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DRAFT MANAGEMENT ACTION PLAN AND BASELINE REALIGNMENT CLOSURE PLAN  
NAS FORT WORTH TX  
2/6/2001  
HYDROGEOLOGIC



**NAVAL AIR STATION  
FORT WORTH JRB  
CARSWELL FIELD  
TEXAS**

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**ADMINISTRATIVE RECORD  
COVER SHEET**

AR File Number 681



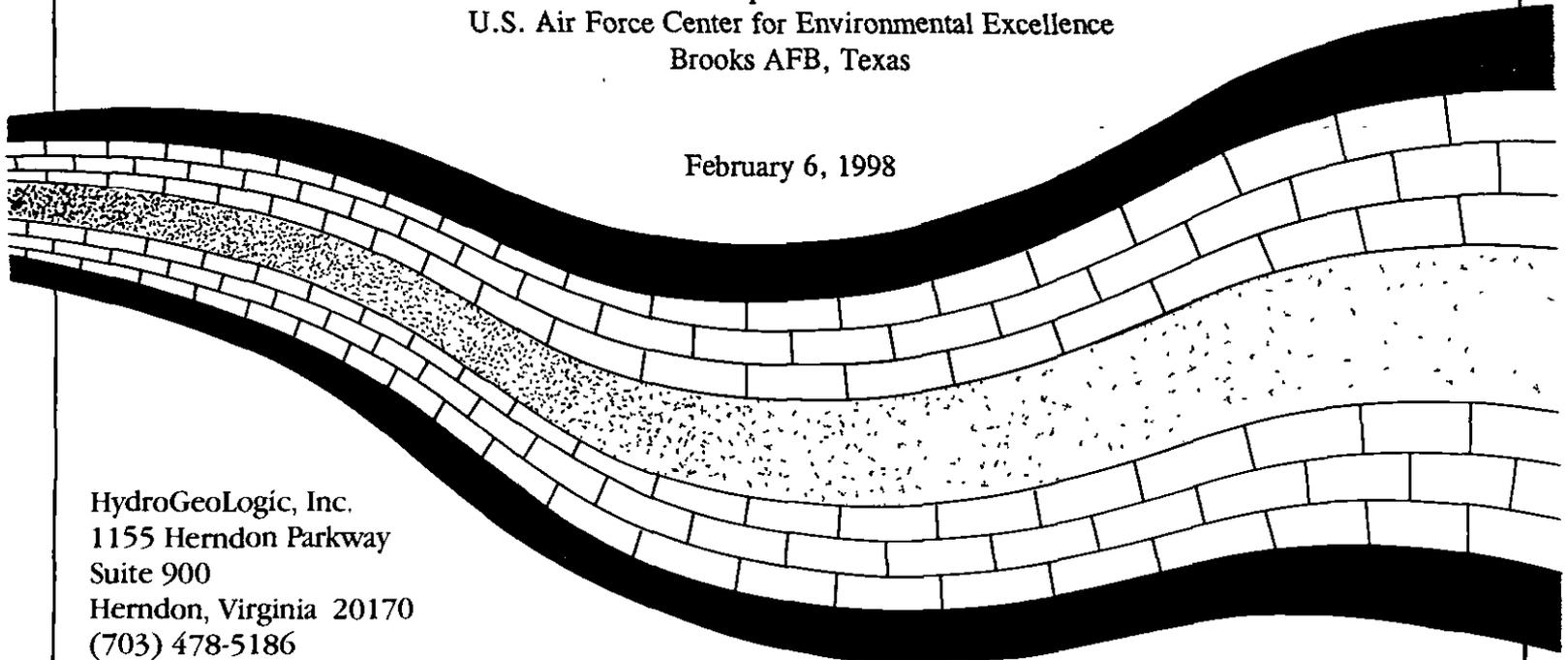
**DRAFT MANAGEMENT ACTION PLAN/BRAC CLEANUP PLAN  
FOR THE  
FORMER CARSWELL AIR FORCE BASE  
NAVAL AIR STATION FORT WORTH JOINT RESERVE BASE**



