RCRA Closure Plan
Radioactive Materials Handling Facility
Buildings 4021, 4022, and 4621
ETEC
Santa Susana Field Laboratory, Area IV
Ventura County, California

Revision 0

Approved:

Program Manager

07/16/15
Date

REVISION HISTORY

Revision No.	Effective Date	Sections Affected	Description
0	07/16/15	All	Baseline document.

CONTENTS

DEFINITIONS

ACRONYMS

ACM	Asbestos Containing Material
AI	Atomics International
ALARA	As Low As Reasonably Achievable
AOC	Administrative Order of Consent
CA DSH-RHB	California Department of Health Services-Radiological Health Branch
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CO	Consent Order for Corrective Action
D&D	Decontamination and Decommissioning
DM	Decommissioned Materials
DOE	Department of Energy
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
FFCAct	Federal Facilities Compliance Act
NAA	North American Aviation
NASA	National Aeronautical and Space Administration
ORM	Other Regulated Materials

PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Feasibility Study
RMHF	Radioactive Materials Handling Facility
SRAIP	Soils Remedial Action Implementation Plan
SSFL	Santa Susana Field Laboratory
STP	Site Treatment Plan
SWPPP	Stormwater Pollution Protection Plan

EXECUTIVE SUMMARY

This document presents the Resource Conservation and Recovery Act (RCRA) Closure Plan for Buildings 4021, 4022, 4621 and the adjacent Outside Mixed Waste Storage Area which are located within the Radioactive Materials Handling Facility (RMHF). These units are operating under a RCRA Part A Permit for Interim Storage and Treatment Units. The RMHF is located within the former Energy Technology Engineering Center (ETEC) of Area IV of the Santa Susana Field Laboratory (SSFL) in Ventura County, California.

The RMHF infrastructure is owned by the Department of Energy (DOE), with the land being owned and the facility being previously operated by The Boeing Company. 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.

The RMHF has been in a safe shutdown mode since May 2007 and is currently inactive.

The RMHF was constructed in 1958 to manage radioactive waste generated at ETEC and was operational for nearly fifty years. These operations included processing, packaging, and temporary storage of radioactive waste materials for offsite disposal at DOE approved facilities. The radioactive waste included uranium, plutonium, mixed fission products such as cesium-137 (Cs-137), strontium-90 (Sr-90) and activation products such as cobalt-60 (Co-60), europium-152 (Eu-152), and tritium (H-3). The RMHF operated in its original capacity until research at ETEC involving radioactive materials was completed in 1988. Beginning in 1989, DOE began to focus efforts on completing radiological site clean-up at Area IV and the decommissioning and demolition (D&D) of ETEC facilities. As the D&D of ETEC buildings and subsequent removal of radioactive materials approaches completion, the RMHF has been progressively deactivated.

The RMHF, specifically Buildings 4021, 4022 and 4621 (and the adjacent outside storage yard) operated under a Part A (Interim Status) RCRA permit for the storage and treatment of mixed waste as granted by the California EPA Department of Toxic Substance Control (DTSC). Mixed waste contains both radioactive and chemical constituents. As such, mixed wastes are subject to separate regulatory requirements for their respective radioactive and chemical components. The DOE is authorized by the Atomic Energy Act to regulate the radioactive component of mixed waste and the DTSC is authorized by RCRA to regulate the chemical component.

This Closure Plan was originally prepared by Haley and Aldrich; a contractor for the Boeing Company, and submitted to DTSC in 2006. It has undergone initial DTSC review but was never approved as final by the regulatory agency based on the suspension of D&D activities until completion of an Environmental Impact Statement (EIS) for Area IV. North Wind's current contract for ETEC Closure activities with the DOE includes the revision and completion of this Closure Plan in preparation for D&D of ETEC facilities. Ten buildings and structures currently comprise the RMHF; however, the specific units subject to the RCRA Closure requirements described in this plan consist of three units: Building 4021- previously used for treatment;

Building 4022 - currently used for waste storage, and Building 4621 - also previously used for waste storage which includes the adjacent outdoor, asphalt- paved area.

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 purpose of this closure plan is to outline the proposed plan to meet DTSC's closure standards for the chemical component of the mixed wastes managed at the RMHF through the performance of closure activities in a manner that keeps exposure to ionizing radiation As Low As Reasonably Achievable (ALARA) pursuant to DOE requirements. The desired outcome of the removal action is an RMHF footprint that meets radiological standards of protectiveness for unrestricted use.

In August 2007, the California DTSC entered into a Consent Order for Corrective Action (CO) 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 CO 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

Facility Name:	Radioactive Materials Handling Facility (RMHF)
EPA ID No:	CA3 890 090 001
Facility Address:	Santa Susana Field Laboratory 5800 Woolsey Canyon Road Canoga Park, California 91304
Mailing Address:	North Wind, Inc. 1425 Higham Street Idaho Falls, ID 83402
Contact Person:	Brad Frazee, Program Manager
Facility Operator:	North Wind, Inc. 1425 Higham Street Idaho Falls, ID 83402 208-528-8718
Facility Owner:	U.S. Department of Energy 4100 Guardian Street, Suite 160 Simi Valley, CA 93063 Mr. John Jones (805) 416-0992 john.jones@emcbc.doe.gov
Preparer of Closure Plan:	North Wind, Inc. 1425 Higham Street Idaho Falls, ID 83402
Nature of Business:	The RMHF was constructed in 1959 for the safe storage and handling of new and irradiated nuclear fuel and other radioactive materials from the ETEC as well as other DOE. These operations included processing, packaging, and temporary storage of radioactive waste materials for offsite disposal at DOE approved facilities. The RMHF operated in this capacity for approximately 50 years. In 1989, the RMHF was authorized under the Federal RCRA for the storage and treatment of mixed wastes generated at ETEC. When the DOE-sponsored activities at ETEC began to focus on the D&D of the ETEC facilities, the RMHF was dedicated to the exclusive support of D&D activities at SSFL. In this capacity, only radioactive and mixed wastes were managed at the RMHF. As the D&D of ETEC and subsequent removal of radioactive materials approaches completion, the RMHF has been progressively deactivated. In 1989, the RMHF was authorized by Environmental Protection Agency (EPA) for the storage of mixed wastes in containers at three specific locations: Building 4021, Building 4022, and Building 4621

	and its associated outdoor asphalt-paved storage yard. The treatment of wastes was limited to the small-scale neutralization of acids and waste stabilization at Building 4021. ETEC is a government-owned complex of buildings. It is located within Area IV of the Santa Susana Field. Area IV is owned by Boeing but some of the structures are owned by the federal government and administered by the DOE on land leased from Boeing. The RMHF, located in Area IV, is administered by DOE, who is also responsible for the soil cleanup within Area IV. Shortly after the passage of the Atomic Energy Act in 1946, North American Aviation, Inc. (NAA; a predecessor to The Boeing Company) set up an organization to investigate and pursue business opportunities in nuclear power development. The NAA nuclear group became the Atomics International Division (AI) of NAA in 1955. When AI needed a remote site for nuclear reactor development, it took over part of the SSFL (Area IV) for this work. At one time, AI research and development facilities included 10 nuclear research reactors, 7 critical facilities, a "Hot Laboratory," the Nuclear Materials Development Facility, the Radioactive Materials Handling Facility (RMHF), and various ancillary test and storage areas. As a result of AI activities, several facilities contain radioactive and chemical contamination. In 1984, AI was merged into the Rocketdyne Division. Rocketdyne operated all parts of the SSFL, including the Former AI and ETEC facilities until 1996 when Rocketdyne was acquired by The Boeing Company. In 2005, The Rocketdyne Division, excluding SSFL was sold to United Technologies Company. The Boeing Company retained ownership of the SSFL and the land that the ETEC is located on. Research involving radioactive materials was completed in 1988. Since that time DOE- sponsored activities have focused on the D&D of the AI facilities and the offsite disposal of the wastes. The RMHF was dedicated to the exclusive support of the D&D activities at SSFL, including the treatment and storage of radiological wastes and mixed wastes. Treatment activities included elementary neutralization, stabilization, and size reduction. All waste received at the RMHF were subsequently shipped offsite for proper disposal. As of 2015, the RMHF continues to be operated under Interim Status (Part A). Interim status is required for the storage and treatment of the small quantities of mixed waste (waste containing both hazardous and radioactive constituents) resulting from D&D activities that previously

	occurred at ETEC. The final disposition of mixed waste is addressed under the DOE and DTSC- approved Site Treatment Plan (STP), which is authorized by the Federal Facilities Compliance Act (FFCAct). Currently there are no mixed wastes at RMHF. The RMHF has been in a safe shutdown mode since May 2007 and is inactive. It is being decommissioned with demolition potentially planned within the next several years.
Environmental Permits:	The RMHF operates under a Part A (Interim Status) RCRA permit for the storage and treatment of mixed waste. A copy of the original Part A Permit Application 24 October 1997 as authorized by the Department of Toxic Substances Control in the Interim Status Authorization Letter received by Boeing in December 1997 is provided in Appendix A. No other environmental permits licenses, registrations, or authorizations have been specifically issued or assigned to the RMHF. It should be noted that the RMHF was never permitted; just operated under the Interim Status (Part A). No wastes have been present at the RMHF since 2007 when it was designated in safe shutdown mode (May 2007). In August 2007, the California DTSC entered into a Consent Order 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 EIR, pursuant to the CEQA. In 2006, DOE submitted a revised closure plan for the RMHF (October 2006 [Revised January 2007]). Then, on May 23, 2007, DTSC issued a letter, in response to a Federal District Court for the Northern District of California's ruling, notifying DOE that review of the of the RMHF Closure Plan (October 2006 [Revised January 2007]) will be suspended until DOE completes an EIS. In response to DTSC's letter, DOE submitted a letter requesting a schedule extension for D&D activities and placed the RMHF in a safe and stable configuration and has been conducting maintenance, 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 RMHF closure plan is approved by DTSC. In January 2014, the Class I permit was modified to change the RMHF Operator from Boeing to North Wind. The DTSC then entered into an AOC in December 2010 that further defined and made more specific DOE's obligations with respect to soils at the site. This AOC 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. 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.
Certification:	**CERTIFICATION** "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 fine and imprisonment for knowing violations."
Signature:	All permit applications shall be signed as follows: (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; (2) for a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or (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: (A) the chief executive officer of the agency, or (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). _____ 06/16/15 Brad Frazee, COO (North Wind) Date _____ John Jones, U.S. Department of Energy Date

2. FACILITY LOCATION

2.1 Size

The Radioactive Materials Handling Facility (RMHF) was constructed in 1959 with the primary purpose of the treatment and storage of radioactive and mixed waste, which was generated at various radiological facilities within Area IV at the former ETEC. It was operated for approximately 50 years. The facility includes 10 buildings with ancillary structures and paved areas.

The RMHF has an area of approximately 1.5 acres (approx. 69,000 ft^2), and is located within the former ETEC at 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, as well as the boundaries of the RMHF, are shown in Figure 1 (Appendix B), with a more detailed layout of the RMHF shown in Figure 2 (Appendix B).

2.2 Topographic Map

Land use within a one-mile radius of the RMHF is depicted in Figure 3 (Appendix B). The only development within a one-mile radius of the RMHF is the infrastructure of the SSFL. According to the Ventura County General Plan (2014), the majority of the land surrounding the RMHF is considered "open space".

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 RMHF 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 RMHF, 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 RMHF 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 RHMF 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 RMHF was designed and constructed in 1959 for the safe storage and handling of new and irradiated nuclear fuel and other radioactive materials from ETEC as well as other DOE locations. In 1989, the RMHF was authorized under the Federal RCRA for the storage and treatment of mixed wastes generated at ETEC. The RMHF was authorized for the storage of mixed wastes in containers at three specific locations: Building 4021, Building 4022, and Building 4621 and its associated outdoor asphalt-paved storage yard. The treatment of wastes was limited to the small-scale neutralization of acids and waste stabilization at Building 4021.

The RMHF operated in its original capacity until research at ETEC involving radioactive materials was completed in 1988. When the DOE-sponsored activities at ETEC began to focus on the D&D of the ETEC facilities, the RMHF was dedicated to the exclusive support of these D&D activities. In this capacity, only radioactive and mixed wastes were managed at the RMHF. As the D&D of ETEC and subsequent removal of radioactive materials approaches completion, the RMHF has been progressively deactivated.

The entire RMHF facility is paved with either concrete or bituminous asphalt, and is occupied by buildings with concrete foundations. There are currently 10 numbered structures at the RMHF: Building 4021, Building 4022, Building 4621 and the adjacent storage yard, Building 4075, Building 4044, Building 4563, Building 4665, Building 4688, Building 4034, and Building 4658.

This Closure Report focuses on the storage units at the RMHF that operate under Interim Status – Buildings 4021, 4022 and 4621 and the asphalt-paved, storage yard around 4621. Available "as-built" plans for RMHF structures are provided in Appendix D. Table 1 in Appendix C provides a list of the units that were typically utilized in the treatment and storage of mixed wastes.

3.1 Building 4021

Building 4021 is approximately 2,778 ft^2 in size and consists of a packaging room, a decontamination room with a work area, a hot and cold change room, and a laundry room. Building construction is steel frame with sheet steel roofing and sides. The floor is a concrete slab on grade. There is a paved area between Buildings 4021 and 4022, as shown on Figure 4 in Appendix B, which serves to house the ductwork for the two buildings' ventilation system. Current and past photographs of Building 4021 are included in Appendix E.

Historical activities conducted within Building 4021 consisted of the treatment of small quantities of mixed waste, as well as the handling and processing of low-level radioactive wastes. Treatment was typically performed on a bench-scale basis and consisted of elementary neutralization and stabilization to meet RCRA Land Disposal Restriction requirements for offsite disposal. A list of equipment used to carry out the approved treatment of mixed waste is provided in Table 2, Appendix C.

A portion of Building 4021 was also used to house the non-hazardous, radioactive liquid storage and evaporation system. The system was used to manage non-hazardous wastewaters resulting from decontamination operations such as rinsing and steam cleaning. Floor drains inside the building lead to an intermediate 300-gallon holding tank housed in a lined, subterranean vault. The system was designed to pump liquids that accumulate in the holding tank through a filter system in Building 4021 to the 8,000- gallon in Building 4022. The non-hazardous liquid was subsequently pumped back to the evaporator unit in Building 4021 on a demand basis.

3.1.1 Elementary Neutralization

Elementary neutralization was performed in Building 4021 on a small scale, batch basis within one of two fume hoods. The treatment equipment typically consisted of a magnetic stirring stand, graduated burette or similar apparatus to measure and introduce the neutralizing liquid, and a two- liter, borosilicate beaker or similar container that held the waste to be neutralized. The mixture was stirred and the pH monitored using a pH meter to confirm when neutralization was successfully completed. Equipment was rinsed and the rinsate collected into the same container that held the neutralized waste. The neutralized waste was subsequently stabilized prior to offsite disposal. The maximum permitted treatment capacity of the batch elementary neutralization process was five (5) gallons of waste per day.

