Donald Carr</b>		<b>Donald Carr</b>		
19. Discrepancy Indication Space <b>Gen. ID - same as site address</b>				
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.				
Printed/Typed Name		Signature		
<b>John T. Klager</b>		<b>John T. Klager</b>		

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

In case of emergency or spill immediately call the National Response Center (800) 424-6802 and the N.Y. Dept. of Environmental Conservation (518) 457-7362.

COPY 5 - Generator - mailed by TSD facility

HDMSPP00036400