Contract Number F41624-95-D-8005

Prepared for:  
U.S. Air Force Center for Environmental Excellence  
Brooks AFB, Texas

February 6, 1998



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**VIA FEDEX**

February 10, 1998

Mr. Alan Flolo  
AFBCA/DC-Carswell  
6550 White Settlement Road  
Fort Worth, TX 76114-3520

**Re: Draft MAP/BCP  
NAS Fort Worth JRB, Texas  
F41624-95-D-8005-0005, Delivery Order No. 05**

Dear Alan:

Please find enclosed two copies of the Draft Management Action Plan/BRAC Closure Plan for the above-referenced project. Should you have any questions, please contact me at (703) 736-4538.

Sincerely,



Christopher J. Roman  
Task Manager

Enclosures (2)

cc: Mr. Joe Dunkle, AFCEE  
Mr. Jim Costello, HydroGeoLogic

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Herndon, VA 20170

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## LIST OF ACRONYMS

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AFB	Air Force Base
AFBCA	Air Force Base Conversion Agency
AFCEE	Air Force Center for Environmental Excellence
AFP 4	Air Force Plant 4
AGE	Aerospace Ground Equipment
Air Force	U.S. Air Force
AOC	Area of Concern
AST	Aboveground Storage Tank
BCP	BRAC Cleanup Plan
BCT	BRAC Cleanup Team
BRAC	Base Realignment and Closure
CA	Cost Analysis
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CRA	Carswell Redevelopment Authority
CRP	Community Relations Plan
DBCRA	Defense Base Closure and Realignment Act
DERA	Defense Environmental Restoration Account
DERP	Defense Environmental Restoration Program
DOD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
EBS	Environmental Baseline Survey
EE	Engineering Evaluation
EIS	Environmental Impact Statement
FBOP	Federal Bureau of Prisons
FEIS	Final Environmental Impact Statement
FS	Feasibility Study
ILS	Instrument Landing Site
IRP	Installation Restoration Program
IRPIMS	Installation Restoration Program Information Management System
JRB	Joint Reserve Base
LTM	Long-Term Monitoring
LTO	Long-Term Observation
MAP	Management Action Plan
MGD	Million Gallons per Day
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NA	Not Applicable
NAS	Naval Air Station
Navy	U.S. Navy
NCTCOG	Northern Central Texas Council of Governments

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**LIST OF ACRONYMS**

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NDI	Non-Destructive Inspection
NEPA	National Environmental Policy Act
NFA	No Further Action
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	National Park Service
NRHP	National Register of Historic Places
OWS	Oil/Water Separator
PA	Preliminary Assessment
PCB	Polychlorinated Biphenyl
POL	Petroleum/Oil/Lubricant
RA	Remedial Action
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
ROD	Record of Decision
ROI	Region of Influence
RPM	Remedial Project Manager
RRR	Risk Reduction Rule
SAC	Strategic Air Command
SARA	Superfund Amendments and Reauthorization Act
SCS	Site Characterization Summary
SHPO	State Historic Preservation Officer
SWMU	Solid Waste Management Unit
TCE	Trichloroethylene
TDPW	Texas Department of Parks and Wildlife
TNRCC	Texas Natural Resource Conservation Commission
USACE	U.S. Army Corp of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
WAA	Waste Accumulation Area
WSA	Weapons Storage Area
WRA	Westworth Redevelopment Authority

# TAB

Section 1

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**DRAFT MANAGEMENT ACTION PLAN/BRAC CLEANUP PLAN  
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FORMER CARSWELL AIR FORCE BASE  
NAVAL AIR STATION FORT WORTH JOINT RESERVE BASE**