3.1.2 Stabilization and Amalgamation

Waste stabilization was conducted on the mixed waste in order to meet state and federal land disposal restrictions (land ban) requirements. Stabilization was also performed to solidify waste oil. A special form of stabilization known as amalgamation was the treatment process used for high mercury-content mixed waste. This treatment technology is specified in the state land ban regulations in 22 CCR 66268.40. Following stabilization, the waste was sent offsite for disposal.

Three types of equipment were used for waste stabilization. Small quantities of waste were stabilized or amalgamated in five gallon containers. During this process, waste was poured into the container and the appropriate quantities of water and stabilizing or amalgamating material were added. Mixing was accomplished using hand-held equipment, such as a hand drill equipped with a paint stirring attachment.

Larger quantities of waste were stabilized in the containers associated with either a commercial-type concrete mixer or a barrel-style mixer. After stabilization was complete, the waste was subsequently transferred to appropriate containers, such as 55-gallon open head drums, for offsite disposal. The equipment was decontaminated with clean water after each use and the rinsate was collected, stabilized and managed appropriately. Prior to conducting any stabilization activities, the area floor drain was covered to prevent the migration of spills. The maximum permitted treatment capacity for stabilization was 55 gallons per day.

3.2 Building 4022

Building 4022 is 3,910 ft^2 in size and consists of a high bay building with below grade storage vaults. Building construction is steel frame with sheet steel sides and roofing. The below grade portion of the building is constructed of reinforced concrete and consists of seven individual, air-cooled vaults for the storage of radioactive and mixed waste. A Floor Plan for Building 4022 is provided in Figure 5 (Appendix B) with current and past photographs of the exterior present in Appendix E.

The vaults vary in size from 7.5-ft wide x 24.5-ft long to 17.5-ft wide x 25-ft long with 30-inch thick concrete walls. The vaults vary from 11.5-ft to 20-ft in depth and are accessible through removable, 30-inch thick magnetite concrete cover blocks. All seven vaults have a common drain system which is routed to a below-grade sump. Liquids historically captured in the sump were pumped into the facility's radioactive liquid handling system.

Although the design capacity of the storage vaults exceeded the permitted storage capacity, the volume of waste was monitored through administrative controls to ensure that the amount in storage did not exceed the permitted storage capacity. The typical volume of waste historically stored in the vaults was 50 cubic yards of containerized waste. Mixed wastes stored in the vaults were double contained, with the typical volume based on the primary container volume.

Vault 1 and Vaults 3 through 7 were used for the storage of mixed waste and low-level radioactive waste. The storage of mixed waste in these vaults was consistent with the DOE policy of reducing personnel exposure to ALARA. Vault 2 was used to house an 8,000 gallon non-hazardous radioactive liquid storage tank.

3.3 Building 4621 and Outdoor Mixed Waste Storage Yard

Building 4621 and the adjacent Outdoor Mixed Waste Storage Yard were used for the storage of low-activity, containerized mixed waste. Security fencing is present around the perimeter of the yard and building. Building 4621 is 614 ft^2 in size and is constructed with a steel frame, sheet steel sides and roofing. The floor is a concrete slab-on-grade. Building 4621 was used for the storage of liquid mixed waste in 55-gallon drums on pallets with spill containment. Metal boxes containing dry mixed waste were stored outside in the storage yard area along with large roll-off metal bins containing dry mixed waste. No waste containers were opened nor were wastes otherwise transferred or handled in the outdoor mixed storage yard. The outdoor storage yard was used solely for the storage of closed containers pending shipment offsite. Photographs of the area are present in Appendix E.

Building 4621 and the Mixed Waste Storage Yard are surrounded by a berm which was constructed to, in conjunction with the slope of the RMHF, direct a spill not immediately controlled to the stormwater catch basin located immediately west of the RMHF. An additional intent of the catch basin was to contain the potential spread of any radioactive material should an accidental release occur during routine handling of containers. The basin

was equipped with a remote monitoring system having radioactivity- and high-liquid-level alarms that sound directly in the RMHF office and the SSFL Security Control Center. The stormwater catch basin had a capacity of approximately 30,000 gallons. Currently stormwater runoff from the RMHF is collected in an aboveground storage tank located just west of the RMHF. The stormwater is tested, treated, and disposed of as part of Boeing's stormwater management program.

4. HAZARDOUS WASTE CONSTITUENTS

Mixed wastes typically stored at the RMHF fall into the following categories: inorganics, organics, organic liquids containing inorganic constituents, waste acids containing metals, solidified oil containing F-listed wastes, asbestos, and used oil. Table 3 in Appendix C presents a list of the hazardous waste constituents that were typically stored and treated at the RMHF.

Since 1989, the RMHF has been solely used for the exclusive support of D&D activities, which involve conducting initial radiation surveys, installing protective equipment (air locks, tenting, shielding, temporary ventilation systems), removing contaminated materials and equipment, decontaminating external sources, conducting final verification surveys, and packaging waste for shipment.

During D&D activities at ETEC, potential hazardous wastes that may be generated include lead-based paint, asbestos containing materials, solvents, oils, and greases. These wastes would be generated during pre-demolition abatement activities. Prior to demolition, samples of suspect hazardous materials will be collected in each structure and sent offsite to an approved analytical laboratory. Once confirmed and properly characterized, all hazardous materials will be abated from a structure and packaged in accordance with regulatory requirements. Temporary waste storage areas will be set up as needed at designated locations while waste is being properly characterized for disposition offsite.

5. ESTIMATE AND MANAGEMENT OF MAXIMUM INVENTORY

During the period of time that treatment and storage operations were taking place in Buildings 4021, 4022 and 4621, the maximum permitted storage capacity for mixed waste was the equivalent of 200 cubic yards in 200 containers. After wastes were stabilized at the RMHF, they were subsequently shipped to an approved mixed waste disposal facility offsite. Table 4 in Appendix C provides a representative list of equipment that was used for treatment.

6. FACILITY CLOSURE

6.1 Objectives

The objective of this Closure Plan is 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 4021, 4022 and 4621 and all structures at the RMHF, 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, and no exposure to ionizing radiation and releases of radioactive materials remain. These objectives are to be obtained for the building structures only; the characterization and remediation of the soils and groundwater at the RMHF are being managed under the Corrective Action RFI program discussed earlier in this document; where DOE is required to prepare and submit a Soils Remedial Action Implementation Plan (SRAIP).

In parallel with DOE removing the RMHF from service as a hazardous waste facility through this DTSC-approved closure plan, DOE will remove the RMHF from all radiological service (i.e., mixed waste, low-level radioactive waste service) through its D&D program. These DOE activities are being independently undertaken by DOE under its exclusive Atomic Energy Act? jurisdiction. Compliance with DOE's D&D requirement that residual radioactivity be reduced to a level that permits release of the RMHF site for unrestricted use is not a requirement for facility closure pursuant to this Closure Plan.

All activities required to meet Interim Status closure requirements for hazardous waste facilities are subject to DTSC's jurisdiction. Some closure activities may be sequenced to D&D activities subject only to DOE jurisdiction. Specifically, in any area subject to the closure requirements, the chemical cleanup under the Closure Plan may take place following pre-demolition radiological release under the D&D program.

6.1.1 Role of the California Department of Health Services during Closure Activities

In 2002, the Governor of California issued a moratorium on the disposal of waste materials originating from former radiological facilities that passed the approved numerical release criteria but potentially contained amounts of manmade radioactivity above background. These materials were defined as "Decommissioned Materials" (DM) and were no longer permitted to be disposed of in Class III or unclassified (unlined) waste disposal sites. Under the Governor's moratorium, the materials below the release criteria from a demolished former radiological facility can only be disposed of at a Class I or Class II disposal waste facility when they have zero radiological activity present above background levels.

DOE has established a process for identifying materials that fall within the category of decommissioned materials. These processes will be detailed in the Waste Management Plan that will be prepared as part of the D&D Work Plan Package. Processes will include procedures to

ensure that contamination levels are below the designated criteria, completed by surveys and sample collection/analysis. Resulting documentation will be provided to the CA DHS-RHB. The CA DHS-RHB will perform a verification survey, provide written concurrence, and all waste will be scheduled for transport and disposition at a licensed and permitted low level radiological waste (LLRW) or low level mixed waste (LLMW) facility. General Approach to Closure

The general approach to facility closure is to reduce the chemical hazards to levels that can be safely managed with minimal exposure to personnel or impacts to the environment prior to dismantlement. The dual characteristics of the mixed waste historically present at the RMHF Interim facilities presents a set of unique considerations relative to the techniques and methods that are best suited for the closure. Essentially, the methods used for closure must meet the intent of, and achieve the performance goals for hazardous waste and hazardous waste constituents pursuant to facility closure requirements for Interim Status Facilities in 22 CCR, Division 4.5, Chapter 15; and, the methods used for closure of the RMHF must ensure that exposures to ionizing radiation and releases of radioactive materials are reduced to ALARA pursuant to DOE requirements. Figure 6 in Appendix B presents the general flow for the Closure and D&D process planned for the RMHF Interim facilities.

6.2 Closure Process

Progression of the closure of Buildings 4021, 4022 and 4621 will follow the general sequence discussed below:

- Step 1) Initial closure/pre-demo activities, including completion and approval of stormwater 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

While this Closure Plan specifically is prepared for the Interim Facilities at the RMHF (Buildings 4021, 4022 and 4621), additional demolition may be ongoing concurrently for the remaining structures at the RMHF as part of the overall closure of the facility. This Closure Plan will be incorporated as an Appendix to the Facility- or Building-Specific D&D Work Plans that will be prepared as part of the controlling work package for the D&D phase of the work.

6.2.1 Preparation of Controlling Documents

The principal controlling documents that will outline the detailed methodology for the closure of the RMHF 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 DOE Procedure for Demolition of Facilities in Area IV submitted to DTSC in 2011 will be referenced as well.

The performance of closure activities in DOE radiologically-controlled areas or on equipment, buildings, structures or other areas contaminated with DOE radioactive materials will be defined in multiple documents, which include radiological management plans, standard operating procedures, and the detailed D&D work plans. In addition, 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 step-by-step procedures that outline 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 and/or radiological materials, underground utilities, feature tracking
- 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

Other plans and documents that will be prepared as part of the D&D Work Package will include, but are not limited to:

- SWPPP
- Safety and Health Program
- Radiological Control Plan
- Activity Hazard Analyses for all identified work tasks
- Asbestos Abatement Plan
- Quality Assurance Project Plan
- Waste Management Plan
- Waste Transportation Plan

6.2.2 Mobilization and Site Setup

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.

6.2.3 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 RMHF. 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.

6.2.3.1 Radiation Survey

Focused radiological waste surveys will be conducted on residual equipment, materials, the building structures and areas of asphalt paving of 4021, 4022 and 4621 to delineate existing radiological contamination. After surveys are complete, the waste will be scheduled for transport and disposition at a licensed and permitted LLRW or LLMW facility. Initially and during the course of the closure process, it will be necessary to survey any remaining building contents and the actual structures for radiological contamination. The results of the survey will be used to estimate the effort required to reach DOE release criteria (below NUREG 1.86 rad levels), as well as to safely manage any materials determined to contain radiological contamination, including building debris.

6.2.3.2 Residual Waste Characterization Survey

A visual inspection of Buildings 4021, 4022 and 4026, including the areas surrounding the structures as well as any 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. Details on verification sampling are discussed in Section 8.0 of this Closure Plan.

6.2.3.3 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.

6.2.3.4 Land Survey

The purpose of the land survey is to ensure that locations of improvements are recorded and documented. A land survey of the RMHF 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 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 stormwater runoff.

6.2.3.5 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 other regulated materials (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.

6.3 Decontamination/Removal of Non-Essential Equipment and Existing Waste

Step 4 of the closure process will include decontamination of any radiological contamination identified in Step 3, if deemed feasible. This step will also include the removal of any existing waste that may have been stored in Building 4022 during other ongoing demolition and the removal of any remaining ancillary equipment that is non-essential for use in the closure of the buildings. Removal, packaging and disposition will follow the requirements of the approved Waste Management Plan.

Decontamination activities will be conducted according to the decontamination procedures described in Section 7.0 of this Closure Plan, while verification sampling for chemical constituents is discussed in Section 8.0.

6.3.1 Determination of Disposition for the RMHF Waste

Due to the history of the activities within the RMHF as controlled radiological area, all waste material present and generated during D&D will be dispositioned as LLRW or LLMW at a licensed and permitted facility in accordance with all local, state and federal requirements. Demolition and Disposition of Waste

6.3.2 Demolition

After all activities in Steps 1 – 5 have been completed, Step 6 of the closure process is to initiate demolition of the buildings and structures. 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.

Above-grade, structural components of the buildings will be demolished prior to removal of building foundations or asphalt and concrete pavement.

6.3.3 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.

6.3.3.1 Estimated Volume of Waste Generated During Closure of the RMHF

The estimated volume of waste and demolition debris that are anticipated to be generated during closure of Buildings 4021, 4022 and 4621 of the RMHF are presented in Table 5 in Appendix C.

No soil waste will be generated during the D&D activities. All activities associated with soil will be addressed in the Soil Corrective Action Program being completed by DOE.

6.3.3.2 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.

6.3.3.3 Waste Accumulation

Hazardous wastes that are generated during the closure and demolition activities associated with Buildings 4021, 4022 and 4621 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.

6.3.3.4 Designated Disposal Facilities

Wastes debris generated during closure will be shipped offsite and outside of California for disposal. Hazardous or mixed waste and debris will be shipped to authorized, offsite hazardous or mixed waste facilities, as appropriate using Uniform Hazardous Waste Manifests. Low level radioactive waste and debris will be shipped to an appropriately authorized/licensed offsite low level radioactive waste facility outside of California.

Table 6 identifies the designated disposal facilities to which debris and wastes generated during Closure are expected to be shipped.

7. HAZARDOUS WASTE DECONTAMINATION PROCEDURES

This Section provides general information on proposed decontamination procedures techniques that will be used during the closure of the RMHF Interim facilities. Additional detail regarding the actual decontamination techniques will be included in the Quality Assurance Project 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.

7.1 Decontamination Procedures for Areas, Buildings or Structures

If hazardous chemical waste is identified during the initial Closure surveys discussed in Section 6.3.3 and chemical decontamination is required or deemed feasible to allow waste to be characterized differently, micro-decontamination procedures will be used to the fullest extent practicable. Micro-decontamination will mitigate the volume of decontamination wastes that are generated and, more specifically, the volume of decontamination liquids that are generated. Areas identified during residual waste characterization surveys as having residual chemical contamination will be decontaminated using micro-decontamination procedures. The rationale for using micro-decontamination techniques is supported by the following:

- Micro-decontamination is consistent with the waste minimization requirements of DOE Order 435.l for radioactive waste.
- Gross decontamination procedures such as steam cleaning of an entire building would generate larger, unnecessary volumes of potentially mixed waste.

If it is determined that decontamination is necessary and feasible for an area or portion of a building or structure, one of the micro-decontamination procedures listed below will be followed:

- Wipe cleaning the immediate area that has been affected by a release.
- Limited steam (or water washing, etc.) cleaning of the affected area.
- Manually isolating and removing the affected area and managing as a mixed waste.

