ENVIRONMENTAL ASSESSMENT

FOR

HAZARDOUS WASTE STAGING FACILITY

Project 39GF71024-GPD121000000

PANTEX PLANT

AMARILLO, TEXAS

DOE/EA-0688

JUNE 1993

ENVIRONMENTAL ASSESSMENT

FOR

HAZARDOUS WASTE STAGING FACILITY

Project 39GF71024-GPD121000000

PANTEX PLANT

AMARILLO, TEXAS

DOE/EA-0688

JUNE 1993

TABLE OF CONTENTS

Table of Contents
(Continued)

LIST OF TABLES

LIST OF FIGURES

1.0 Need for Action

This Environmental Assessment (EA) has been prepared pursuant to the implementing regulations to the National Environmental Policy Act (NEPA), which require federal agencies to assess the environmental impacts of a proposed action to determine whether that action requires the preparation of an Environmental Impact Statement (EIS) or if a Finding of No Significant Impact (FONSI) can be issued. NEPA requires that an EA provide an interdisciplinary review of the proposed action in order to identify possible preferable alternatives and to identify mitigative measures that will prevent environmental impacts. If it is determined that the proposed action will have unavoidable significant environmental impact, then an EIS shall be prepared.

The Pantex Plant does not possess permanent containerized waste staging facilities with integral secondary containment or freeze protection. Additional deficiencies associated with some existing staging facilities include: no protection from precipitation running across the staging pads; lack of protection against weathering; and facility foundations not capable of containing leaks, spills or accumulated precipitation. These shortcomings have raised concerns with respect to requirements under Section 3001 of the Resource Conservation and Recovery Act (RCRA). Deficiencies for these waste staging areas were also cited by a government audit team (Tiger Team) as Action Items.

Existing waste staging areas are currently at or near capacity. Additional space is required for the staging of contaminated waste generated at Pantex, especially in light of the expected acceleration of retirement schedules. The proposed facility would help to alleviate capacity problems as well as provide a single compliant facility to stage wastes at Pantex.

2.0 Description of Proposed Action

The Hazardous Waste Staging Facility (HWSF) is a Fiscal Year 1990 (FY-90) Environmental, Safety, and Health (ES&H) General Plant Project (GPP). This proposed project was listed in the Environmental Restoration/Waste Management (ER/WM) Five Year Plan. As such, the provision for the staging of hazardous, mixed, and low level waste is part of the no-action alternative in the Programmatic Environmental Impact Statement for the integrated ER/WM program. Construction of this proposed project will not prejudice whether or not this integration will occur, or how.

Hazardous waste is defined in 40 CFR 261.3 as a solid waste that has not been excluded and (1) exhibits one of the four characteristics of hazardous waste (ignitability, corrosivity, reactivity, toxicity), (2) is specifically listed, or (3) is a mixture of a listed hazardous waste and a solid waste. Types of wastes generated as a result of Pantex operations include low level radioactive waste (such as rags, gloves, paper towels), hazardous waste, mixed waste, and waste metal components. The following is an estimation of the total quantity of each type of waste generated annually:

Mixed waste volume in staged areas (Dec. 31, 1990)....175 m^3
Expected mixed waste generation rate (1991-2020).....20 m^3/yr

Expected low level radioactive waste in staged areas..137 m^3
(Dec. 31, 1991)
Expected low level radioactive waste generation.....237 m^3
(Jan. 1, 1991 - Jan. 1, 1993)
Expected low level radioactive waste generation.....137 m^3/yr
rate (beyond Jan. 1, 1993)
Unlisted hazardous waste generated annually.....150,000 Gal./yr
Waste metal components generated annually.....22,000 Gal./yr

Currently, the Pantex Plant disposes of only Class III waste at the Plant. The Pantex Plant currently sends all Class I (both hazardous and non-hazardous) waste off-site for treatment and disposal.

For treatment and disposal of hazardous waste, the Plant currently accomplishes this through one contractor, Chemical Waste Management, which has facilities in Houston, TX; Baton Rouge, LA; St. Louis, MO; and Emeill, AL. The current practice is to notify the contractor when the number of filled drums reaches eighty. The drums are then shipped for disposal to one of the off-site, permitted facilities.

For disposal of Class I non-hazardous waste, the Plant uses the BFI landfill in Hereford, TX, in addition to several others. Amarillo, as almost all metropolitan areas, has a designated route for hazardous materials and substances that does not go directly through the city of Amarillo.

Low level radioactive waste is currently shipped to Nevada Test Site. Mixed waste is currently staged in a Pantex facility, and waste metal components are currently shipped for disposal to an off-site, permitted facility.

This proposed action would provide for the design, construction and operation of a 13,900 gross square foot, (excluding mechanical room and loading dock) pre-engineered metal building, the primary function of which would be to provide RCRA-compliant warehouse space for the staging of hazardous waste, mixed waste, low level radioactive waste, and non-radioactive waste (waste metal components, contaminated soil, and asbestos waste).

This proposed facility is designed to stage three (3) possible hazardous waste classifications at any one time. One classification is solvents, which must be staged in the segregated Solvent Storage Area because of inherent flammability characteristics. There are three (3) rows for waste staging provided with spill containment trenches in the Solvent Storage Area, and only solvents or flammables could be staged in this area. The remainder of the building, which is called Bulk Material Staging Area, includes two (2) other rows for waste staging with spill containment trenches. Each row could hold a different classification of waste (other than solvents/flammables), or both rows could hold one (1) classification of waste. The classifications of hazardous waste that might be staged in this area include the following: acids (or organic acids), bases (or organic bases), cyanides, oxidizers, heavy metals, or others. The Bulk Material Staging Area would hold 640 fifty-five (55) -gallon metal drums, 320 drums (double stacked) over each of the two trenches, or sixty-six (66) boxes (7'x 4'x 4' or 7'x 4'x 2') over

each trench. NFPA (National Fire Protection Association) prohibits the stacking of drums in the Solvent Storage Area, limiting the number of drums over each trench to 160. The Bulk Material Staging Area could be utilized for staging mixed waste.

The design of this proposed building and the RCRA Classified Hazardous Waste Staging Facility are such that each of the staging areas can stage any of the compatible waste identified above. The HWSF would not stage waste or components that are classified.

This proposed facility would be for the staging of such materials in compliance with 40 CFR 264 and 268. It would be designed and constructed to criteria set forth in DOE Order 6430.1A and 40 CFR 264.170 through 264.178, which include: 1) Spill capturing provisions, 2) Protection from elements of weather, 3) Separate spill containment provisions for incompatible wastes or chemicals, 4) and sufficient aisle space provided to permit inspection of the containers. The technical objectives of this facility are to:

- o comply with all applicable environmental, safety and health safeguards, standards, policies and regulations, as, for example, in the Clean Air Act, the Clean Water Act, the Toxic Substances Control Act, DOE Orders 5400.1, 5480.5, 5820.2A and 6430.1A, the DOE Industrial Fire Protection Standards (5480.7), and Resource Conservation and Recovery Act (RCRA) of 1976;

- o reduce personnel risks in accordance with DOE health and safety regulations; and

- o provide equipment and control systems that improve personnel safety, material accountability, product quality and production efficiency.