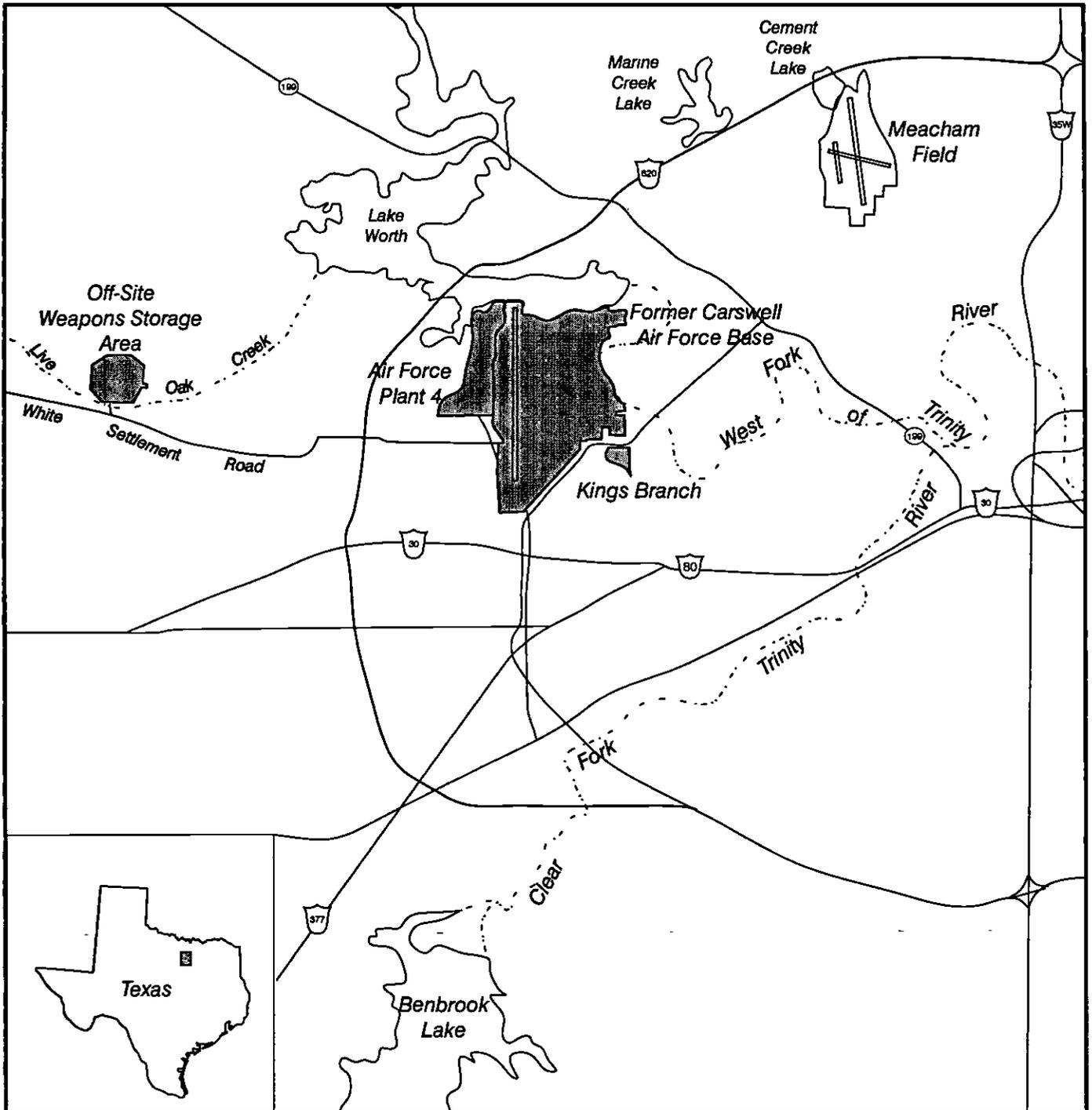
## **1.0 INTRODUCTION**

### **1.1 BACKGROUND**

As a result of past waste and resource management practices, portions of the former Carswell Air Force Base (AFB) were contaminated by various hazardous substances. In response, the U.S. Air Force (Air Force) instituted an environmental restoration program in 1984 ("BRAC Cleanup Plan: Carswell Air Force Base, Fort Worth, Texas," April 1995 (1995 BCP), p. 1-7). This Draft Management Action Plan (MAP)/BRAC Cleanup Plan (BCP) summarizes the current status of the continuing environmental restoration activities at the former Carswell AFB and provides a long-range planning and budgeting guide for future restoration activities.