Selection of the most appropriate decontamination technique will be determined in the field. In instances where decontamination is selected and conducted, verification sampling and analysis, as described in Section 8.0 of this Closure Plan, will be used to confirm that the area has been properly decontaminated.

7.2 Decontamination of Equipment

The following provisions have been made to decontaminate equipment during closure of the RMHF Interim 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.

7.3 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 within the RMHF 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.

7.4 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.

7.5 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 complied 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 RMHF Interim Facility closure field records.

8. FINAL CONFIRMATION

After demolition, visual verification will be performed to ensure and document that all debris associated with Buildings 4021, 4022, and 4621 and the asphalt yard has been removed and shipped for disposal

9. SOIL SAMPLING

No soil sampling will be conducted during the D&D of the RMHF Interim facility structures. The 2010 AOC outlines the actions that will be taken by DOE related to soil investigation, characterization, and remediation.

As a result of this Order, any information regarding and pertinent to soil 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 8.0 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 RMHF 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 AOC and the 2010 CO.

11. PERFORMANCE STANDARDS

The goal of this Closure Plan is to achieve closure of the RMHF Interim Facilities 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 Interim Facilities, 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 is a safe status, so that future characterization and remedial activities associated with the soil and groundwater programs can be continued.

12. CLOSURE COST ESTIMATE

Closure cost requirements for Interim Status facilities are located in 22 CCR, Chapter 15,Article 8. However, 22 CCR 66265.140(c) stipulates that state and federal governments are exempt from Article 8.

The RMHF is owned by the United States Department of Energy and is exempt from the requirement to prepare a cost estimate for closure.

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 RMHF 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

The overall radiological decontamination, decommissioning and demolition of the RMHF Interim Facilities involves the removal of Buildings 4021, 4022, 4621 and the Outdoor Mixed Waste Storage Yard, as well as their foundations and utilities and the surrounding pavement. The effort to remove the RMHF occurs concurrently with the RCRA Facility closure effort described in this Closure.

Radiological contamination is likely to exist in all of the Interim Facilities. To protect human health and the environment, work practices will be developed and outlined in the Radiological Control Plan, developed as part of the D&D Work Package documents, to maintain worker radioactive material exposure to ALARA. The work practices necessary to safely decontaminate and demolish these facilities are expected to require a period to time normally expected for the completion of closure activities.

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.

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 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 RMHF Interim Facilities.

15.2 Closure Certification

If D&D activities occur within the timeframe of North Wind's management contract of ETEC, North Wind will manage and perform field oversight to confirm that D&D activities are performed in accordance with all state, local and federal guidelines, DTCS-approved DTSC-approved closure procedures and all approved plans are followed. Following completion of all tasks, the North Wind will prepare a report that will include the following information:

- 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
- 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 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 not only the Interim Facilities; but the RMHF as a whole. 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 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 location of the RMHF until closure activities have been completed.

17. SITE SECURITY

The RMHF is surrounded by an 8-foot chain link fence topped with barbed wire. Access to the RMHF is controlled by locked gates and monitored foot traffic entry.

In addition, access to the location of the RHMF can only be achieved by gaining access to the SSFL. The SSFL is surrounded by fencing and access to the private SSFL road system is controlled by a security checkpoint at the entrance to SSFL, which is manned 24 hours a day. Security personnel conduct routine surveillance of the SSFL, including the RMHF.

After each shift during D&D activities, all heavy equipment will be placed in designated locations and keys removed. Covers will be placed over waste containers, if present.

Site Supervision will ensure that all gates are locked and all personnel accounted for prior to leaving the site.

18. REFERENCES

The Boeing Company, "2014 Annual Groundwater Monitoring Report", February 2015

MWH Americas, Inc. "Standard Operating Procedures: Building Feature Evaluation and Sampling, Revision 1" June 2009.

The Boeing Company, "Radioactive Materials Handling Facility Decontamination and Decommissioning Engineering Evaluation/Cost Analysis" June 2007.

MWH Americas, Inc. Standardized Risk Assessment Methodology (SRAM) Work Plan, Santa Susana Field Laboratory, Ventura County, California. Revision 2, Final. September 2005.

MWH, 2003. 'Technical Memorandum: Geology and Hydrogeology of the Eastern Simi Hills Study Area, Santa Susana Field Laboratory, Ventura County, California" September 2003.

Ventura County Planning Division "2014 Ventura County General Plan"

APPENDIX A
1997 Part A Application and Interim Status

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. GS6-EPA-01

For EPA Regional Use Only

Date Received
Month Day Year

EPA
United States Environmental Protection Agency
Washington, DC 20460

Hazardous Waste Permit Application Part A

(Read the instructions before starting)

I. Installation's EPA ID Number *(Mark 'X' in the appropriate box)*

[ ] A. First Part A Submission

[X] B. Part A Amendment # Four

C. Installation's EPA ID Number: CA3890090001

D. Secondary ID Number *(If applicable)*:

II. Name of Facility: BOEING NA INC. ETEC RMHF

III. Facility Location *(Physical address not P.O. Box or Route Number)*

A. Street: TOP OF WOOLSEY CANYON ROAD

Street *(Continued)*:

City or Town: SIMI HILLS

State: CA

Zip Code: 93063-

County Code (If known): 056

County Name: VENTURA

B. Land Type (Enter code): P

C. Geographic Location

LATITUDE (Degrees, minutes, & seconds): 34 13 46 N

LONGITUDE (Degrees, minutes & seconds): 118 42 30 W

D. Facility Existence Date
Month Day Year: 01 01 95 8

IV. Facility Mailing Address

Street or P.O. Box: 6633 CANOGA AVE (PO BOX 7922)

City or Town: CANOGA PARK

State: CA

Zip Code: 91309-7922

V. Facility Contact *(Person to be contacted regarding waste activities at facility)*

Name *(Last)*: GABLER

(First): MARK

Job Title: DIRECTOR

Phone Number *(Area Code and Number)*: 818-586-5326

VI. Facility Contact Address *(See instructions)*

A. Contact Address
Location [ ] Mailing [X] Other [ ]

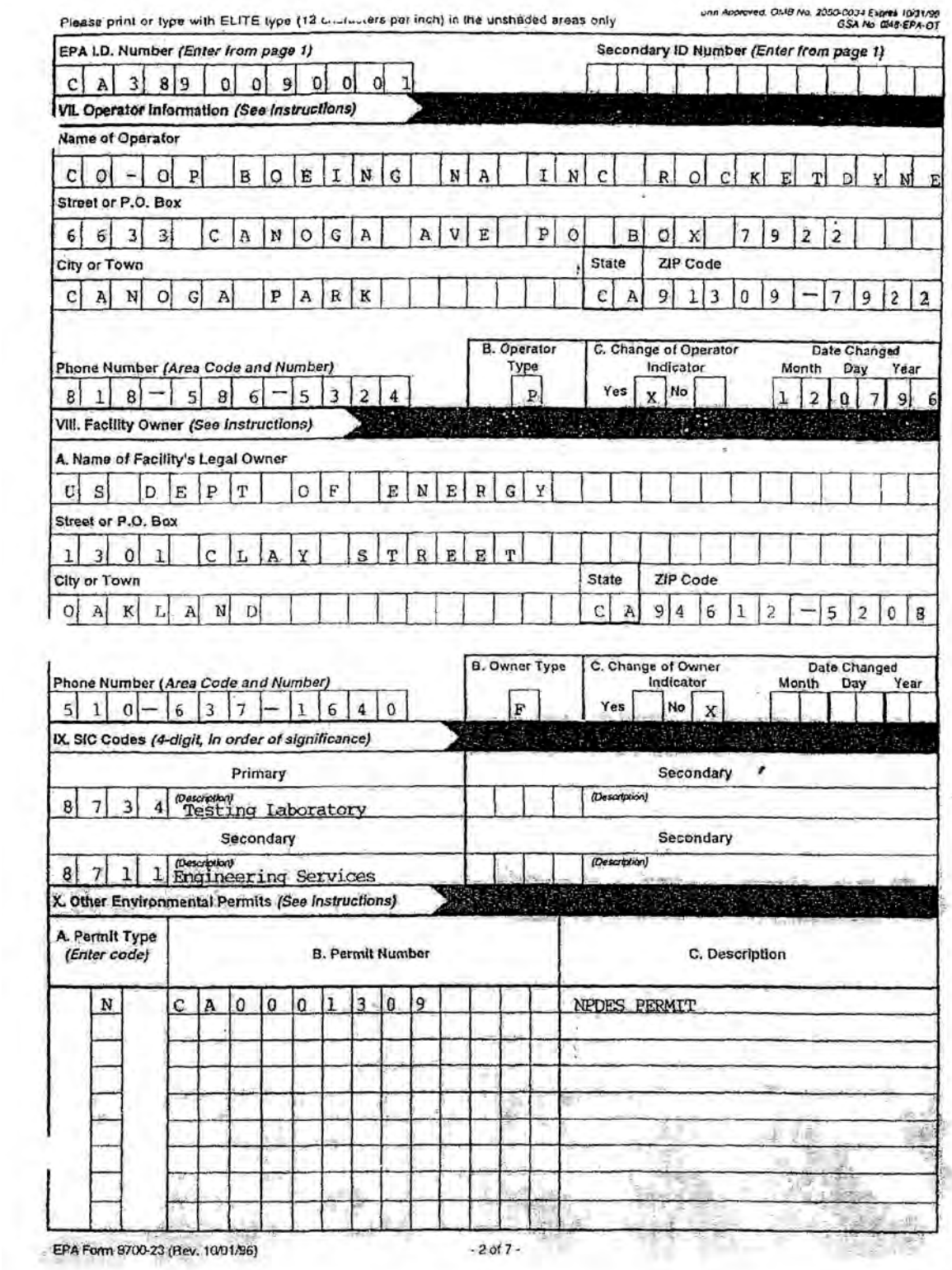
B. Street or P.O. Box:

City or Town:

State:

Zip Code:

EPA Form 8700-23 (Rev. 10/01/96) - 1 of 7 -



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

EPA I.D. Number *(Enter from page 1)*: CA3890090001

Secondary ID Number *(Enter from page 1)*:

VII. Operator Information *(See instructions)*

Name of Operator: CO-OP BOEING NA INC ROCKETDYNE

Street or P.O. Box: 6633 CANOGA AVE PO BOX 7922

City or Town: CANOGA PARK

State: CA

ZIP Code: 91309-7922

Phone Number *(Area Code and Number)*: 818-586-5324

B. Operator Type: P

C. Change of Operator Indicator: Yes X No

Date Changed: Month 12 Day 07 Year 96

VIII. Facility Owner *(See instructions)*

A. Name of Facility's Legal Owner: US DEPT OF ENERGY

Street or P.O. Box: 1301 CLAY STREET

City or Town: OAKLAND

State: CA

ZIP Code: 94612-5208

Phone Number *(Area Code and Number)*: 510-637-1640

B. Owner Type: F

C. Change of Owner Indicator: Yes No X

Date Changed: Month Day Year

IX. SIC Codes *(4-digit, in order of significance)*

Primary		Secondary	
8734	(Description) Testing Laboratory		(Description)
Secondary		**Secondary**	
8711	(Description) Engineering Services		(Description)

X. Other Environmental Permits *(See instructions)*

A. Permit Type *(Enter code)*	B. Permit Number	C. Description
N	CA0001309	NPDES PERMIT

EPA Form 8700-23 (Rev. 10/01/96) - 2 of 7 -

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GSA No. 6NB-EPA-DT

EPA I.D. Number *(Enter from page 1)*: C A 3 8 9 0 0 9 0 0 0 1

Secondary ID Number *(Enter from page 1)*:

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

The Energy Technology Engineering Center (ETEC) is a government-owned laboratory co-operated by the U.S. Department of Energy (DOE) and Boeing North American, Inc., Rocketdyne Division. Past activities at ETEC included energy related research and development (R&D). DOE has ended these R&D activities and is in the process of closing down the laboratory. Efforts are now focused on environmental restoration and decontamination and decommissioning of facilities that comprise the site.

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 XIII.*

B. PROCESS DESIGN CAPACITY - *For each code entered in column A, enter the capacity of the process.*
1. 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.*
2. UNIT OF MEASURE - *For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be 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
	Disposal:	
D79	Underground Injection	Gallons; Liters; Gallons Per Day; or Liters Per Day
D80	Landfill	Acre-feet or Hectare-meter
D81	Land Treatment	Acres or Hectares
D82	Ocean Disposal	Gallons Per Day or Liters Per Day
D83	Surface Impoundment	Gallons or Liters
D99	Other Storage	Any Unit of Measure Listed Below
	Storage:	
S01	Container (Barrel, Drum, Etc.)	Gallons or Liters
S02	Tank	Gallons or Liters
S03	Waste Pile	Cubic Yards or Cubic Meters
S04	Surface Impoundment	Gallons or Liters
S05	Drip Pad	Gallons or Liters
S06	Containment Building	Cubic Yards or Cubic Meters
S99	Other Disposal	Any Unit of Measure Listed Below
	Treatment:	
T01	Tank	Gallons Per Day or Liters Per Day
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	
T83	Aggregate Kiln	
T84	Phosphate Kiln	
T85	Coke Oven	
T86	Blast Furnace	
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; Metric Tons Per Hour; Short Tons Per Day; or Btu's Per Hour
T88	Titanium Dioxide Chloride Process Oxidation Reactor	
T89	Methane Reforming Furnace	
T90	Pulping Liquor Recovery Furnace	
T91	Combustion Device Used In The Recovery Of Sulfur Values From Spent Sulfuric Acid	
T92	Halogen Acid Furnaces	
T93	Other Industrial Furnaces Listed in 40 CFR §260.10	
T94	Containment Building	Cubic Yards or Cubic Meters
	Miscellaneous (Subpart X):	
X01	Open Burning/Open Detonation	Any Unit of Measure Listed Below
X02	Mechanical Processing	Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; or Kilograms 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; or Btu's Per Hour
X04	Geologic Repository	Cubic Yards or Cubic Meters
X99	Other Subpart X	Any Unit of Measure Listed Below

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

EPA Form 8700-23 (Rev. 10/01/96) - 3 of 7 -

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

EPA I.D. Number *(Enter from page 1)*: C A 3 8 9 0 0 9 0 0 0 1

Secondary ID Number *(Enter from page 1)*:

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 1. Amount (Specify)	B. 2. Unit Of Measure (Enter code)	C. Process Total Number Of Units	For Official Use Only
X 1	S 0 2	533,788	G	0 0 1	
1	S 0 1	.200	Y	2 0 0	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					

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 lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in item XIII.