The proposed facility at the Pantex Plant would be located west of 13th Street and north of the new steam power plant in accordance with the Pantex Plant Site Development Plan (Figure 3). The facility would consist of two major areas, Bulk Material Staging Area and Solvent Storage Area. There will also be a mechanical room and adjoining loading dock (Figure 4). The proposed facility would be sited on cleared land in the developed portion of the plant where the supporting infrastructure (roads, security, and requisite utilities) presently exist.

The building will consist of a metal structure on a concrete slab with a clear ceiling height of 15 feet. Two roll up doors (10 feet width) are also required to allow forklift access. In addition, four personnel access doors, two doors on each of the east and west walls, are required to comply with NFPA (National Fire Protection 101, Life Safety Code).

Spill containment would be required within the proposed facility. Because of different categories of staging classifications, separate spill containment for each waste classification would be required. Waste solvents would be staged in the proposed facility and, as a result, fire protection regulations necessitate the construction of fire walls to separate the flammables (solvents) from the rest of the materials staged in the facility.

In order to maintain staging flexibility within the facility, two separate spill containment trenches for bulk item staging (non-flammable staging) and three separate spill

containment trenches for solvents (i.e., flammables) would be provided. Aisles between the separate containment areas would be a minimum of ten feet. Containment trenches of sufficient volume would be required to assure a 10 percent spill capacity of the total drums plus containment of fire protection water for a total of 20 minutes within each containment area. The trenches would require a liquid tight seal. The floor would be slightly pitched to the trenches such that the flow of escaping liquids would be captured by the spill containment trenches.

The Bulk Material Staging Area is an open staging area while the Solvent Storage Area would occupy the remainder of the building. Both areas would be serviced by forklift and personnel traffic. Provisions would also be incorporated for grounding the drums. (Figure 4)

The proposed HWSF would be used to stage materials for shipment off-site for treatment, recycling, or disposal. This facility is also intended, in the future, to stage materials for the proposed Hazardous Waste Treatment and Processing Facility. In the case of mixed waste, the HWSF would stage materials until treatment and disposal options are identified and the contractual arrangements are in place.

The Mechanical Room would be sized and designed to provide adequate accessibility and ease of maintenance for mechanical and electrical equipment.

This project would consider the conservation of energy in the design of all mechanical and electrical systems. Cooling is not required for this facility. Personnel would not occupy this facility for a long enough duration for extreme heat to affect them. The Environmental Protection Department of Battelle Pantex determined that the drums of waste would not bulge if the interior temperature did not exceed 104°F. The ventilation systems would be interlocked with the lighting controls or other means so that the system would operate continuously while personnel are working inside the facility. The ventilation systems also would be energized by thermostat and would be designed to provide a minimum of six (6) air changes per hour (staging areas only) and maintain an interior summer temperature of 104°F (maximum) based on a design exterior temperature of 98°F. The ventilation systems would remove fumes from the building. The building would be heated to maintain a 50°F minimum temperature to provide freeze protection for waste solvents and fire protection systems. Electrical systems would include utility service, lighting, secondary and emergency power distribution, lightning protection, as well as static and equipment grounding systems. Electronic systems would include fire detection and alarm, public address, and service and secure telephone communications. A water distribution system would be installed to supply domestic water throughout the facility, as required. A fire protection system would be installed as necessitated by the presence of flammable waste solvents.

Site work would consist of site grading and drainage, possible removal of applicable portions of an abandoned sanitary sewer pipe, temporary construction fencing, soil sterilization (vegetation control around utility marker signs and under paving and slabs), and paving. Existing plant utility lines would be extended to provide necessary services to the new facility. These utilities would include domestic water, fire protection water, fire alarm, telephone, electricity, and public address.

Natural phenomena design was determined using regionally developed criteria, UCRL-15910, "Design and Evaluation Guidelines for Department of Energy Facilities Subjected to Natural Phenomena Hazards". Facility-use categories, located in Table 2-1 of UCRL and reproduced below, provide suggested guidelines to determine extent of protection the facility would provide personnel and contents against natural phenomena. This proposed facility has been analyzed using the Battelle Pacific National Laboratory "Hazard Class Determination" methodology. The results of these analyses indicate that this facility be designated a "low" hazard, "mission dependent" facility, and will afford protection against the design basis high winds and earthquake criteria for Important or Low Hazard Facilities for this area. Because of the facility use (see UCRL-15910, Table 5-3, below), this facility will not be designed for the design basis tornado.

TABLE 2-1
FACILITY-USE CATEGORY GUIDELINES

Facility-Use Category	Description
General Use Facilities	Facilities which have a non-mission dependent purpose, such as administration buildings, cafeterias, storage, maintenance and repair facilities which are plant or grounds oriented.
Important or Low Hazard Facilities	Facilities which have mission dependent use (e.g., laboratories, production facilities, and computer centers) and emergency handling or hazard recovery facilities (e.g., hospitals, fire stations).
Moderate Hazard Facilities	Facilities where confinement of contents is necessary for public or employee protection. Examples would be uranium enrichment plants, or other facilities involving the handling or storage of significant quantities of radioactive or toxic materials.
High Hazard Facilities	Facilities where confinement of contents and public and environment protection are of paramount importance (e.g., facilities handling substantial quantities of in-process plutonium or fuel reprocessing facilities). Facilities in this category represent hazards with potential long term and widespread effects.

A summary of the earthquake design parameters may be found in Table 4-1 of UCRL-15910, with the minimum wind design criteria located in Table 5-3. Table 5-5 describes the importance factors and effective velocity pressures. All three tables are provided below.

TABLE 4-1
SUMMARY OF EARTHQUAKE EVALUATION GUIDELINES

	FACILITY-USE CATEGORY			
	General Use	Important or Low Hazard	Moderate Hazard	High Hazard
HAZARD EXCEEDANCE PROBABILITY	$2x10^{-3}$	$1x10^{-3}$	$1x10^{-3}$	$2x10^{-4}$
RESPONSE SPECTRA	Median Amplification (no conservative bias)			
DAMPING	5%		Post Yield (Table 4-4)	
ACCEPTABLE ANALYSIS APPROACHES	Static or Dynamic Force Method Normalized to Code Level Base Shear		Dynamic Analysis*	
IMPORTANCE FACTOR	I=1.0	I=1.25	Not Used*	
LOAD FACTORS	Code Specified Load Factors Appropriate for Structural Material		Load Factors of Unity	
INELASTIC DEMAND-CAPACITY RATIOS	Accounted for by Rw In Code Base Shear Equation (Ref. 10 and Table 4-2)		Fu from Table 4-2 Applied to Dead Load Plus Live Load Plus Earthquake	
MATERIAL STRENGTH	Minimum Specified or Known In-situ Values			
STRUCTURAL CAPACITY	Code Ultimate or Allowable Level		Yield Level	
PEER REVIEW, QA, SPECIAL INSPECTION	—	Required		

* Minimum seismic requirements in these categories include static analysis per UBC provisions with I = 2.0 and Z from hazard exceedance probability for category considered.