On October 1, 1994, the Air Force transferred the majority of the property that constituted Carswell AFB to the U.S. Navy (Navy) to become the Naval Air Station Fort Worth Joint Reserve Base, Carswell Field (NAS Fort Worth JRB). NAS Fort Worth JRB occupies 2,264 acres in Tarrant County, 8 miles west of downtown Fort Worth, Texas. The general locations of NAS Fort Worth JRB, and of the contiguous and noncontiguous properties associated with the former Carswell AFB, are depicted on Figure 1.1. The noncontiguous properties include a 247-acre Weapons Storage Area (Off-Site WSA) and a 44-acre residential parcel known as Kings Branch. A neighbor to the west of NAS Fort Worth JRB is Air Force Plant 4 (AFP 4), a government-owned/contractor-operated facility where combat aircraft are designed and manufactured (1995 BCP, p. 1-5).

The Air Force maintains responsibility for the environmental cleanup of the base and associated property in cooperation with the Navy. NAS Fort Worth JRB property is being investigated and cleaned up with Defense Environmental Restoration Account (DERA) funds through the Air Force Center for Environmental Excellence (AFCEE). Specifically, the Air Force, under its Installation Restoration Program (IRP), is responsible for the cleanup of contamination that resulted from operations conducted prior to the October 1, 1994, transfer date. The contiguous and noncontiguous portions of the former Carswell AFB being transferred to the public by the Department of Defense (DOD) are being investigated and remediated with Base Realignment and Closure (BRAC) funds through the Air Force Base Conversion Agency (AFBCA). The AFBCA determines the conditions for transfer of property in conjunction with the Westworth Redevelopment Authority (WRA). The AFBCA works closely with the WRA to redevelop land for the economic benefit of the community ("Community Relations Plan: Naval Air Station Fort Worth Joint Reserve Base, Carswell Field, Texas," July 1997 (1997 CRP), p. 2).



**Figure 1.1**  
**Site Location**



The Navy has responsibility for remediating any contamination that has resulted after the October 1, 1994, transfer date, and is also managing environmental compliance activities associated with petroleum products, storage tanks, oil/water separators (OWSs), pesticides, medical waste, asbestos, polychlorinated biphenyls (PCBs), radon, lead-based paint, and other hazardous materials. The Air Force and the Navy have signed several memorandums of understanding (MOUs) that outline the general terms under which the Air Force and Navy will conduct the environmental management of NAS Fort Worth JRB. The Air Force has also entered into a partnering relationship with the U.S. Environmental Protection Agency (USEPA), Region VI, the Texas Natural Resource Conservation Commission (TNRCC), and other state agencies to ensure that it meets its obligations to ensure quality cleanup efforts and environmental compliance (1997 CRP, pp. 1-2).

## **1.2 REPORT ORGANIZATION**

This Draft MAP/BCP is designed to fulfill the requirements of both a MAP for the IRP and a BCP for the BRAC program. A MAP and a BCP are similar in that both are intended to summarize the status of an installation's environmental restoration and compliance programs and discuss the overall strategy for environmental restoration and related compliance activities. Both types of reports define efforts to resolve technical issues and strategies, action items, and schedules for environmental restoration activities leading to property disposal and transfer ("MAP Guidebook Update," June 1995; "BRAC Cleanup Plan Guidebook," Fall 1995).

Although the recommended outlines for a MAP and a BCP are similar, there are some variations. The outline for this Draft MAP/BCP is a hybrid that seeks to provide the information required for both the IRP and BRAC programs as they apply to the former Carswell AFB. Because the Navy is responsible for environmental compliance issues, those sections of the MAP and BCP outlines that pertain to compliance have been omitted. Also, it should be noted that the NAS Fort Worth JRB and associated Air Force properties, with the exception of AFP 4, will be referred to in this document as the former Carswell AFB. AFP 4 is not addressed in this document except when contamination from that property impacts NAS Fort Worth JRB and Air Force properties.

This report consists of seven major sections. Section 1.0 of this report describes the objectives of the environmental restoration program, explains the purpose of this Draft MAP/BCP, and provides a brief history of the base.

Section 2.0 summarizes the current status of the Carswell AFB property disposal planning process and describes the relationship of the disposal process with other environmental programs.