XIII. Other Processes *(Follow instructions from item XII for D99, S99, T04 and X99 process codes)*

Line Number (Enter #s in seq w/XII)	A. Process Code (From list above)	B. PROCESS DESIGN CAPACITY 1. Amount (Specify)	B. 2. Unit Of Measure (Enter code)	C. Process Total Number Of Units	D. Description Of Process
X 1	T 0 4				*In-situ Vitrification*
1	T 0 4	5	U	0 0 1	Treatment involves neutralization followed by stabilization
2	T 0 4	55	U	0 0 3	Treatment involves stabilization
3					
4					

EPA Form 8700-23 (Rev. 10/01/96) - 4 of 7 -

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Form Approved. OMB No. 2050-0034 Expires 10/31/09
GSA No. 0246-EPA-OT

EPA I.D. Number *(Enter from page 1)*: C A 3 8 9 0 0 9 0 0 0 1

Secondary ID Number *(Enter from page 1)*:

XIV. Description of Hazardous Wastes

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 column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column 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 column 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 column A select the code(s) from the list of process codes contained in item XII A. on page 3 to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed hazardous waste: For each characteristic or toxic contaminant entered in column A, select the code(s) from the list of process codes contained in item XII 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 XIV-D(1).*
3. *Enter in the space provided on page 7, item XIV-E, the line number and the additional code(s).*

2. PROCESS DESCRIPTION: *If a code is not listed for a process that will be used, describe the process in the space provided on the form (D.(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 column A. On the same line complete columns B, C and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.*
2. *In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column 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 XIV (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 operation. 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 HAZARD WASTE NO. (Enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (Enter code)	D. PROCESS (1) PROCESS CODES (Enter)	D. PROCESS (2) PROCESS DESCRIPTION (If a code is not entered in 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

HDMSP00033306

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GSA No. 0246-EPA-DT

EPA I.D. Number (Enter from page 1): C A 3 8 9 0 0 9 0 0 0 1

Secondary ID Number (Enter from page 1):

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)	D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
1	D008	4500	P	S01 T04	Sec. XIII, line 2
2	D007	2050	P	S01 T04	Sec. XIII, line 2
3	D001	1000	P	S01	
4	D002				Included with above
5	D009				" "
6	F003				" "
7	F005				" "
8	D009	1500	P	S01 T04	Sec. XIII, line 2
9	D002	50	P	S01 T04	Sec. XIII, line 1
10	D004				Included with above
11	D006				" "
12	D007				" "
13	D002	50	P	S01 T04	Sec. XIII, line 1
14	D002	50	P	S01 T04	Sec. XIII, line 1
15	D006				Included with above
16	D007				" "
17	F002	2000	P	S01	
18	NONE	5000	P	S01 T04	Sec. XIII, lines 1 and 2
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					

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HDMSP0003330

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Form Approved. OMB No. 2050-0034 Expires 10/31/99
GSA No. 0245-EPA-OT

EPA I.D. Number (Enter from page 1)	Secondary ID Number (Enter from page 1)
C A 3 8 9 0 0 9 0 0 0 1	

XV. Map

Attach to this application a topographic 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 and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in this map area. See instructions for precise requirements.

XVI. Facility Drawing

All existing facilities must include a scale drawing of the facility (See instructions for more detail).

XVII. Photographs

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).

XVIII. Certification(s)

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 fine and imprisonment for knowing violations.

Owner Signature — Date Signed

Name and Official Title (Type or print)
James T. Davis, Associate Manager, Oakland Operations Office, U. S. DOE

Owner Signature — Date Signed 10/24/97

Name and Official Title (Type or print)

Operator Signature — Date Signed 10/13/97 10/23/97 MG

Name and Official Title (Type or print)
Mark Gabler, Director and Program Manager

Operator Signature — Date Signed 10/24/97

Name and Official Title (Type or print)
James T. Davis, Associate Manager, Oakland Operations Office, U. S. DOE

XIX. Comments

DOE Oakland Operations Office signs this application as the owner and co-operator of ETEC RMHF. A statement of joint operation of the Radioactive Materials Handling Facility and a waste description addendum pages are attached as part of this application.

Note: Mail completed form to the appropriate EPA Regional or State Office. (Refer to instructions for more information).

EPA Form 8700-23 (Rev. 10/01/96) - 7 of 7 -

HDMSP0003330

Addendum. Description of hazardous w tes by STP code and treatment process EPA Form 8700-23, 6 line number.

Line Number	ETEC STP Code	California Waste No.	Waste Description	Treatment Process Description
1	W002	1 8 1 1	TRU contaminated lead blocks	None; Storage pending planned disposal at WIPP
1	W009	1 8 1 1	Paint chips	None
1	W018	1 8 1 1	HEPA filter elements	None
1	W028	1 8 1 1	Lead glass/lead	None
1	W035	1 8 1 1	Evaporator sludge	Stabilize using concrete-like product to meet nonwastewater treatment standard
2	W019	1 8 1 1	Chrome Salt Cores	Crush then stabilize using concrete-like product to meet nonwastewater treat. std
2	W030	1 8 1 1	Neutralized acid cleaner	Solidify using concrete-like product to meet nonwastewater treatment standard
3	W020	7 9 2	Laboratory Analytical Reagent Waste	None
4				
5				
6				
7				
8	W021	1 8 1 1	MTRU Drain line debris	None; Storage pending planned disposal at WIPP
8	W026	1 8 1 1	Chrushed mercury light bulbs	Stabilize using concrete-like product to meet nonwastewater treatment standard
8	W032	1 8 1 1	Mercury and sediment	Amalgamation to meet treatment standard
9	W029	7 9 2	Corrosive cleaning liquid	Neutralize then stabilize using concrete-like product to meet wastewater and 40 CFR 268.48 Underlying Hazardous Constituent treatment standards
10				
11				
12				
13	W033	7 9 1	Radiological lab standards	Neutralize then stabilize using concrete-like product to meet wastewater and 40 CFR 268.48 Underlying Hazardous Constituent treatment standards
14	W031	7 9 2	Acidic aqueous liquid	Neutralize then stabilize using concrete-like product to meet wastewater and 40 CFR 268.48 Underlying Hazardous Constituent treatment standards
15				
16				
17	W034	3 5 1 1	MTRU Solidified oil	None; Storage pending planned disposal at WIPP
18	NONE	2 2 1 1	Oil	Solidification using concrete-like product
18	NONE	1 8 1 1	Asbestos containing material	None
18	NONE	1 8 1 1	Carbonate/hydroxide salts	Neutralize then solidify
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				

RADIOACTIVE MATERIALS HANDLING FACILITY (RMHF) PART A (ATTACHMENT)

STATEMENT OF JOINT OPERATION FOR THE RADIOACTIVE MATERIALS HANDLING FACILITY (RMHF) AT THE ENERGY TECHNOLOGY ENGINEERING CENTER

The Department of Energy (Department) and its operating contractor, Boeing North American (BNA) Incorporated, have jointly signed this application as the operator of the permitted facility. The Department has determined that dual signatures best reflect the actual apportionment of responsibility under which the Department's RCRA responsibilities are for policy, programming, funding, and scheduling decisions, as well as general overview, and the contractor's RCRA 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 Boeing North American's representatives certify, to the best of their knowledge and belief, the truth, accuracy and completeness of the application for their respective areas of responsibility.

M. Gabler
General Manager
Energy Technology Engineering Center
Boeing North American, Inc.
Facility Co-Operator

James T. Davis
Associate Manager,
for Environmental
Management
Oakland Operations Office
Facility Owner/Co-Operator

Cal/EPA

Department of Toxic Substances Control

400 P Street, 4th Floor
P.O. Box 806
Sacramento, CA 95812-0806

DEC 11 1997

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DEC 15 1997
DRF 0496

Pete Wilson
Governor

Peter M. Rooney
Secretary for
Environmental
Protection

Mr. James T. Davis,
Associate Manager
for Environmental Management
Oakland Operations Office
U.S. Department of Energy
1301 Clay Street
Oakland, CA 94612-5208

Mr. Mark Gabler,
Director
Energy Technology Engineering Center
Boeing North American, Inc.
6633 Canoga Ave
P.O. Box 7922
Canoga Park, CA 91309-7922

Dear Mr. Davis and Mr. Gabler:

INTERIM STATUS AUTHORIZATION FOR THE OPERATION OF MIXED WASTE STORAGE AND TREATMENT FACILITES AT THE ENERGY TECHNOLOGY ENGINEERING CENTER (ETEC), CA3 890 090 001.

The Department of Toxic Substances Control (DTSC) has received your letter of October 24, 1997 submitting a revised RCRA\State Part A application and Closure Plan for the Boeing North American Corp-Energy Technology Engineering Center's Radioactive Materials Handling Facility (RMHF) facility in the Simi Hills. Our review of the October 24, 1997 Part A application has determined it to adequately describe the storage and treatment activities involving mixed wastes at ETEC.

The Interim Status authority for the RMHF first went into force with the March 22, 1989 Part A submittal to US Environmental Protection Agency. This letter is clarify the requirements and limitations conferred by Interim Status. The RMHF is limited to only storing and treating mixed wastes. Decontamination and waste packaging occurs in Building 4021 (aka B-021, or T021). All treatment shall to be limited to this

building. A storage vault with significant shielding is located in Bldg. 4022 (aka B-022, or T022), and a capacity of up to 3,500 lbs of solids and liquids. Additional storage is located in Bldg 4621 (aka B-621, or T4621) and its accompanying yard.

It has been determined that both Boeing North American, Inc. as operator, and the US DOE as owner have complied with the administrative requirements for filing for interim status, as defined in the Health and Safety Code section 25200.5 and regulation under section 66270.70. Both parties shall comply with the regulations specified in Chapter 15, Division 4.5, Title 22, California Code of Regulation until the final permit decision or the facility closure is completed.

If you have any questions regarding this letter you may contact Paula Batarseh at (510) 540-3969.

Sincerely,

James M. Pappas

James M. Pappas, P.E., Chief
Northern California
Permitting Branch

cc:
Brian Sujata
Rocketdyne/Energy Technology Engineering Center
Boeing North American, Inc.
6633 Canoga Ave
P.O. Box 7922
Canoga Park, CA 91309-7922

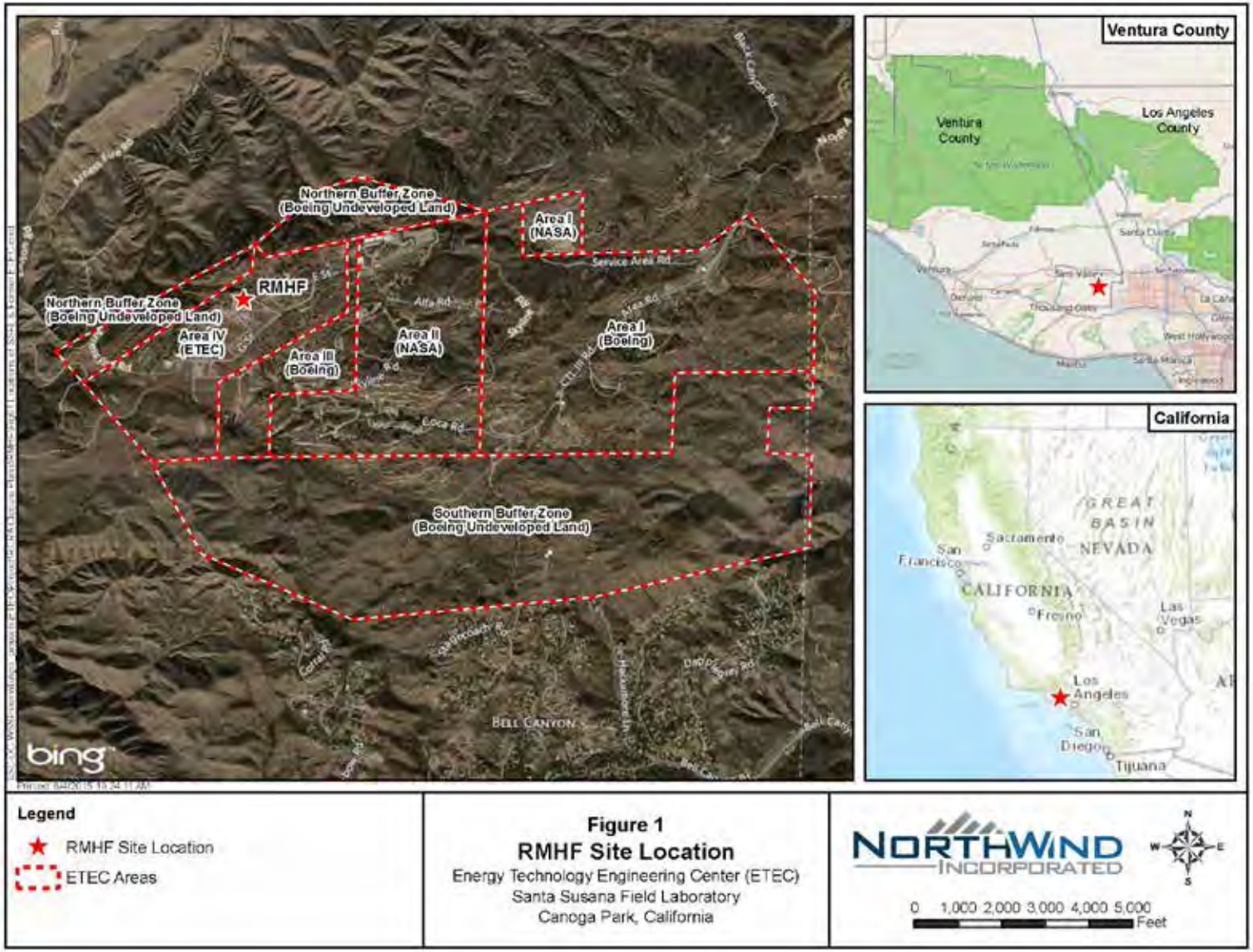
Kevin Hartnett
Oakland Operations Office
U.S. Department of Energy
1301 Clay Street
Oakland, CA 94612-5208

ETEC Interim Status
Page 3.