TABLE 5-3
SUMMARY OF MINIMUM WIND DESIGN CRITERIA

	Building Category	General Use	Important or Low Hazard	Moderate Hazard	High Hazard
wind	Annual Probability of Exceedance	$2x10^{-2}$	$2x10^{-2}$	$1x10^{-3}$	$1x10^{-4}$
	Importance Factor*	1.0	1.07	1.0	1.0
	Missile Criteria			2x4 timber plank 15 lb @ 50 mph (horiz.); max. height 30 ft.	2x4 timber plank 15 lb @ 50 mph (horiz.); max. height 50 ft.
tornado	Annual Hazard Probability of Exceedance			$2x10^{-5}$	$2x10^{-5}$
	Importance Factor*			I = 1.0	I = 1.35
	APC			40 psf @ 20 psf/sec	125 psf @ 50 psf/sec
	Missile Criteria			2x4 timber plank 15 lb @ 100 mph (horiz.); max. height 150 ft; 70 mph (vert.) 3 in. dia. std. steel pipe, 75 lb @ 50 mph (horiz.); max. height 75 ft, 35 mph (vert.)	2x4 timber plank 15 lb @ 150 mph (horiz.), max, height 200 ft; 100 mph (vert.) 3 in. dia. std. steel pipe, 75 lb @ 75 mph (horiz.); max. height 100 ft, 50 mph (vert.) 3,000 lb automobile @ 25 mph, rolls and tumbles

* See Table 5-5 for discussion of importance factors

TABLE 5-5
IMPORTANCE FACTORS AND EFFECTIVE VELOCITY PRESSURES

Facility-Use Category	Extreme Winds	At Hurricane Oceanlines*	Tornadoes
General Use	1.00	1.05	--
Important or Low Hazard	1.07	1.11	--
Moderate Hazard	1.00	1.05	1.00
High Hazard	1.00	1.11	1.35

* For regions between the hurricane oceanline and 100 miles inland, the importance factor I shall be determined by linear interpolation.

In ANSI A58.1-1982 (Reference 16), effective velocity pressure, q_z, at any height z above ground is given by:

$$q_z = 0.00256 K_z (IV)^2$$

where Kz is a velocity pressure coefficient evaluated at height z (as a function of terrain exposure category per Table 6 of Reference 16)
I is importance factor given in Table 5-3 and above
V is the basic wind speed given in Table 5-4

Radiation emissions would be kept as low as reasonably achievable (ALARA) in accordance with DOE Order 5480.11. Under normal conditions, with enclosed drums containing radioactive components or mixed waste, meeting all safety criteria for waste staging areas, the anticipated emissions would not exceed a dose rate of 0.006 mrem/hr (gamma) at 3 feet. Periodically, monitoring will take place by the Radiation Safety Department of Pantex to ensure these conditions are still valid, in accordance with DOE Order 5480.11.

The RCRA inspection requirements for this facility (i.e., staging configurations, aisle spacing) are contained in the Hazardous Waste Permit issued by the Texas Water Commission and the EPA. The DOE has reviewed the permit and is comfortable with the inspection requirements contained therein.

Hazardous waste activities carry a potential risk of accidental contamination or exposure to the environment and/or personnel. Facilities involving hazardous waste are designed with protective physical features to minimize accidental contamination. These protective features include spill containment trenches and specialized foundation design. This proposed facility, as designed, would result in minimal risks to the environment.

An internal accident could expose plant personnel to toxic chemical materials. Emergency eyewash/shower stations would be located throughout the facility, in accordance with ANSI (American National Standards Institute) standards, to prevent harm to personnel, to the maximum extent possible.

Should the ventilation system fail to activate upon entry of plant personnel, or while personnel are working inside the building, warning devices will alert the personnel that the ventilation system has failed, presenting the opportunity for a dangerous toxic vapor buildup. Operating procedures will direct personnel to abandon the facility in the event of a ventilation failure alarm.

Periodic sampling from low level radioactive waste drums and non-radioactive waste drums would occur at intervals required by the Waste Analysis Plan in the Part B permit issued by the Texas Water Commission and the EPA. The sampling procedures would also meet the waste acceptance criteria for off-site treatment and staging facilities. A portable vacuum system equipped with a HEPA (high efficiency particulate air) filter would be used when sampling drums of low level radioactive wastes. The equipment used for the sampling of non-radioactive waste drums would depend on materials staged in the drums. If necessary, the same vacuum system would be used with possibly a carbon canister attached. Personnel protection and safety procedures would comply with the requirements of the Battelle Pantex Industrial Hygiene Department and OSHA (Occupational Safety and Health Administration) regulations.

The radiation exposure for one sampling procedure event (assuming each sampling operation was 1 hour), would result in a whole-body 50-year dose equivalent of approximately 6.8 mrem. If the same worker were to perform an estimated 200 sampling operations in a year, the current Pantex Plant standard for radiation exposure (1000 mrem per year from all sources) would be exceeded; however, the DOE limit of 5 rem per year would not be exceeded. Workers would be rotated to prevent exceeding the Pantex standard for radiation exposure. The calculated effective dose equivalent for the same estimated 200 sampling operations to a maximum receptor located approximately 7400 feet from the facility on the plant boundary at the point intersecting a line drawn from the facility to the closest residence is 1.2×10^{-7} mrem/year.

All operations would be performed utilizing approved operations and inspection standards in order to minimize the possibility of an accident.

3.0 Location of Proposed Action

The Pantex Plant consists of approximately 16,000 acres, located in Carson County, Texas, the northern part of the Texas Panhandle. (Figure 1) The adjacent area is entirely agricultural, with extremely low population density (3 persons/sq. mi.). The Plant is approximately 17 miles northeast of the City of Amarillo and 9 miles west of the City of Panhandle. (Figure 1)

The region is classified as "semi-arid"; its continental climate characterized by hot summers, relatively cold winters, with an average annual precipitation of 20 inches. The region is classified as "windy" (wind speed of >7 mph more than 95 percent of the year). The prevailing winds are from the south and southwest. The area is subject to thunderstorms throughout the year, with associated hail and the potential for tornados in the spring. There are occasional snow storms in the winter.

The Pantex Plant site (Figure 2) is principally level, with few elevation variations. The dominant soils are of the Pullman and Randall series and are underlaid by sedimentary Permian, Triassic, Tertiary and Quaternary formations. There are no natural rivers or streams. Three natural "playas" act as surface runoff reservoirs. The shallowest significant water-bearing stratum (Ogallala Formation of the Tertiary System) is approximately 400 feet below grade. The area is categorized in the Uniform Building

Code as "Seismic Risk Zone I", where some damage may occur as a result of distant earthquakes.

This portion of the High Plains plateau, in the transition zone between the North Central Plains and the Llano Estacado (staked plains), is essentially treeless. The Pantex Plant site is characterized as "mixed prairie", on which native vegetation consists of climax stands of bluestem, wildrye, and bunchgrasses, primarily buffalo and blue grama.

The proposed facility at the Pantex Plant would be located west of 13th Street and north of the new steam power plant. The entirety of Zones 11 and 12 are previously disturbed by human activity from past development actions and do not contain any unique or unusual natural habitat.