Section 3.0 summarizes the current status and past history of the Carswell AFB IRP, the status of the base natural and cultural resources program, and community relations activities that have occurred to date.

Section 4.0 describes the basewide strategy for environmental restoration, including the strategies for dealing with each solid waste management unit (SWMU) and area of concern (AOC).

Section 5.0 provides master schedules of planned and anticipated activities to be performed throughout the duration of the environmental restoration program.

Section 6.0 describes specific technical and/or administrative issues to be resolved and presents a strategy for resolving these issues.

Section 7.0 lists the references for the information contained in this report.

In addition to the main text, the following appendices are included in this document:

- Appendix A - tables presenting projected restoration costs
- Appendix B - a table listing previous environmental restoration program deliverables by SWMU and AOC
- Appendix C - copies of relevant correspondence concerning actions at various SWMUs and AOCs
- Appendix D - a copy of the February 1997 MOU concerning environmental compliance with copies of the June 8-9, 1993 MOU, the September 23, 1994 MOU, the January 26, 1996 amendment to the original MOU, and the June 19, 1996 MOU as attachments
- Appendix E - a comparison of the suggested MAP and BCP outlines with the outline for this Draft MAP/BCP

### **1.3 ENVIRONMENTAL RESPONSE OBJECTIVES**

The objectives of the environmental restoration effort at the former Carswell AFB are as follows (1995 BCP, pp. 1-2-1-3):

- protect human health and the environment
- comply with existing statutes and regulations
- conduct all restoration activities consistent with Section 120 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and the Community Environmental Response Facilitation Act (CERFA)

- establish priorities for environmental restoration so that property disposal and reuse goals can be met
- initiate selected removal actions to control, eliminate, or reduce risks to manageable levels
- characterize health and safety risks associated with releases of hazardous substances, pollutants, contaminants, or hazardous wastes related to property transactions by parcel
- develop, screen, select, and implement remedial actions (RAs) that reduce risks in a manner consistent with statutory requirements to facilitate property disposal transactions and interim leases
- coordinate former Carswell AFB environmental response activities with the AFP 4 IRP through effective project management and technical information exchange

#### **1.4 MAP/BCP PURPOSE, UPDATES, AND DISTRIBUTION**

As discussed in Section 1.2, a MAP and a BCP are similar in the requirements that they fulfill. Copies of this Draft MAP/BCP and subsequent updates will be made available to the BRAC Cleanup Team (BCT), remedial project managers (RPMs), Restoration Advisory Board (RAB) members, and regulatory agencies such as the USEPA, Region VI, and the TNRCC (1995 BCP, p. ES-1).

#### **1.5 BRAC CLEANUP TEAM, REMEDIAL PROJECT MANAGERS, RESTORATION ADVISORY BOARD**

Two teams have been formed to implement environmental restoration at the former Carswell AFB. The BCT includes representatives from AFCEE, the AFBCA, the TNRCC, and the USEPA, Region VI. The BCT holds regular meetings on the second Thursday of every calendar quarter. The RPMs include representatives from AFCEE, the TNRCC, and the USEPA, Region VI. Members of the teams are listed on Table 1.1.

**Table 1.1  
BCT and RPM Members**

Name	Organization	Responsibility	
		RPM	BCT
Joe Dunkle	AFCEE/ERD	X	
Olen Long	AFBCA		X
Gary Miller	USEPA, Region VI	X	X
Charlie Rice	AFCEE/ERB		X
Mark Weegar	TNRCC	X	X

The community is informed of BCT and RPM activities and provides input through the RAB. The RAB for the former Carswell AFB/AFP 4 combines the RABs for both sites. The first joint meeting was held on May 9, 1996, and meetings have continued on a quarterly basis to review the progress of restoration activities, to present former Carswell AFB and AFP 4 cleanup activities, and to address matters of public concern. Notices of the meetings are made public, often in the *Fort Worth Star-Telegram* or in smaller, suburban publications. The minutes of the meetings are placed in the administrative record and information repository for NAS Fort Worth JRB. RAB members are listed in Table 1.2 (1997 CRP, p. 23).