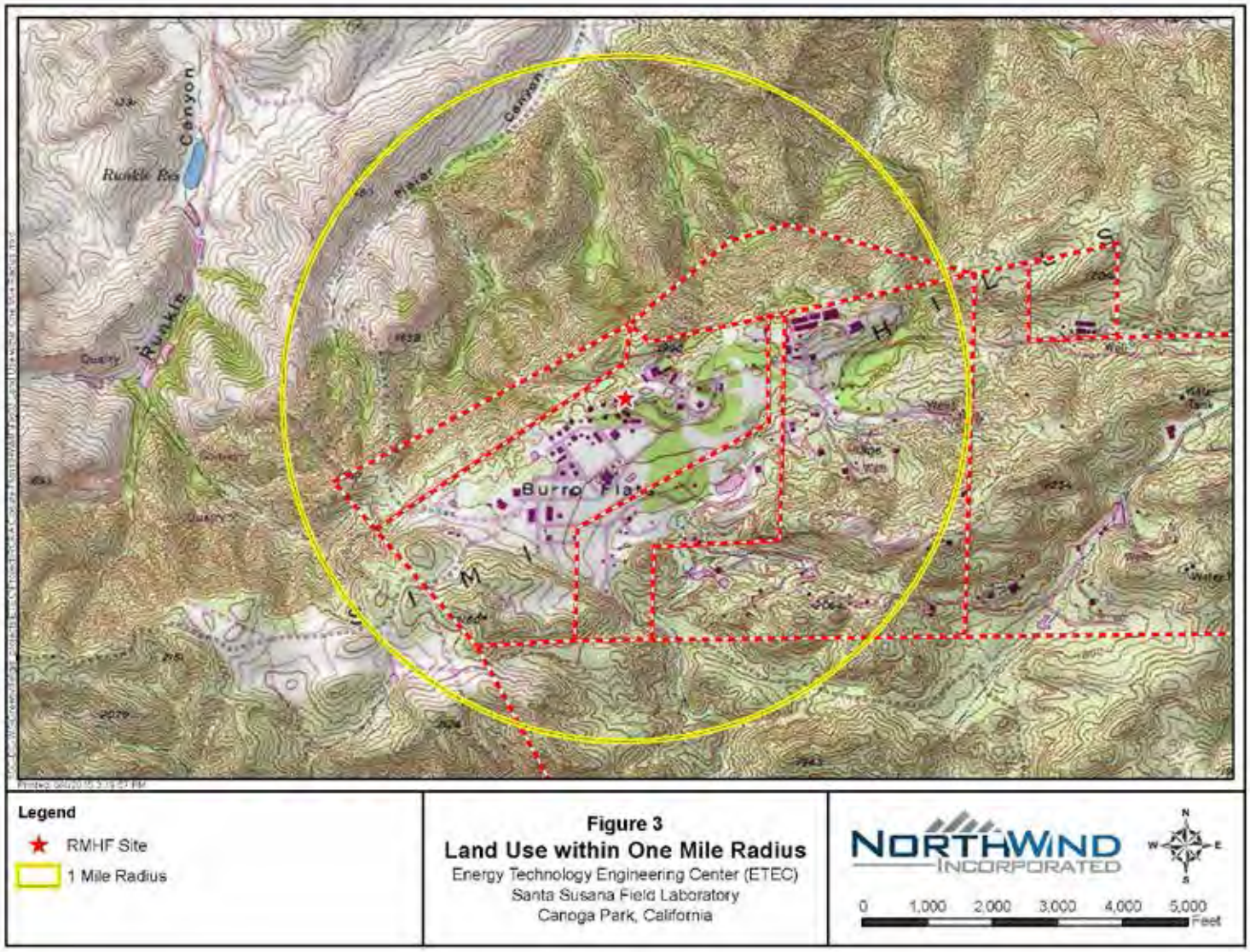
Charlene Williams
DTSC- Statewide Compliance
700 Heinz Avenue
Berkeley, CA 94710

Jose Kou
DTSC
1011 N. Grandview Avenue
Glendale, CA 91201

APPENDIX B
FIGURES


Northern Buffer Zone
(Boeing Undeveloped Land)
Area I
(NASA)
RMHF
Northern Buffer Zone
(Boeing Undeveloped Land)
Area IV
(ETEC)
Area III
(Boeing)
Area II
(NASA)
Area I
(Boeing)
Southern Buffer Zone
(Boeing Undeveloped Land)
Service Area Rd
Alfa Rd
Area Rd
Coca Rd
Bell Canyon
bing
Ventura County
Ventura
County
Los Angeles
County
California
GREAT
BASIN
NEVADA
Sacramento
San
Francisco
CALIFORNIA
Fresno
Las
Vegas
Los
Angeles
San
Diego
Tijuana
Legend
RMHF Site Location
ETEC Areas
Figure 1
RMHF Site Location
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


4665
4075
4022
4044
4021
4034
4658
4621
Legend
Fence
Building
Figure 2
Layout of the RMHF
Energy Technology Engineering Center (ETEC)
Santa Susana Field Laboratory
Canoga Park, California
NORTHWIND INCORPORATED
N
W
E
S
0
50
100
150
200
Feet


Runkle Canyon
Runkle Res
Burro Flats
Legend
RMHF Site
1 Mile Radius
Figure 3
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

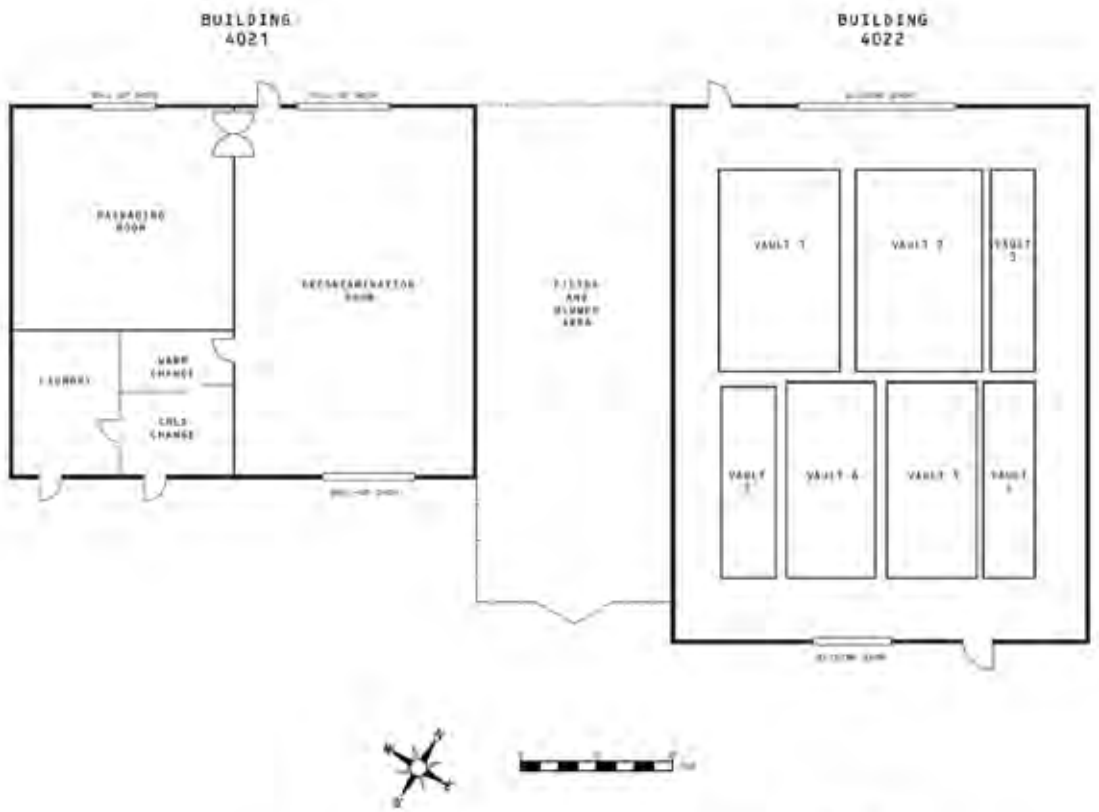


Figure 4

Layout of Buildings 4021 & 4022

Energy Technology Engineering Center (ETEC)

Santa Susana Field Laboratory

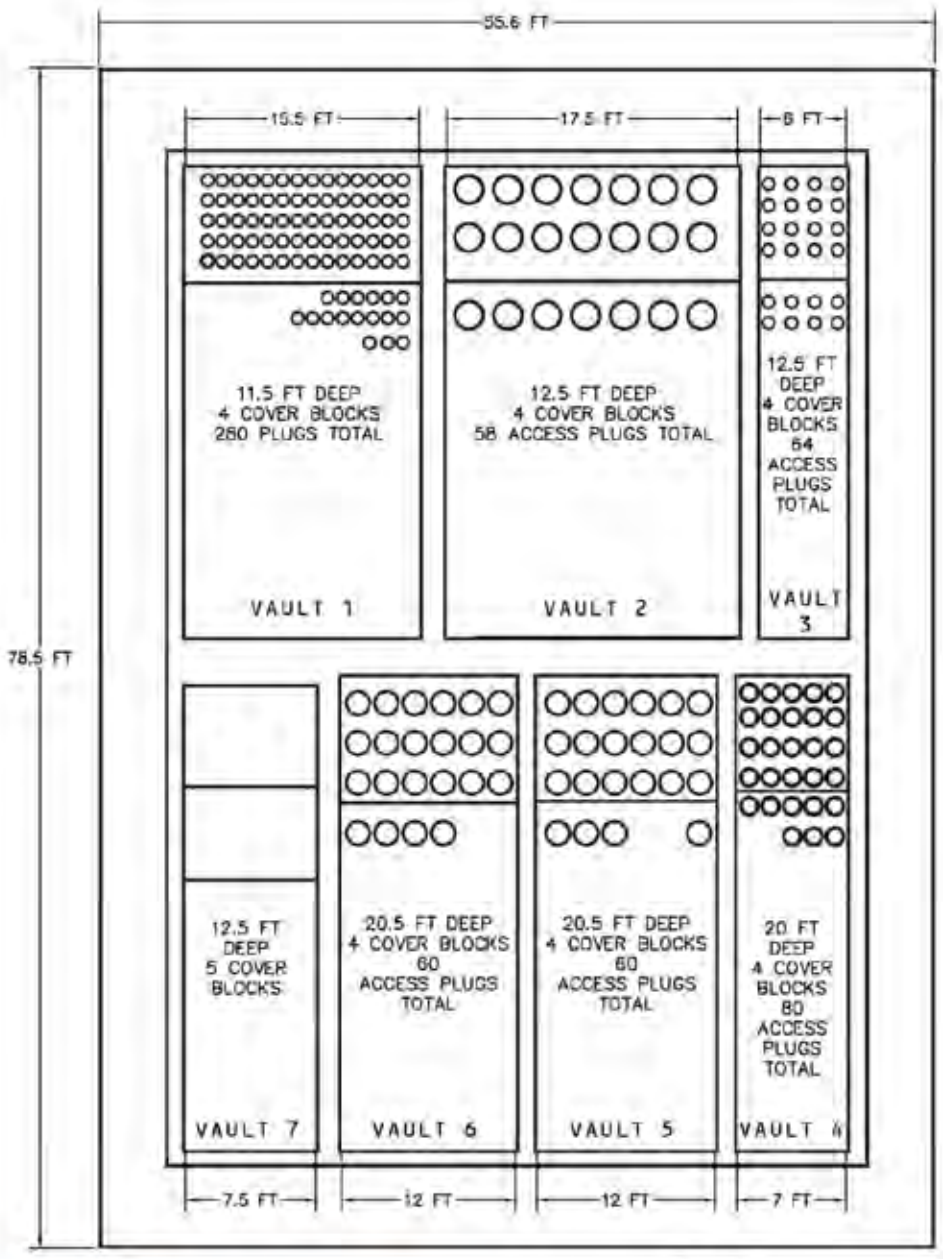


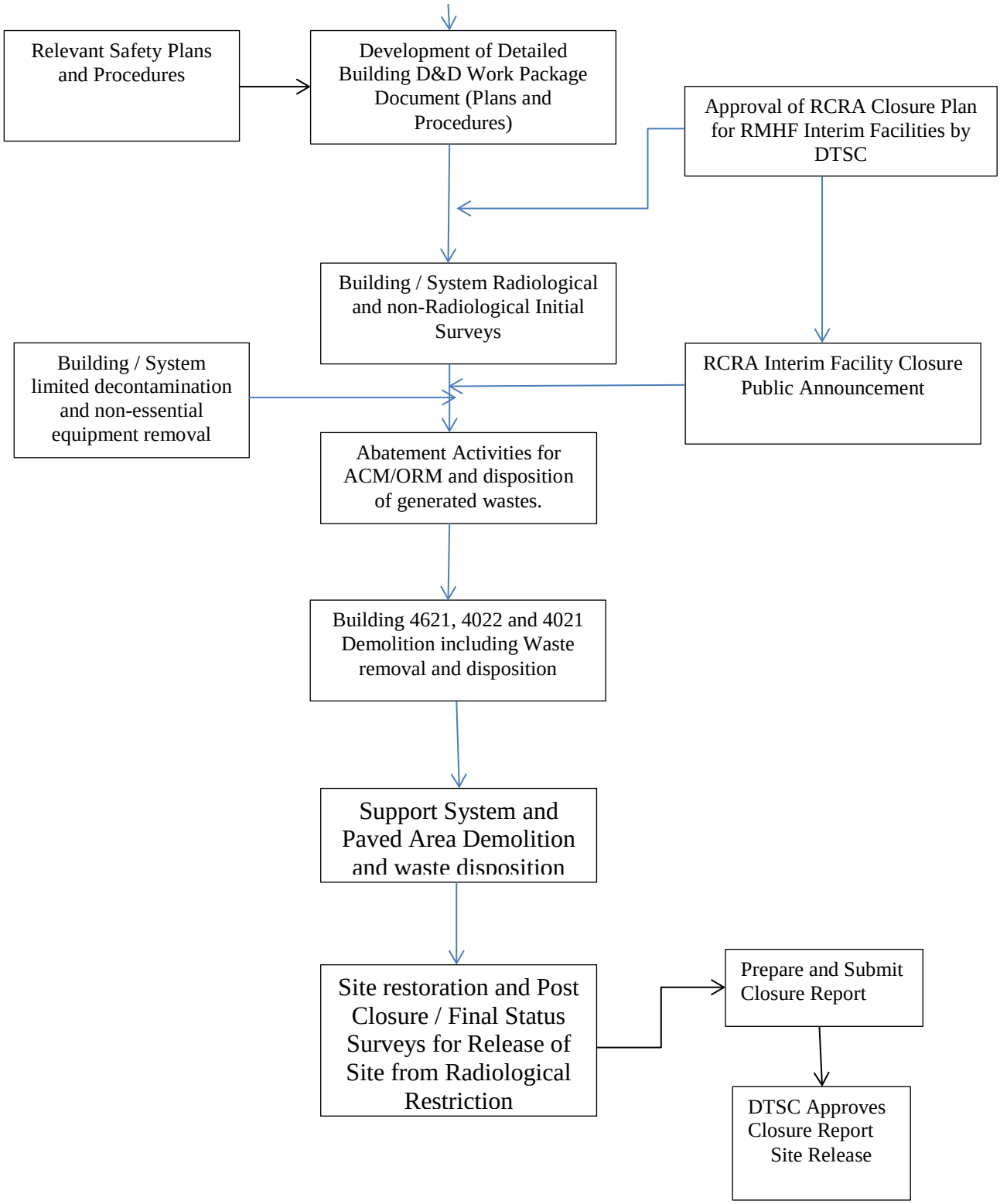
Figure 5

Building 4022 Floor Plan

Energy Technology Engineering Center (ETEC)

Santa Susana Field Laboratory

DTSC Approval to Begin D&D Activities at



APPENDIX C
TABLES

Table 1 – List of Storage Areas/Units

Description	Activity	Dimensions/Capacity (ft)
Building 4021		
Packaging Room	Storage/Treatment	30 x 30 x 14
Decontamination Room	Storage/Treatment	30 x 49.75 x 14
Building 4022		
Main Area	Storage	55.5 x 66.5 x 48.5
Vault #1	Storage	25 x 15 x 11.5
Vault #2	Storage	25 x 17.5 x 12.5
Vault #3	Storage	25 x 6 x 12.5
Vault #4	Storage	25 x 7 x 20
Vault #5	Storage	25 12 20.5
Vault #6	Storage	25 x 12 x 20.5
Vault #7	Storage	24.5 x 7.5 x 12.5
Building 4621		
Storage	Storage	20 x 32 x 10
Outside Mixed Waste Storage Yard		
Storage	Storage	Approx. 7500 ft^2