4.0 Alternatives to Proposed Action

4.1 No action: The Pantex Plant does not possess permanent containerized waste staging facilities with integral secondary containment or freeze protection. Additional deficiencies associated with some existing staging facilities include: no protection from precipitation running across the staging pads; lack of protection against weathering; and facility foundations not capable of containing leaks, spills or accumulated precipitation. These shortcomings have raised concerns with respect to requirements under Section 3001 of RCRA. Section 3001 of RCRA stipulates that all hazardous waste areas have provisions for capturing any spills or leaks that may develop, protection for containers to prevent bulging, separate spill containment provisions for incompatible wastes or chemicals, and sufficient aisle space to permit inspection of the contents. RCRA and the State of Texas prohibit the staging of waste for more than 90 days except in RCRA permitted facilities. The current waste staging areas are also currently at or near capacity; therefore, additional space is required for the staging of waste generated by operations at Pantex. Low level radioactive waste (rags, gloves, paper towels), hazardous waste, mixed waste, and waste metal components are typical wastes generated as a result of Pantex Plant operations. Because the existing staging areas are not always in compliance with regulatory agency requirements, there is a potential for shutting down the Pantex main staging area, thereby impacting Plant operations.

4.2 Redesign and Modify Existing Staging Facilities: The existing space for the staging of waste does not comply with EPA regulations. All of the waste staging areas at Pantex would require major modification to incorporate spill containment features. Also, the contents staged on the 11-7 pad (main staging area) must be protected from the elements of the weather to prevent the containers from bulging. It is not cost effective to bring them into compliance with EPA regulations, since the existing areas also lack the additional capacity that is required for the operation. In addition, current staging facilities would be impacted during construction modifications.

4.3 Use Other Existing Space at Pantex Plant: No existing facilities are available for the staging of waste which comply with all the requirements of the EPA and RCRA.

4.4 Use Temporary Structures: Currently, 38 CONEX cargo containers are used for staging of excess waste. These structures do not meet the EPA requirements for the

staging of waste, and are therefore, not an acceptable alternative. RCRA compliant staging structures are available for purchase; however, they are not cost effective considering the number of RCRA compliant structures that would be required to stage the volume of waste generated at the Pantex Plant. In addition, the RCRA compliant structures would not accommodate the large wood boxes that are used to stage contaminated soil, gravel, etc. This alternative would not effectively solve the problem.

4.5 Stage Waste at Other Sites: This is not an acceptable alternative since all other DOE sites are experiencing the same waste staging problems as the Pantex Plant.

4.6 Stage Wastes Separately: This is not an acceptable alternative because currently there are no existing facilities available which are designed to stage hazardous wastes and that meet RCRA criteria. Hazardous waste will be shipped off-site but will need to be temporarily staged; it is more efficient to consolidate waste operations.

5.0 Environmental Impacts of Project

The specific environmental effects of the proposed action will be as follows:

5.1 Archeology - Of the 42 prehistoric and 3 historical or cultural resources known to exist on the Pantex Plant property, none are within the proposed building site of the HWSF. The proposed HWSF and the proposed High Explosive (HE) Machining Facility have been sited approximately 2,800 feet apart and conditions in the area are very similar. The Texas Historical Commission was contacted in January 1990 in reference to the Environmental Assessment (EA) for the proposed High Explosive (HE) Machining Facility. They have stated that they have no record of properties listed or eligible for listing on the National Register of Historic Places within the project or affected area. An archaeological survey and historical facility survey will be conducted at Pantex in the near future. The proposed project would not be located on sites or impact facilities associated with these surveys. (See Section 7.0 Agencies Consulted). Should any historic or archaeological site be discovered during the proposed construction, work would be delayed until necessary steps were taken for proper preservation or documentation is concluded.

5.2 Floodplain/Wetlands - The proposed project site is not located in either a floodplain or wetland as described by federal regulations (10 CFR 1022) and would not in any way result in destruction, loss, or degradation of wetlands. The United States Department of the Interior, Fish and Wildlife Service was contacted in January 1990 in reference to the EA for the proposed HE Machining Facility. No objection was raised for the use of that area for a new building. Because of the close proximity to the HE Machining Facility, the conclusions also apply to the proposed HWSF (See Section 7.0 Agencies Consulted).

5.3 Threatened and Endangered Species and Critical Habitats - The building site does not contain any unique, unusual or critical habitats for known threatened or endangered species, nor does it adversely restrict known or established migratory corridors used by wildlife. The United States Department of the Interior, Fish and Wildlife Service was contacted in January 1990 in reference to the EA for the proposed HE Machining Facility. They had no objection to the use of that area for a new building. Because of

the close proximity to the HE Machining Facility, it is expected that the proposed HWSF site would not have any special species or habitat. (See Section 7.0 Agencies Consulted).

5.4 Surrounding Land Use - The building site is located between Zones 11 and 12 North, which are surrounded by a buffer zone. Agricultural (livestock grazing, dry and irrigated cultivation) and transportation (highway and rail) uses predominate in the buffer zone and around the Pantex Plant. The population density of the area adjacent to and surrounding the Pantex Plant is approximately 3 persons per square mile. Farms/ranches average 1280 acres in size. The nearest development is the Texas Tech University Agriculture Research Station, one mile south of the Plant. Highland Park School is approximately 4.5 miles to the southwest. There are no expected environmental impacts of the proposed action on the surrounding land use.

5.5 Construction - During the construction phase, some airborne particulate matter (dirt) would be generated during scarifying and earth moving operations at the building site and the borrow pit. The borrow pit is not part of the proposed action, but is used for additional soil fill for plant-wide projects. The proposed action requires a 3' above-grade foundation and soil from the borrow pit would be used to build up the grade. Gravel and watering would be employed to mitigate the impact of airborne dirt. The impacts would be the same or less than those experienced on and in the vicinity of cultivated fields in the local area during cultivation periods and during wind/dust storms. When building construction is complete, the site would be cleaned, graded and compacted to eliminate wind and water erosion. Final grading would direct surface runoff into the existing storm water drainage system. General construction waste would be sent to the on-site landfill. The construction work force, to be drawn from the existing regional pool, would have no measurable impact on land use, housing and social services.

5.6 Air Emissions - During the construction phase of this project, the movement of earth at the construction site would generate airborne dirt. The resulting impact should be no worse than that experienced from the adjacent cultivated fields during wind/dust storms that frequent this region. The site of the proposed facility has never been developed. There is no evidence that the soil is contaminated in any way nor has it been identified as a Solid Waste Management Unit (SWMU). No contamination should be encountered when the soil is disturbed for construction and no mitigation is needed to reduce potential health effects. The cumulative impacts of the fugitive dust combined with the off-site dust should be negligible. The prevailing wind is from the southwest and there are no inhabited buildings within 1000 feet north or northeast of the proposed location of the new building.

The fume level within the building would be very low since the building houses normally sealed containers. With the issuance of the Hazardous Waste Permit, permission was received by the Texas Air Control Board (TACB) to construct and operate this facility. The conditions of the permit limit the number of drums that can be opened at any one time in the building for sampling and consolidation purposes.

5.7 Building Effluent Discharges - There would be no discharge of liquid effluents from the proposed HWSF into off-site surface waters. In general, all liquid effluents (storm water runoff and non-contact industrial waste water) are routed to retention basins

(playas) within the site boundary. There would be no release of contaminated liquids from the HWSF to the playas during normal operations in this proposed facility. Any contaminated spilled material would be treated as a hazardous waste, put in appropriate containers, and staged in the HWSF. Sewage from building sanitary facilities will be routed to the Plant sanitary sewer system.