**Table 1.2**  
**Restoration Advisory Board Members**

Name	Organization	Responsibility
John Doepker	AFMC	AFP4 RPM
Joe Dunkle	AFCEE/ERD	NAS Fort Worth JRB
Olen Long	AFBCA	Site Manager
Gary Miller	USEPA, Region VI	USEPA RPM
Charles Rice	AFCEE/ERB	Team Chief
Mark Weegar	TNRCC	TNRCC RPM

## 1.6 INSTALLATION BACKGROUND INFORMATION

### 1.6.1 Brief History

Tarrant Field Airdrome was established as a military installation in 1942 and was used primarily for flight training and heavy bomber operations. In 1946, the Strategic Air Command (SAC) assumed control of the installation, and the base became headquarters for the 8th Air Force. The base was renamed Carswell AFB in 1948 in honor of a Fort Worth native, Major Horace S. Carswell. Headquarters, 19th Air Division, was located at Carswell AFB from 1951 to 1988.

In the late 1950s, base renovations included the extension of a runway and the addition of a weapons storage area, office space, warehouses, and a fuel hydrant system. Construction through the 1970s created new dormitories, engine test cells, base exchange services, and other amenities. In the 1980s, a hospital, maintenance facilities, offices, and a munitions assembly shop were added.

Other properties that supported the base consisted of the Off-Site WSA and Kings Branch, the residential parcel. Kings Branch is located off base just outside the base perimeter to the southeast of the main gate. The Off-Site WSA is located off White Settlement Road, 5 miles to the west of the base.

Carswell AFB was selected for closure under the Defense Base Closure and Realignment Act (DBCRA) of 1990 during Round II Base Closure Commission deliberations. First-stage closure activities were initiated in 1992; all aircraft were relocated to Barksdale AFB by

January 1993. The base ceased operations on September 30, 1993, and was transferred to the AFBCA for property distribution and reuse. The base was realigned and renamed NAS Fort Worth JRB, Carswell Field on October 1, 1994, when the Navy assumed control of the property (1997 CRP, p. 5).

### **1.6.2 Environmental Setting**

The West Fork of the Trinity River flows along the eastern boundary of the base. Lake Worth, a water supply and recreation reservoir, borders NAS Fort Worth JRB to the north. AFP 4 is located immediately west of the base, and shares the runway with NAS Fort Worth JRB. Surrounding communities include the town of Westworth Village to the east, the city of Fort Worth to the northeast and southeast, and the city of White Settlement to the west and southwest. Fifty-eight percent of the base falls within the jurisdiction of Fort Worth; 34 percent of the base comes under the jurisdiction of Westworth Village; and 8 percent is within the boundaries of White Settlement.