Table 2 – Summary of Waste Management Information

EPA Waste Codes	California Waste Codes	Quantity	Physical State	Principal Hazardous Characteristics
Building 4021				
D001, D002, D004, D006, D007, D008, D009, F003, F005	181, 792, 221	1 cubic yard treated per day on average, but up to 20 cubic yards treated per day	Solids/Liquids	Toxicity characteristic metals, corrosivity characteristic, listed solvent containing wastes, used oils
Building 4022				
D001, D002, D004, D006, D007, D008, D009, F003, F005	181, 792, 221	50 cubic yard storage on average, but up to 200 cubic yards stored.	Solids/Liquids	Toxicity characteristic metals, corrosivity characteristic, listed solvent containing wastes, used oils
Building 4621				
D001, D002, D004, D006, D007, D008, D009, F003, F005	181, 792, 221	50 cubic yard storage on average, but up to 200 cubic yards stored.	Solids/Liquids	Toxicity characteristic metals, corrosivity characteristic, listed solvent containing wastes, used oils
Outside Mixed Waste Storage Yard				
D001, D002, D004, D006, D007, D008, D009, F003, F005	181, 792, 221	50 cubic yard storage on average, but up to 200 cubic yards stored.	Solids Only	Toxicity characteristic metals, corrosivity characteristic, listed solvent containing wastes, used oils

Table 3 – Typical Historical Waste Streams Stored/Treated in the RMHF

Waste Stream	EPA Waste Codes	CA Waste Codes	Hazard Characteristic	Physical State	Hazardous Waste Constituents
Paint Chips	D006, D007, D008	181	Toxic	Solid	Lead, Cadmium, Chromium
	D004		Toxic	Solid	Arsenic
Paint and Solvents	F003, F005		Listed	Liquid/Solid	Non-halogenated solvents
Ignitable Solvents	D001		Ignitable	Liquid/Solid	Mineral Spirits, Stoddard Solvent, Isopropyl Alcohol
Corrosive Wastes	D002		Corrosive	Liquid/Solid	Acid/Bases for neutralization
Chrome Salt Cores	D007	181	Toxic	Solid	Chromium
Drain Line Debris	D009	181	Toxic	Solid/Sludge	Mercury
Lead Glass/Lead	D008	181	Toxic	Solid	Lead
Sediments w/mercury	D006, D008, D009	181	Toxic	Liquid/Sludge	Heavy Metals
Solidified Oil w/Solvents	F002	351	Toxic, Listed	Solid	Solvents
Evaporator Sludge	D008	181	Toxic	Sludge	Lead
HEPA Filter Elements	D008	181	Toxic	Solid	Lead
Contaminated Concrete	D006	181	Varies	Solid	Cadmium
Oil	NA	221	Toxic	Liquid	Oil
Contaminated Soil	D007, D008, D009	611	Toxic	Solid	Varies
Asbestos	N/A	151	Toxic	Solid	Asbestos

Table 4 – List of Treatment Equipment

Equipment	Purpose	Size
Cement Mixer	Stabilization	3 ft^3
Drum Mixer	Stabilization	55 gallons
Fume Hood (Decon Room)	Used during neutralization of acids	3’ x 3’ x 6’
Laboratory Ball Mill	Crushing/Pulverizing	Bench Scale
Electric Drill	Neutralization & Stabilization	Powered Hand Tool
Beakers*	Bench-scale neutralization	2-liter capacity
Graduated Burettes*	Bench-scale neutralization	200 milliliters ea
Magnetic Stirring Stand	Bench-scale neutralization	Bench Scale

* Glassware used during bench-scale neutralization was disposed with the neutralized waste.

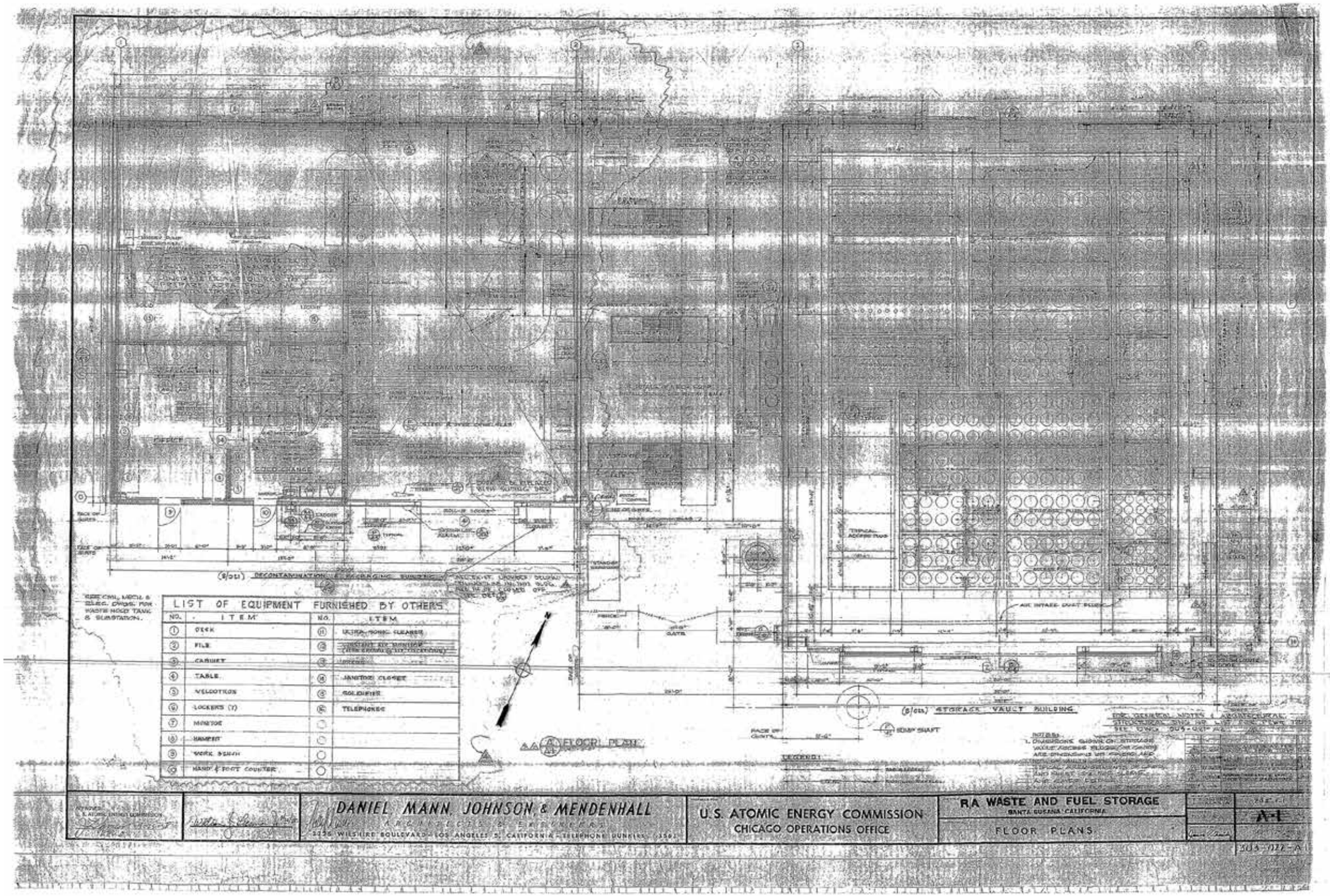
Table 5 - Estimated Amount of Waste to be Generated from the D&D of Buildings

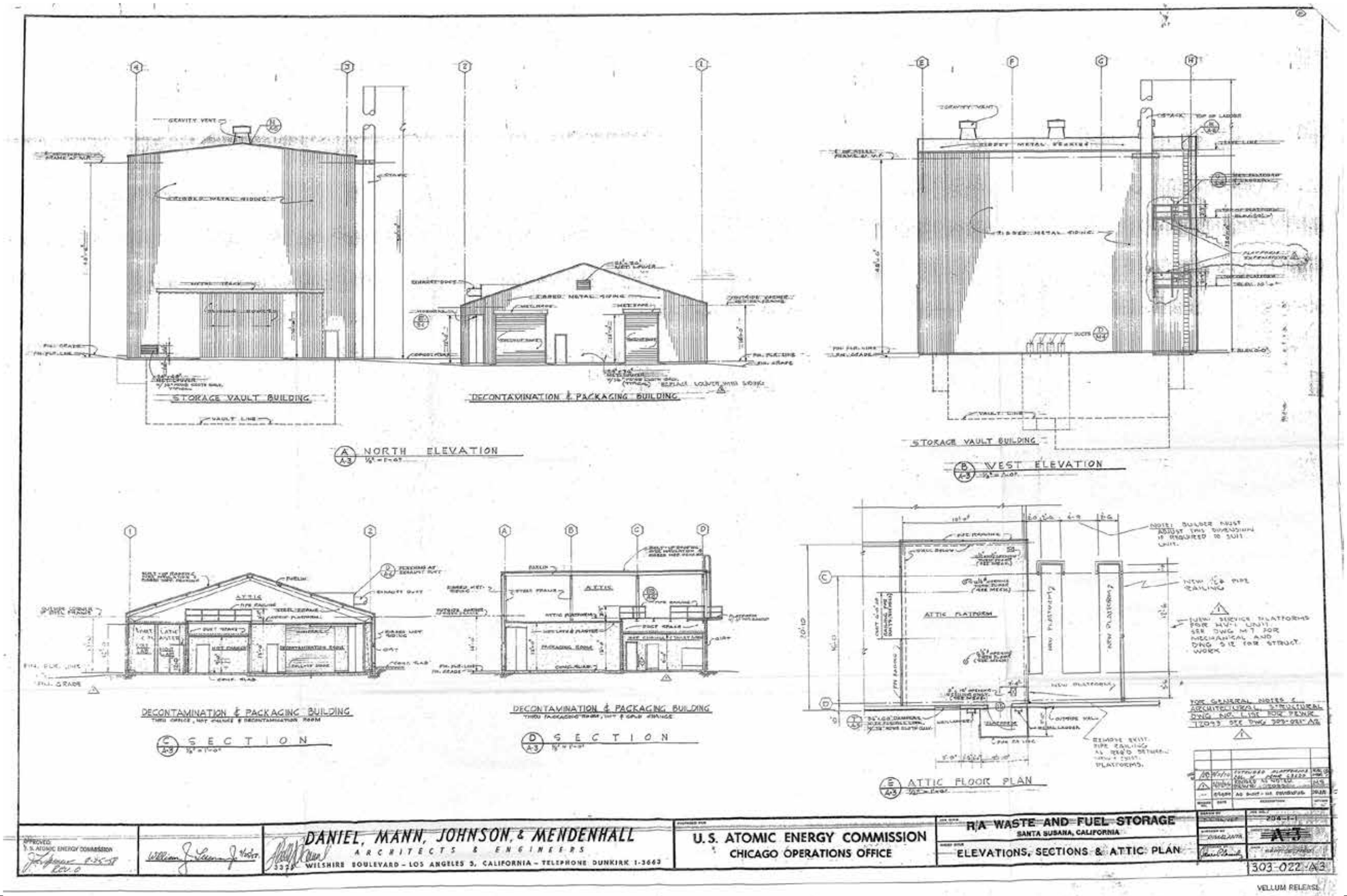
Bldg	Concrete (ft^3)			Steel (lbs)		
	LLW	DW	Total Concrete	LLW	DW	Total Steel
4021	2,313	--	2,313	46,493	--	46,493
4022	4,630	20,724	25,354		189,059	189,059
4621 and Yard	813	--	813	4,494	--	4,494
TOTALS	**7,756**	**20,724**	**28,480**	**50,987**	**189,059**	**240,046**

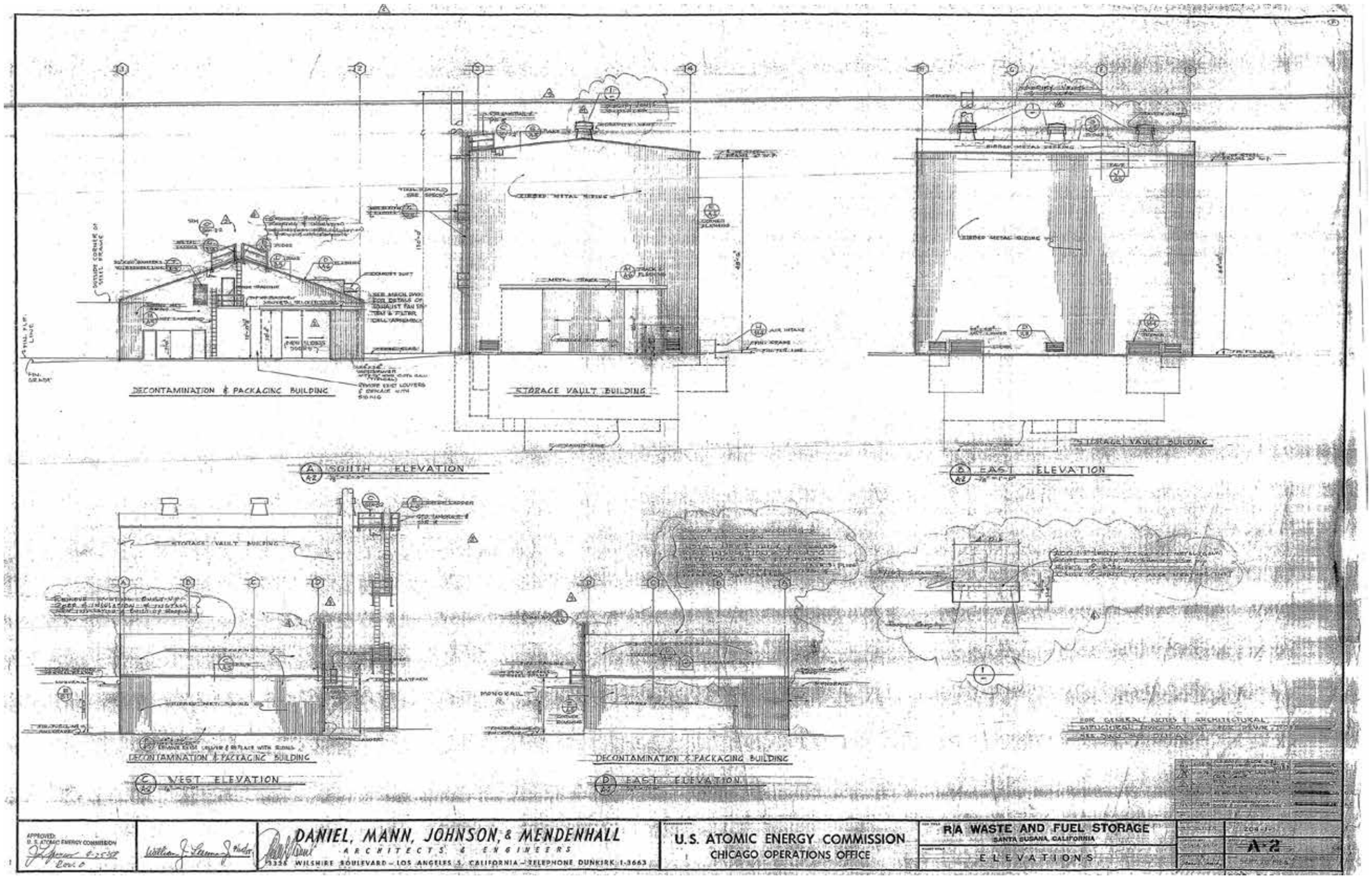
Table 6 – Potential Designated Disposal Facilities