5.8 Solid Waste - The solid waste generated from the construction of the HWSF, less than 50 cubic yards, would constitute excess soil and other material generated during the construction phase of the activity. These wastes would be inspected by the Environmental Protection (EP) Department personnel of Battelle Pantex, and, if acceptable, would be placed in the construction landfill in accordance with DOE Orders and other applicable regulations. The remaining capacity of the present construction landfill is approximately 7500 cubic yards. Guidelines have been issued for the use of the landfills.

5.9 Low level Radioactive Waste/Soil, Hazardous Waste, Mixed Waste, and Asbestos Waste - This proposed facility would be specifically designed, constructed and operated for staging of hazardous waste, mixed waste, low level radioactive waste, and inert waste generated at the Pantex Plant. No anticipated wastes of this nature will be generated by the construction of this facility.

5.10 Transportation - This proposed facility would be built on 13th Street, a minor road at the Pantex Plant with minimal traffic. The Pantex road system is extensive though not very heavily traveled, especially during core working hours. If waste must be transported off-site, Amarillo has a designated route for hazardous materials and substances that does not go directly through the city of Amarillo. Waste that would be transported to off-site permitted facilities would be in containers that meet the criteria set forth by the Department of Transportation (DOT). These are impact-resistant containers designed to mitigate the environmental effects of a traffic accident.

5.11 Radiation Effects - Workers and the public that may be exposed to the very low radiation levels described in Section 2.0 would not be expected to incur any adverse health effects, based on recent radiation risk estimation guidance (Ref. #9). The radiation exposure for one sampling procedure event (assuming each sampling operation was 1 hour), would result in a whole-body 50-year dose equivalent of approximately 6.8 mrem. If the same worker were to perform an estimated 200 sampling operations in a year, the current Pantex Plant standard for radiation exposure (1000 mrem per year from all sources) would be exceeded; however, the DOE limit of 5 rem per year would not be exceeded. Workers would be rotated to prevent exceeding the Pantex standard for radiation exposure. The calculated effective dose equivalent for the same estimated 200 sampling operations to a maximum receptor located approximately 2700 meters from the facility on the plant boundary at the point intersecting a line drawn from the facility to the closest residence is 5.9×10^{-7} mrem/year.

5.12 Potential Accidents -

5.12.1 Aircraft Impact A quantitative analysis of the probability of an aircraft crash into the proposed facility has been performed. Calculations of this probability based on the

methodology used in the Site Environmental Statement (EIS) have determined an airplane crash accident event to be $7x10^{-7}$. A direct aircraft crash into the proposed facility would severely damage or destroy it, and possibly kill personnel located near the accident. Hazardous wastes from the proposed facility would be widespread in the event of an aircraft crash. The calculated effective radiation dose equivalent for this scenario to a maximum receptor located approximately 2700 meters from the facility on the plant boundary, at the point intersecting a line drawn from the facility to the closest residence, would be $2.8x10^{-1}$ mrem/yr. This dose is well below the 25 rem dose limit criterion set forth in DOE Order 6430.1A for radiological releases at the plant boundary. On-site radiation effects would be limited to those from deposition from the release plume. The calculated effective radiation dose equivalent to on-site workers would not exceed $2.6x10^{-3}$ rem at a distance of 0.10 km from the site of the crash. Surface waters are not released to public drinking water, and this should not contribute to off-site impacts. In the event of a plane crash into the proposed facility a significant effort would be required to clean up or decontaminate the affected areas. The affected site for any such incident would be remediated per state and Federal requirements.

5.12.2 Spills The proposed HWSF would stage quantities of hazardous and radioactive waste that could become mobile and threaten water quality if released to the external environment. A spill could occur due to container failure or human error such as improper stacking/handling of drums. Based on expected radiation levels for drums used to stage wastes, if one drum spilled its entire contents, the total radiation dose equivalent would be approximately 4.2 rem if a worker remained at the spill site for one hour. This exceeds the current plant standard. However, the DOE limit of 5 rem would not be exceeded. The one hour exposure period was used as a reference base for calculating a radiation dose. In assessing a spill, trained workers for this facility would not allow themselves to be exposed for one hour to the contents of a drum without obtaining proper personnel protective equipment. The effective dose equivalent of the off-site receptor for this scenario would be less than $5.2x10^{-2}$ mrem/year.

In the event of a spill inside the facility, the design features of the facility would contain and mitigate any potential environmental impacts. In the event of a spill outside the building, Battelle Pantex has procedures in place for spill containment response, as detailed in the Revision of the Pantex Plant's SPCC and RCRA Contingency Plan. The person first observing the incident should phone the Emergency Operations Center (EOC) at Pantex. A designated Hazardous Materials Emergency Coordinator (HMEC) would be contacted to respond to the spill. The HMEC would notify pertinent personnel and then proceed to the scene of the incident. In situations involving fire or explosion, the Pantex Fire Department would be immediately contacted. Once at the scene, the HMEC would determine the necessary actions required to alleviate the situation.

For spills involving materials known or suspected to be radiologically contaminated, the HMEC would notify the Radiological Assistance Team (RAT). No further actions to contain or clean up the spill would be taken until a RAT member arrives at the scene and assesses the situation. At this point, the RAT member assumes responsibility for response actions unless and until it is determined that there is no radiological contamination involved. The RAT member would respond in accordance with the Pantex Plant Radiological Assistance Team Procedures (Document No. EPP-8001).

For spills involving materials that are both hazardous and radiologically contaminated, the HMEC would remain as the emergency coordinator. The HMEC would coordinate response activities with the RAT. The HMEC would notify the Industrial Hygiene Department for any spill involving a response action which requires protective equipment (PPE).

Federal and State regulations require notification of spills or releases of oil products or hazardous substances. Reportable spills are to be reported to the National Response Center (NRC) Duty Officer in Washington, D.C. Any spill of a reportable quantity of oil, or hazardous substances, or a release or threatened release, must be reported to the Emergency Spill Response Number of the Texas Water Commission. DOE/AAO is responsible for all oral and written notifications to outside agencies.

The proposed HWSF would be designed with safety features to protect the land and water next to the facility. The site would be graded to drain surface water into the existing Pantex Plant storm water drainage system. Fire protection would be provided by a dry pipe automatic sprinkler system throughout the building. The floors in the facility would be sloped to containment trenches to provide required containment of spills as well as sprinkler water.

The spill site for any such incident would be remediated per state and federal requirements.

5.12.3 Facility Fire Although a catastrophic fire could occur at the proposed HWSF, it is considered to be unlikely due to the concrete and metal construction of the facility, fire rated separations and the installation of the sprinkler system. Fires could include paper, trash, electrical equipment, and chemical and solvent wastes staged in the facility. The design and construction of the facility would limit the fuel loading contributed by the materials of construction. Administrative controls and RCRA-required provisions prohibiting the close staging of incompatible wastes would be used to limit fuel loading contributed by the contents of the building.