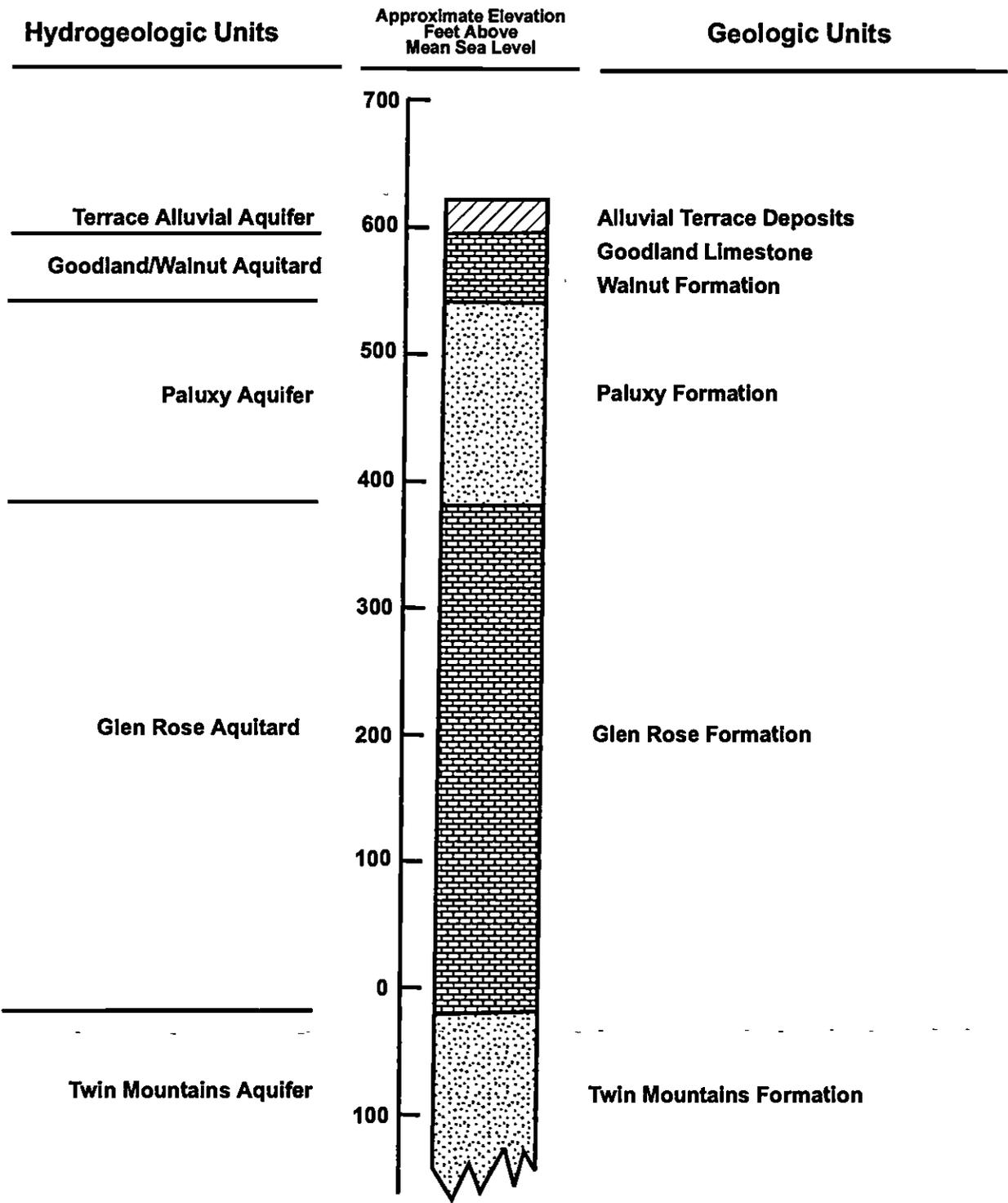
The Off-Site WSA is bordered primarily by rural property including privately owned homes, ranches, and farms and falls under the jurisdiction of Tarrant County. The Kings Branch residential development is within the jurisdiction of Westworth Village.

Primary surface water features in the vicinity include Lake Worth, Farmers Branch Creek, and the West Fork of the Trinity River. Lake Worth was formed by damming the West Fork of the Trinity River and is part of a system of lakes that provide drinking water to the city of Fort Worth (1997 CRP, pp. 5, 8, 10).

Geological formations at the former Carswell AFB include the Goodland Limestone, which is present just below land surface throughout the former Carswell AFB and AFP 4. The Walnut Formation underlies most of the former Carswell AFB and AFP 4 at a depth of 25 to 35 feet below ground surface. The Paluxy Formation, ranging from 133 to 175 feet in density, underlies all of the former Carswell AFB and AFP 4. (See Figure 1.2.)

The hydrogeology of the area consists of three main units: (1) Shallow Aquifer—an aquifer in the uppermost soil and weathered Goodland Limestone (approximately 20 feet below land surface); (2) Aquitard—bedrock of the Goodland Limestone and the Walnut Formation, and (3) Paluxy Aquifer—a water unit beneath the aquitard. The Goodland Limestone and the Walnut Formation, which form the aquitard between the shallow aquifer and the Paluxy Aquifer, are cut by paleo channels that allow the shallow groundwater to reach the Paluxy Aquifer (1997 CRP, p. 9).