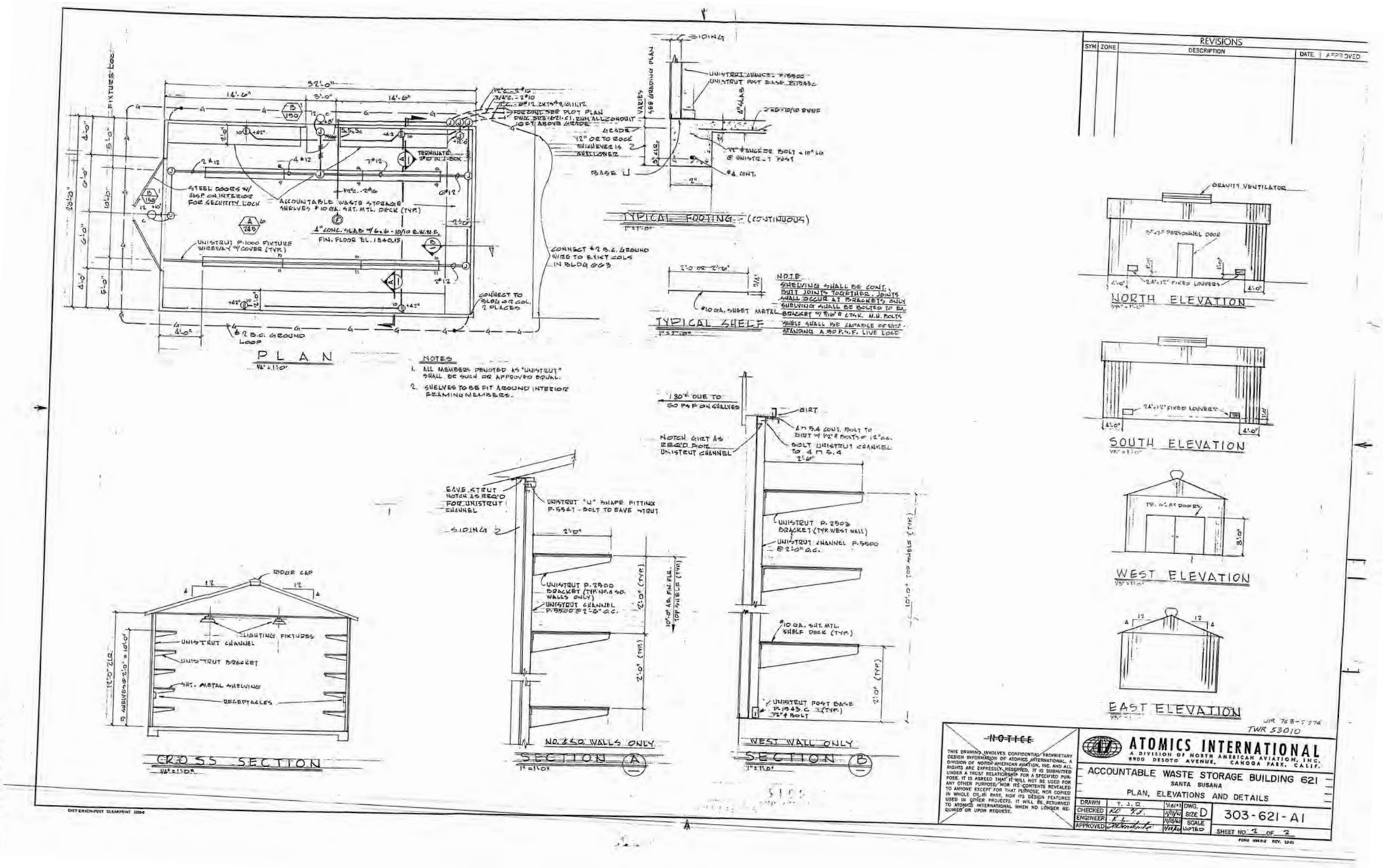
Facility Name	Location	Permit/License Numbers	Estimated Distance from ETEC	Wastes to be Dispositioned at the Facility
CWM – Kettleman Hills Facility	Kettleman Hills, CA	EPA ID – CAT 000 646 117	175 Miles	Non-Hazardous, non-radioactive waste and non-hazardous "decommissioned" materials and "non-decommissioned" containing hazardous waste
EnergySolutions	Tooele County, UT	EPA ID# - UT 982 598 898 RML – UT2300249	725 Miles	Solid and liquid mixed wastes
Nevada Test Site	65 mi. north of Las Vegas	N/A	370 Miles	Radioactive waste and debris not regulated as hazardous waste

APPENDIX D
AS-BUILTS


LIST OF EQUIPMENT FURNISHED BY OTHERS
NO. ITEM
1 DESK
2 FILE
3 CABINET
4 TABLE
5 WELDOTRON
6 LOCKERS (7)
7 MONITOR
8 HAMPER
9 WORK BENCH
10 HAND & FOOT COUNTER
11 ULTRA-SONIC CLEANER
12 JANITOR CLOSET
13 SOLDIFIER
14 TELEPHONES
(B021) DECONTAMINATION & CHANGING BUILDING
(B022) STORAGE VAULT BUILDING
A A FLOOR PLAN
DANIEL MANN JOHNSON & MENDENHALL
ARCHITECTS & ENGINEERS
3325 WILSHIRE BOULEVARD - LOS ANGELES 5, CALIFORNIA - TELEPHONE DUNKIRK 2-5921
U.S. ATOMIC ENERGY COMMISSION
CHICAGO OPERATIONS OFFICE
R A WASTE AND FUEL STORAGE
SANTA SUSANA CALIFORNIA
FLOOR PLANS
A-1
505-022-A


STORAGE VAULT BUILDING
DECONTAMINATION & PACKAGING BUILDING
A NORTH ELEVATION
STORAGE VAULT BUILDING
B WEST ELEVATION
DECONTAMINATION & PACKAGING BUILDING
C SECTION
DECONTAMINATION & PACKAGING BUILDING
D SECTION
ATTIC FLOOR PLAN
DANIEL, MANN, JOHNSON, & MENDENHALL
ARCHITECTS & ENGINEERS
3325 WILSHIRE BOULEVARD – LOS ANGELES 5, CALIFORNIA – TELEPHONE DUNKIRK 1-3663
U.S. ATOMIC ENERGY COMMISSION
CHICAGO OPERATIONS OFFICE
R/A WASTE AND FUEL STORAGE
SANTA SUSANA, CALIFORNIA
ELEVATIONS, SECTIONS & ATTIC PLAN
A-3
303-022 A3
VELLUM RELEASE


DECONTAMINATION & PACKAGING BUILDING
STORAGE VAULT BUILDING
SOUTH ELEVATION
EAST ELEVATION
DECONTAMINATION & PACKAGING BUILDING
WEST ELEVATION
DECONTAMINATION & PACKAGING BUILDING
EAST ELEVATION
DANIEL, MANN, JOHNSON, & MENDENHALL
ARCHITECTS & ENGINEERS
3325 WILSHIRE BOULEVARD – LOS ANGELES 5, CALIFORNIA – TELEPHONE DUNKIRK 1-3663
U.S. ATOMIC ENERGY COMMISSION
CHICAGO OPERATIONS OFFICE
R/A WASTE AND FUEL STORAGE
SANTA SUSANA, CALIFORNIA
ELEVATIONS
A-2


PLAN
NOTES
1. ALL MEMBERS PRIOTED AS "UNISTRUT" SHALL BE SUCH OR APPROVED EQUAL.
2. SHELVES TO BE FIT AROUND INTERIOR FRAMING MEMBERS.
TYPICAL FOOTING (CONTINUOUS)
TYPICAL SHELF
NOTE
SHELVING SHALL BE CONT. BUTT JOINTS TOGETHER. JOINTS SHALL OCCUR AT BRACKETS, ONLY SHELVING SHALL BE BOLTED TO EA. BRACKET W/ 3/8"Ø LG'TH'D. M.H. BOLTS
SHELF SHALL BE CAPABLE OF WITH-STANDING A 50 P.S.F. LIVE LOAD
CROSS SECTION
SECTION A
NO. 250 WALLS ONLY
SECTION B
WEST WALL ONLY
NORTH ELEVATION
SOUTH ELEVATION
WEST ELEVATION
EAST ELEVATION
REVISIONS
SYM | ZONE | DESCRIPTION | DATE | APPROVED
NOTICE
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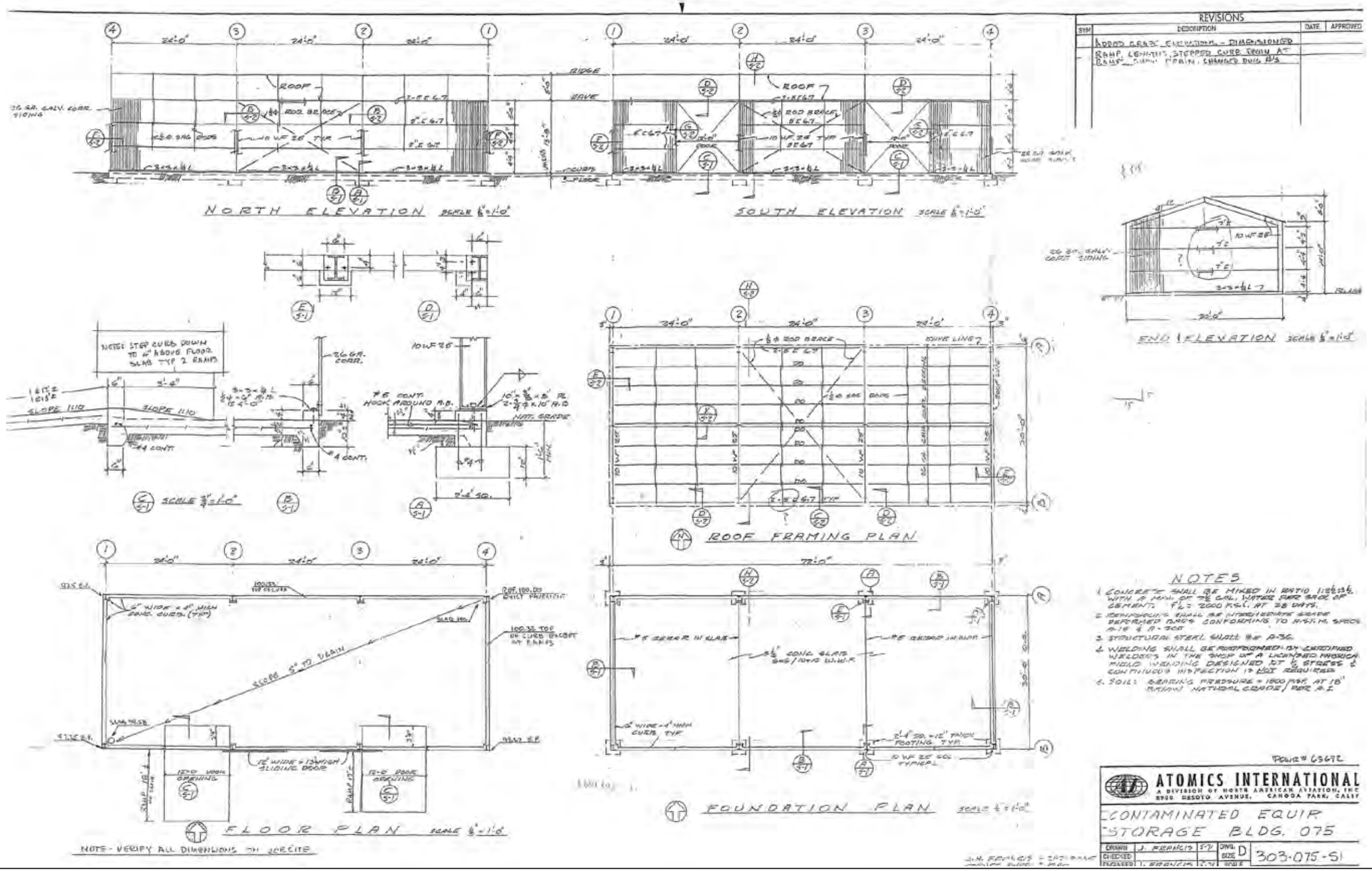
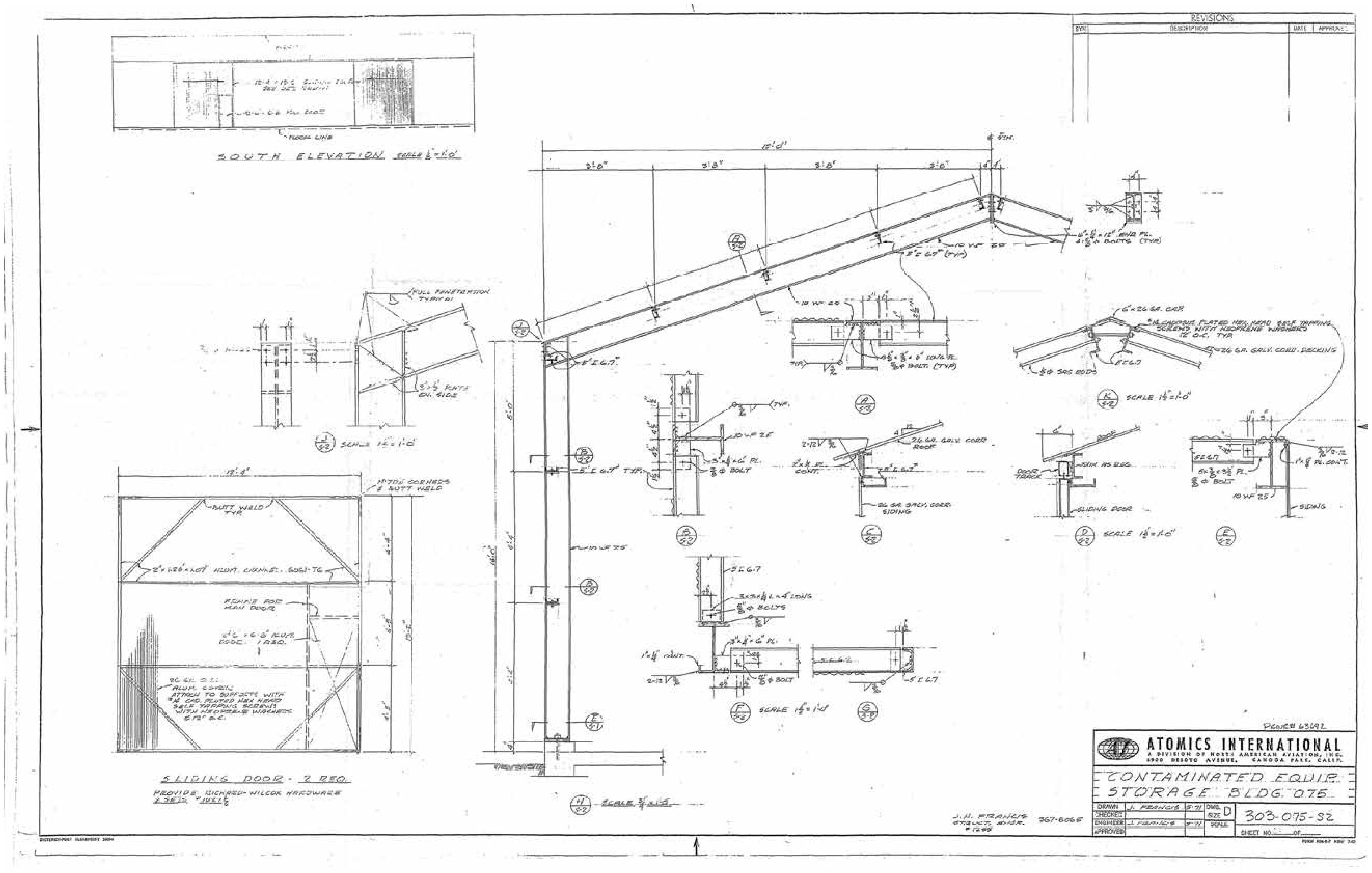
ATOMICS INTERNATIONAL
A DIVISION OF NORTH AMERICAN AVIATION, INC.
8900 DESOTO AVENUE, CANOGA PARK, CALIF.
ACCOUNTABLE WASTE STORAGE BUILDING 621
SANTA SUSANA
PLAN, ELEVATIONS AND DETAILS
DRAWN T. J. C.
CHECKED
ENGINEER
APPROVED
DWG. SIZE D
SCALE NOTED
303-621-A1
SHEET NO 1 OF 2
JOB 768-7776
TWR 53010
HDMSP00033322