If a catastrophic fire occurred, there would be a variety of toxic gases released regardless of the contents or the amounts of hazardous wastes. Firefighters would be required to wear respirators in responding to any staging facility fire. Depending upon the judgement of the chief firefighter, a fire may be allowed to burn itself out to preclude impacts of contaminated water runoff. Some of the toxic metals include chromates, lead, chromic acids, lithium, and mercury. Acid gases, in addition to a variety of formed organic and inorganic compounds, include cyanide gas and phosgene gas. The effect on the human population, not located in the direct vicinity of the building, would be almost non-existent.

The damage to workers cleaning up the effects of a building fire would depend on the quantities and concentrations of chemicals staged, the particular chemicals that were present at the time of the fire, and the reaction time of the response team. Possibilities of groups of chemicals that could be present in the proposed building include:

Acids: Depending upon the amounts released, acids can be corrosive to human tissues, depending on the type and its concentration.

Caustics (or bases) may also be corrosive to human tissues depending on the concentration.

Isocyanate can be a strong irritant of the eyes, mucous membranes, and skin. It is also a potent sensitizer of the respiratory tract.

Alodine includes hexavalent chromium and is a known human carcinogen. It is an oxidizer and is corrosive to human tissues.

Mercury compounds and metallic mercury are poisonous. Effects on humans include mild to severe gastritis, ataxic gait, convulsions, numbness in mouth and limbs, constriction of visual field, and difficulty in speaking.

Asbestos is a known human carcinogen. Small asbestos particles become airborne readily and remain suspended for extended lengths of time.

Lead is also a poison which can cause severe gastrointestinal disturbances and anemia. High levels of exposure to lead can cause neuromuscular dysfunction.

Workers would be required to wear Level A personnel protection equipment (ppe) before entering the affected area. This would include SCBA (self-contained breathing apparatus), full impervious suits, shoe covers, and gloves. Depending upon the characterization of the remains, the personnel protection equipment could be downgraded appropriately according to the situation.

Protective equipment for residues such as asbestos would be issued in coordination with the Industrial Hygiene Department for any personnel involved in activities immediately in the area. Evacuation procedures in the immediate area would be followed as specified by Plant regulations. The fire site and surrounding areas would be remediated per state and federal requirements for such residue as asbestos.

5.12.4 Earthquake The proposed facility would be designed and constructed in accordance with the requirements of UCRL-15910, "Design and Evaluation Guidelines for Department of Energy Facilities Subjected to Natural Phenomena Hazards" to protect against the design basis earthquake criteria for Important or Low Hazard Facilities for this area.

5.12.5 Tornado The proposed facility would be designed and constructed in accordance with the requirements of UCRL-15910, "Design and Evaluation Guidelines for Department of Energy Facilities Subjected to Natural Phenomena Hazards" to protect against the design basis high winds criteria for Important or Low Hazard Facilities for this area. Because of the facility use, this facility would not be designed for the design basis tornado.

In the event of a tornado impacting the proposed facility, the structure could be destroyed and contents scattered around the plant site. The response procedures outlined for a spill event would be put in place to handle this circumstance. Cleanup would be required in accordance with state and federal requirements.

6.0 Summary

The proposed HWSF would provide a safer, RCRA compliant structure for the staging of hazardous waste, mixed waste, low level radioactive waste and non-radioactive waste (waste metal components, contaminated soil, and asbestos waste). The new HWSF would also reduce the risk to the environment and to personnel with its spill capturing provisions, protection from the elements of weather, and separate spill containment.

7.0 Agencies Consulted

The proposed Hazardous Waste Staging Facility would not affect any additional concerns on the local environment that were addressed in the EA for the HE Machining Facility. In January 1990, the following agencies were contacted for the drafting of the HE Machining Facility EA:

United States Environmental Protection Agency

Texas Water Commission

United States Department of the Interior Fish and Wildlife Service

Texas Air Control Board

Texas Historical Commission

Texas Parks and Wildlife Department

Department of the Army, Corps of Engineers

8.0 References

1. RCRA (Resource Conservation and Recovery Act), 42 USC 6901 et seq., as amended.

2. Title 40 CFR (Code of Federal Regulations) Part 261, Identification and Listing of Hazardous Waste

3. Final Action Plan for Tiger Team Assessment of The Pantex Plant, Amarillo, Texas, August 13, 1990, Finding WM/CF-3.

4. UCRL (UCRL-15910) 1989. Design and Evaluation Guidelines for Department of Energy Facilities Subjected to Natural Phenomena Hazards. Prepared for the Office of the Assistant Secretary for Environment, Safety and Health, Office of Safety Appraisals, U.S. Department of Energy.

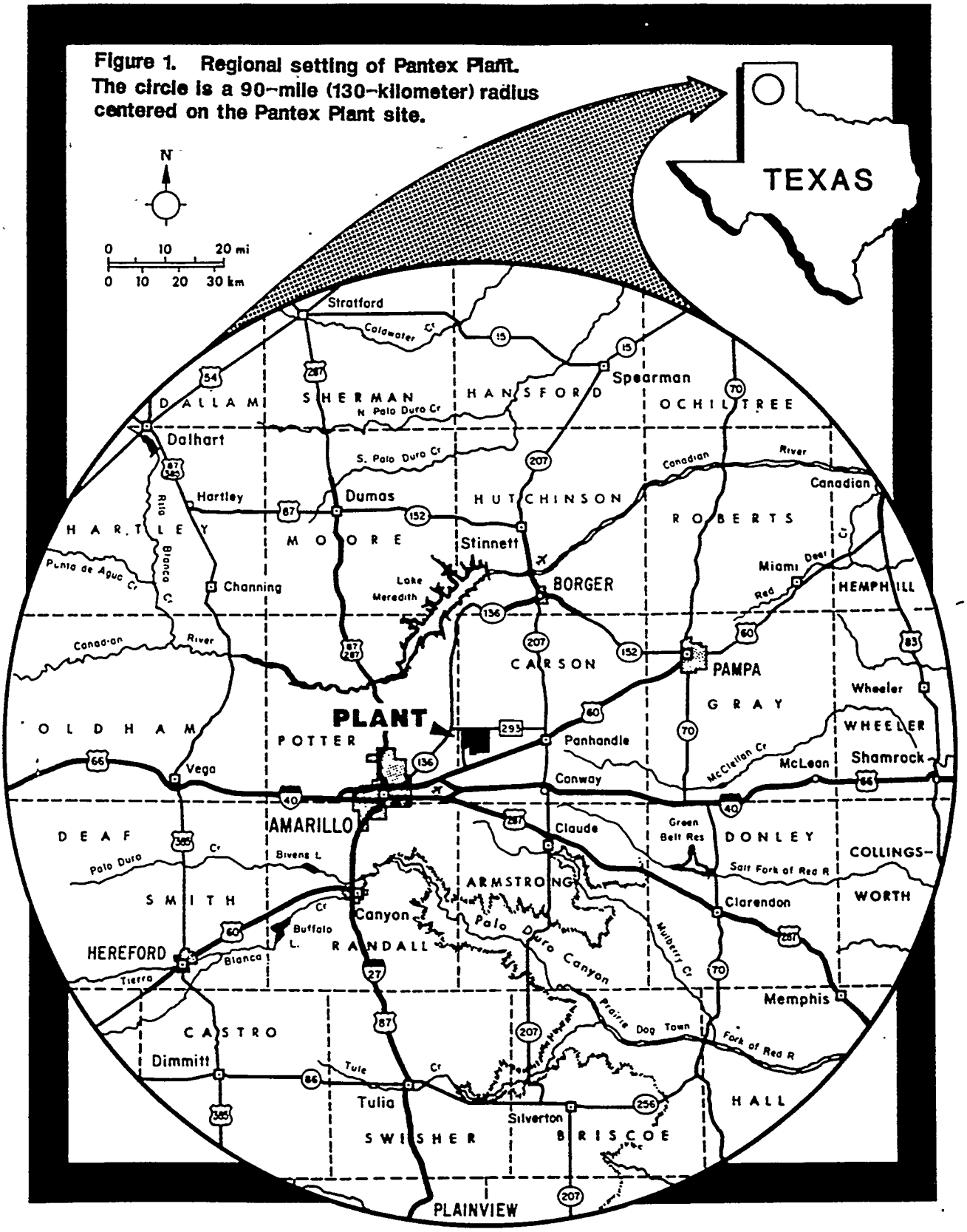
5. DOE (U.S. Department of Energy), 1983a. Final Environmental Impact Statement Pantex Plant Site, Amarillo, Texas. DOE/EIS-0098 October 1983.

6. Site Development Plan, Pantex Plant, Amarillo, Texas, November 1990

7. Revision of the Pantex Plant's SPCC and RCRA Contingency Plan, Revision No. 2.0, August 1991, Radian Corporation, Milwaukee, WI.

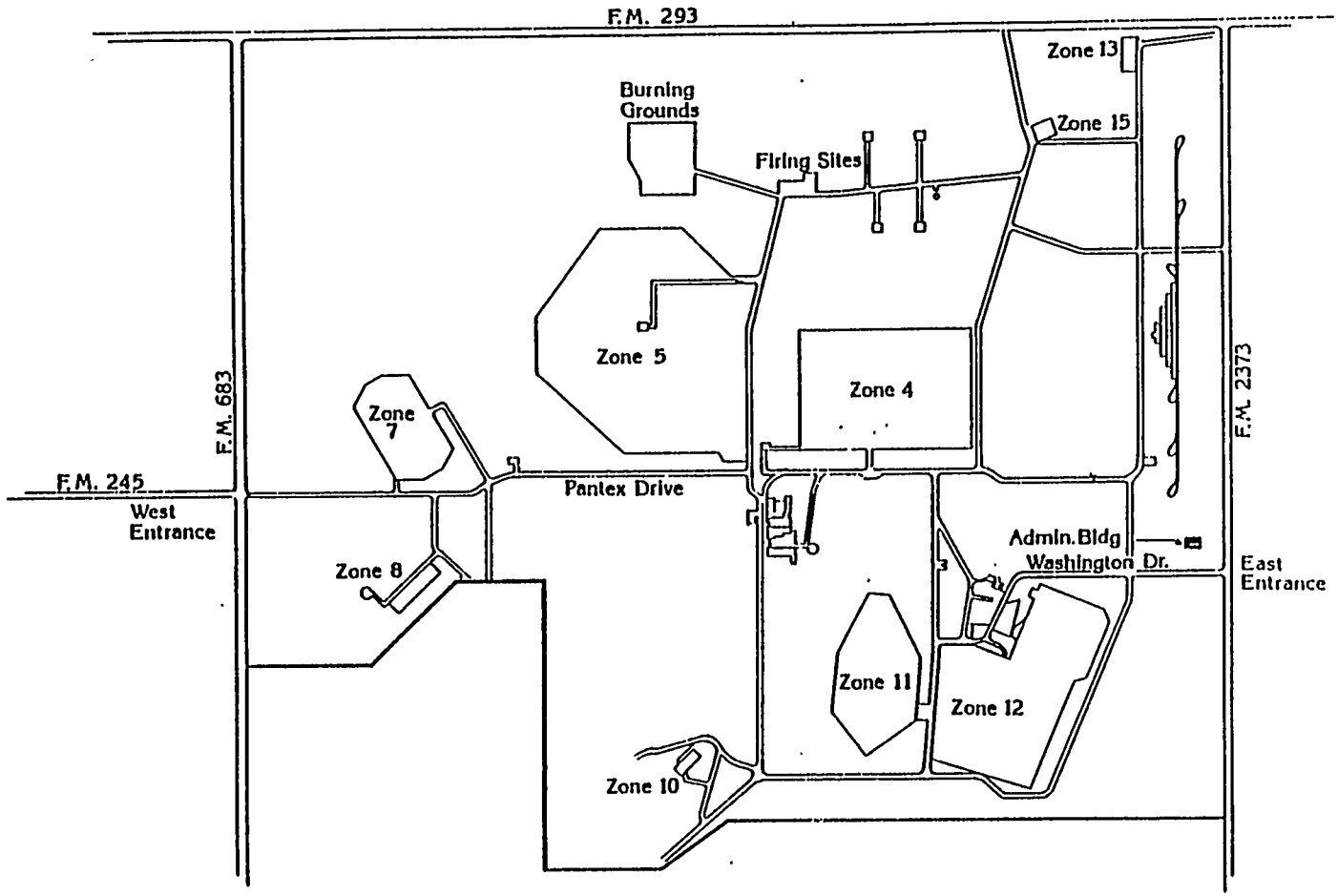
8. Griffis (Griffis, David W.), 1991. Radiation dose calculations using "AIRDOS-PC", an EPA authored and approved software, and "Code for Internal Dosimetry" (CINDY) software, developed by Battelle - Pacific Northwest Laboratories.

9. Standards for Protection Against Radiation, 56FR23360-63, May 21, 1991, Nuclear Regulatory Commission (summarizes recent radiation risk assessment guidance)