NORTH ELEVATION SCALE 1/8"=1'-0"
SOUTH ELEVATION SCALE 1/8"=1'-0"
END ELEVATION SCALE 1/8"=1'-0"
REVISIONS
SYM | DESCRIPTION | DATE | APPROVED
ADDED GRADE ELEVATIONS - DIMENSIONED
RAMP LENGTH, STEPPED CURB, SWING AT RAMP, SLOPE, DRAIN, CHANGED DWG #'S
ROOF FRAMING PLAN SCALE 1/8"=1'-0"
FOUNDATION PLAN SCALE 1/8"=1'-0"
FLOOR PLAN SCALE 1/8"=1'-0"
NOTE: VERIFY ALL DIMENSIONS ON SITE
NOTES
1. CONCRETE SHALL BE MIXED IN RATIO 1:2½:3½ WITH A MAX. OF 7½ GAL. WATER PER SACK OF CEMENT. F'c = 2000 PSI. AT 28 DAYS.
2. REINFORCING SHALL BE INTERMEDIATE GRADE DEFORMED BARS CONFORMING TO A.S.T.M. SPECS A-15 & A-305
3. STRUCTURAL STEEL SHALL BE A-36.
4. WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS IN THE SHOP OF A LICENSED AMERICAN WELDING SOCIETY DESIGNED QT & STRESS & CONTINUOUS INSPECTION IS NOT REQUIRED
5. SOIL: BEARING PRESSURE = 1500 PSF AT 18" BELOW NATURAL GRADE / PER SOILS
ATOMICS INTERNATIONAL
A DIVISION OF NORTH AMERICAN AVIATION, INC
8900 DESOTO AVENUE, CANOGA PARK, CALIF
CONTAMINATED EQUIP STORAGE BLDG. 075
DRAWN J. FRANCIS 5-71
CHECKED
ENGINEER
DWG SIZE D
303-075-51


SOUTH ELEVATION
SLIDING DOOR - 2 REQ.
ATOMICS INTERNATIONAL
A DIVISION OF NORTH AMERICAN AVIATION, INC.
CONTAMINATED EQUIP. STORAGE BLDG. 075
303-075-S2

APPENDIX E
PHOTOGRAPHS

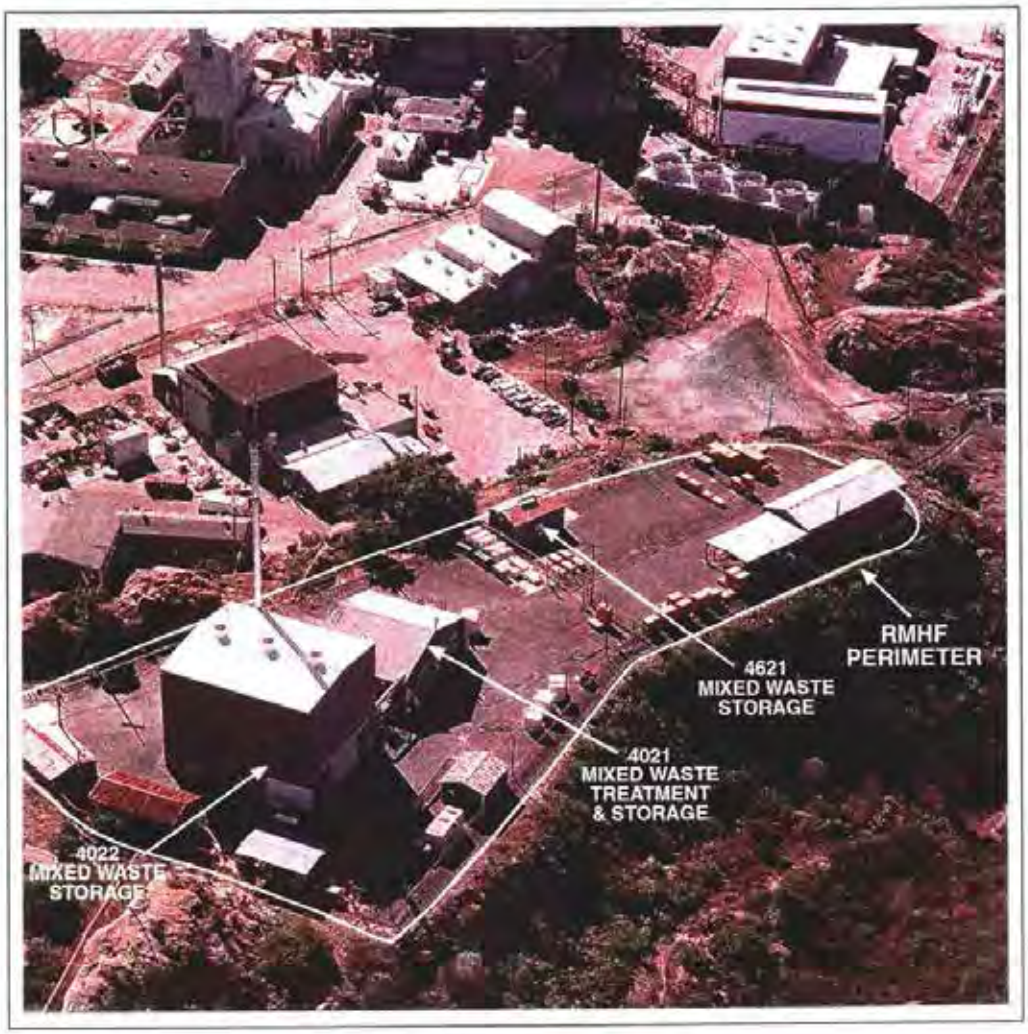


Plate 1 - Aerial View of the RMHF

Plate 2 - View of the interior Storage Area of Building 4022

Plate 3 - View of Vault opening in Building 4022. (Ventilation port can be seen in center of photograph)

Plate 4 - View of interior of Vault within Building 4022. (Drums of higher activity low level and transuranic wastes are shown

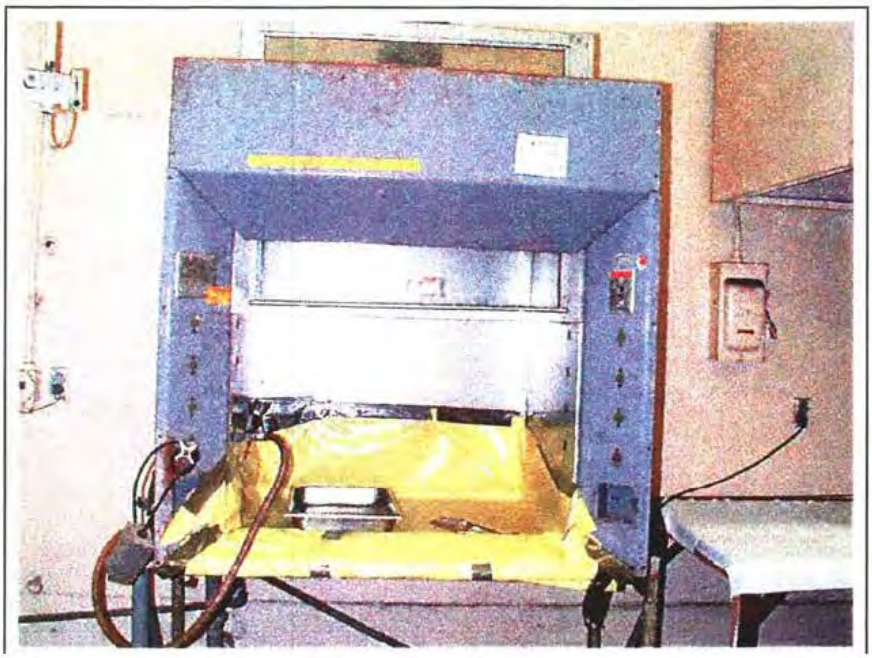


Plate 5 - View of Fume Hood in the Decontamination Room within Building 4021

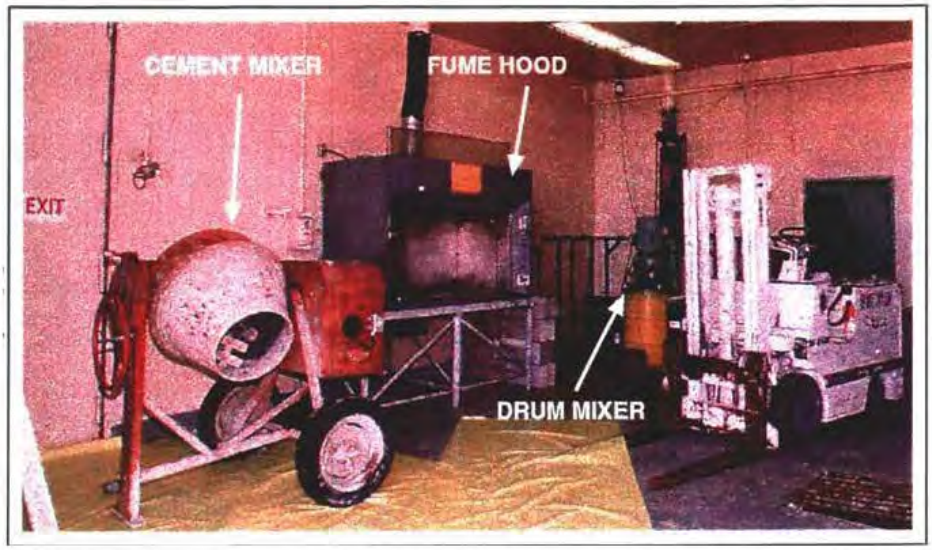


Plate 6 - View of Fume Hood, Cement Mixer and Drum Mixer in the Packaging Room of Building 4021

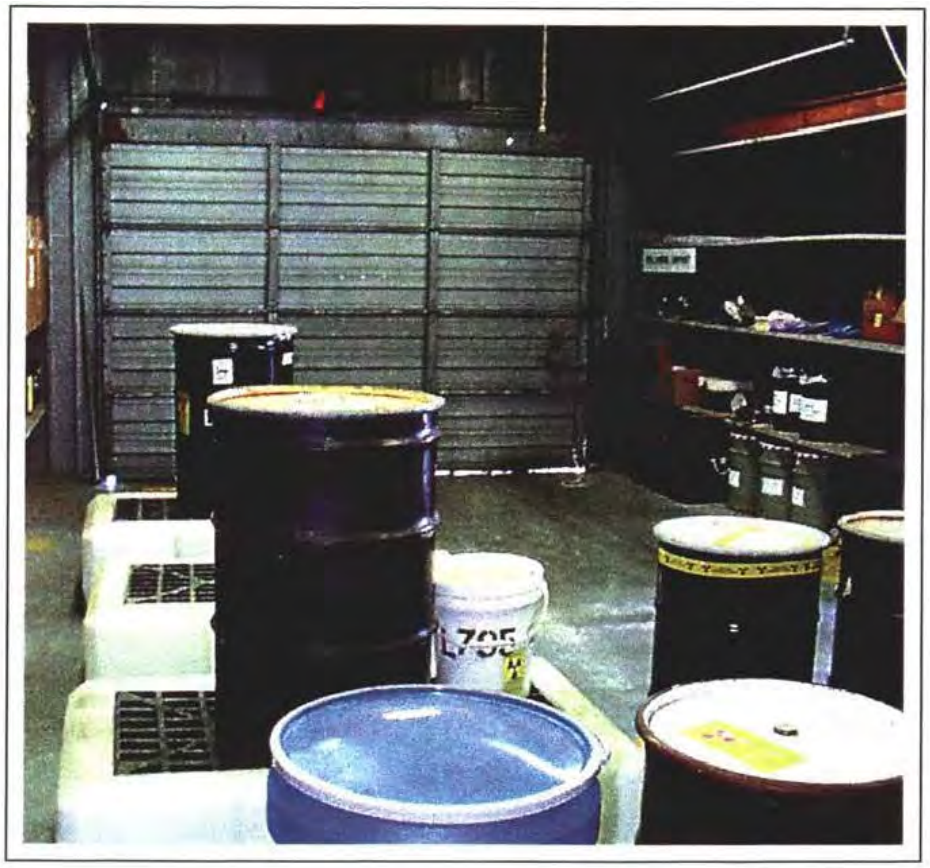


Plate 7 - View of interior of Storage Building 4621

Building 4022 Looking North

Building 4022 Looking North

Building 4022 and Building 4021 Looking Northeast

Between Building 4022 and 4021 Looking North

Building 4021 Looking Northeast

Building 4021 Looking East

Building 4021 and Building 4022 Looking Southeast

Building 4621 Looking South

Building 4621 Looking Southeast

Building 4624 Looking Southeast

Building 4621 Looking East

Buildings 4021 and 4022 Looking Southeast

Between Buildings 4021 and 4022 Looking South-Southeast

Between Buildings 4021 and 4022 Looking South-Southeast

Building 4022 Looking South