PANTEX VICINITY MAP

Figure 1



PANTEX PLANT MAP
FIGURE 2

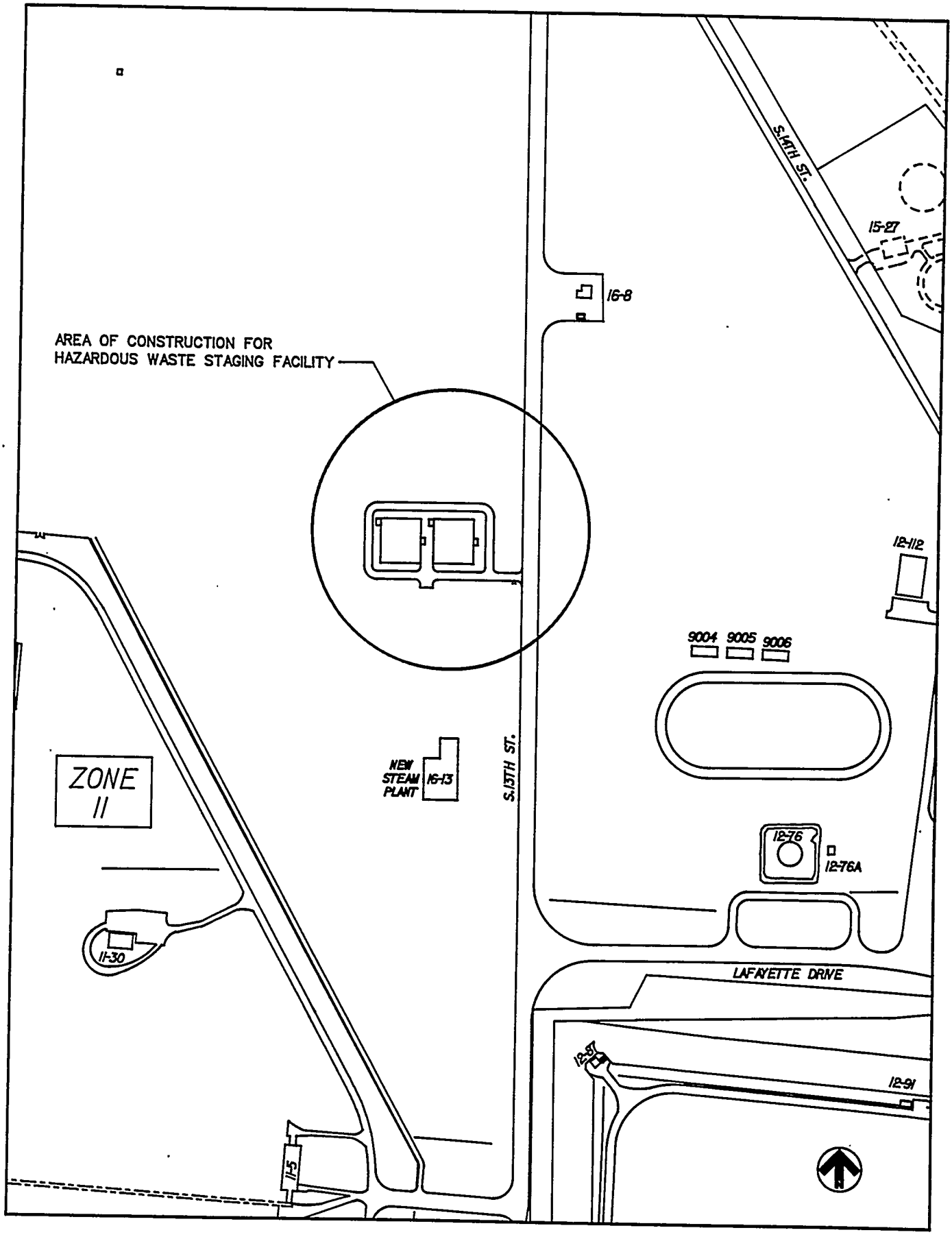
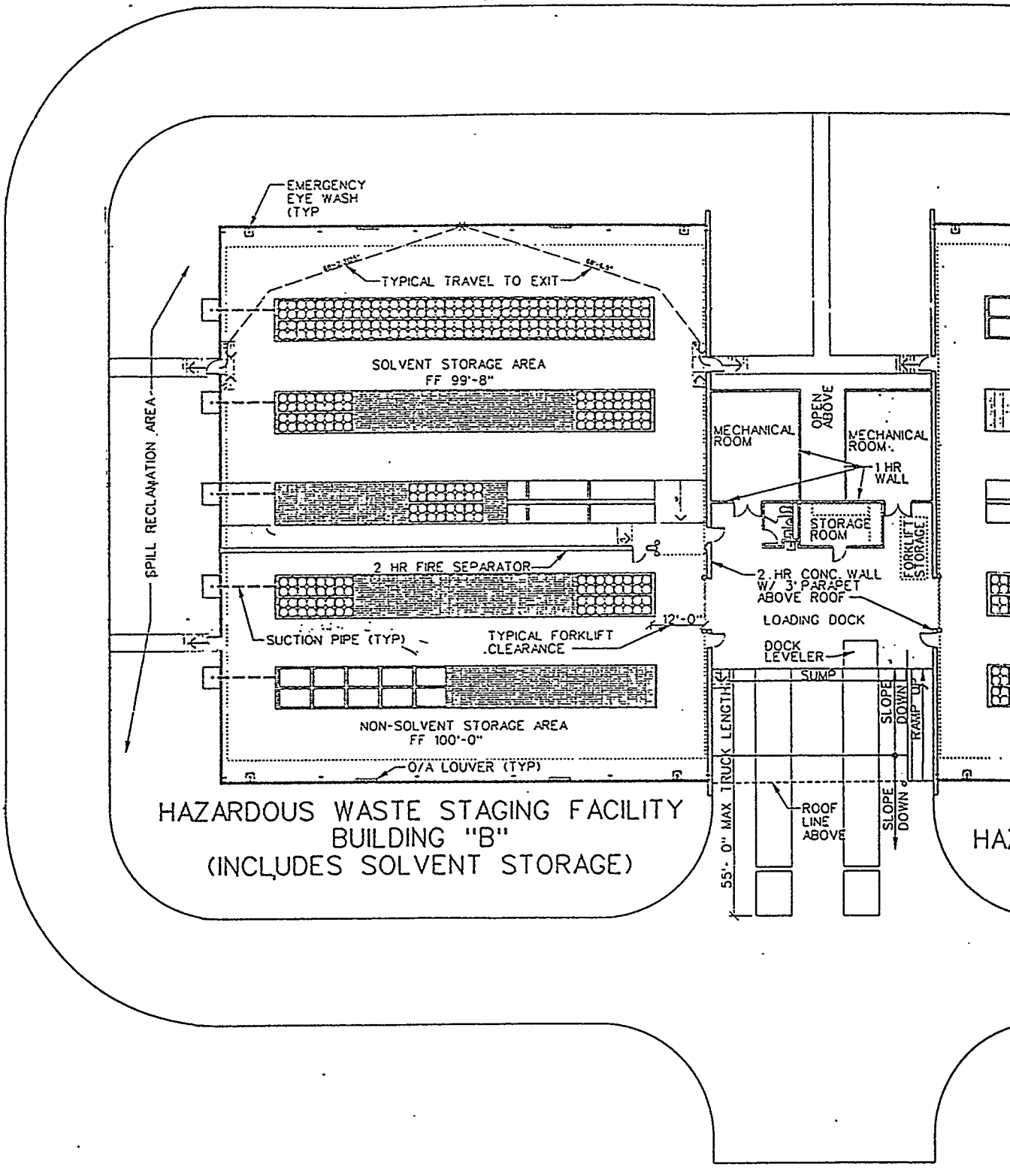

AREA OF CONSTRUCTION FOR
HAZARDOUS WASTE STAGING FACILITY
S.14TH ST.
15-27
16-8
12-112
9004 9005 9006
NEW STEAM PLANT 16-13
S.13TH ST.
ZONE II
12-76
12-76A
11-30
LAFAYETTE DRIVE
12-91
11-5

FIGURE 3



LEGEND

- 4' X 4' WOODEN PALLET W/ 55 GALLON DRUMS
- 7' 4' X 4' WOODEN BOXES
- BAR GRATING
- BAR GRATE SUPPORT FRAME
- EMERGENCY EYEWASH AND SHOWER
- VENT LOUVERS
- = COLUMN
- o STEEL GUARD POST