The Paluxy Aquifer is an important source of potable groundwater for the Fort Worth area. Surrounding communities, especially White Settlement, develop their municipal water supplies from the Paluxy Aquifer. Groundwater from the Paluxy Aquifer is also used in some of the surrounding farms and ranches for agricultural purposes. Due to extensive use of the Paluxy Aquifer, water levels have declined significantly over the years, mainly in the Fort Worth area. Water levels in the NAS Fort Worth JRB vicinity have not decreased as much due to the area's



**Figure 1.2**  
**Stratigraphic Column Correlating**  
**Hydrogeologic Units and Geologic Units**  
**at the Former Carswell AFB**

(Radwan, 1989)

- Legend**
-  Alluvium
  -  Limestone
  -  Sandstone

proximity to the Lake Worth recharge area and the fact that the base does not develop water from the Paluxy Aquifer; drinking water is supplied by the city of Fort Worth, which uses Lake Worth as its water source (“1998 Basewide Groundwater Sampling and Analysis Plan,” (1998 GSAP), p. 2-3).

The fine grained limestone, shale, marl, and sandstone beds of the Glen Rose Formation lie below the Paluxy Aquifer, forming a thickness of 250 to 450 feet. The sands in the Glen Rose Formation yield small quantities of groundwater in the area; the impermeable limestone acts as an aquitard restricting water movement between the Paluxy Aquifer and the Twin Mountains Aquifer.

The Twin Mountains Aquifer is the oldest and deepest water supply source used in the NAS Fort Worth JRB area, occurring approximately 600 feet below ground surface with a thickness between 250 to 430 feet. It supplements the Paluxy Aquifer, which is the main source of potable water in the Fort Worth area (1998 GSAP, p. 2-3).

The average annual temperature in the Fort Worth area is 66 degrees Fahrenheit (°F), and monthly mean temperatures vary from 45 °F in January to 86 °F in July. The average daily minimum temperature in January is 35 °F, and the lowest recorded temperature is 2 °F. The average daily maximum temperature in July and August is 95 °F, and the highest temperature ever recorded at the base was 111 °F in the month of June. Freezing temperatures occur at NAS Fort Worth JRB an average of 33 days per year (1997 CRP, p. 10).

Mean annual precipitation recorded at the base is approximately 32 inches. The wettest months are April, May, and September. It is generally dry from November to March, and then again in August. Measurable snowfall occurs 2 days per year between November and March. Most thunderstorm activity occurs at the base between April and June, averaging 45 days per year.

### **1.6.3 Natural and Cultural Resources**

Buck Oaks Farm, a historical structure located within the boundaries of the former Carswell AFB, was placed on the National Register of Historic Places (NRHP) in 1987. There are no significant archaeological or prehistoric sites within the boundaries of the former Carswell AFB.

Few animal habitats are concentrated in the area due to its urban nature. Common birds in the area include herons, kestrels, kingfishers, seagulls, mourning doves, meadowlarks, grackles, and starlings. Bass, catfish, and sunfish are found in the waters of the Trinity River. No endangered species nest on former Carswell AFB property, although there are several bird species considered endangered in the Fort Worth area (1997 CRP, p. 10).

### **1.6.4 Hazardous Substance Activities**

Since the beginning of industrial operations in 1942, wastes have been generated and disposed of at the former Carswell AFB. The locations of past hazardous substance activities are now

managed as SWMUs and AOCs. Major industrial operations on the former Carswell AFB have included jet engine, aerospace ground equipment (AGE), fuel system, weapons system, pneudraulic system, and general and special purpose vehicle maintenance; aircraft corrosion control; and nondestructive inspection activities. All of these operations have generated wastes, primarily oils, recoverable fuels, spent solvents, and cleaners (1995 BCP, p. 1-8). Sources of the hazardous substances associated with the various SWMUs and AOCs are listed in Table 1.3.

For historical perspective, the total quantity of waste oils, recoverable fuels, spent solvents, and cleaners that was generated during the 1970s and early 1980s is estimated to be approximately 55,000 gallons per year. Past and present industrial waste disposal practices are summarized below and in Table 1.4 (1995 BCP, pp. 1-8):

- 1942–1971: The majority of waste oils, recovered fuels, spent solvents, and cleaners were burned at the fire department training areas during practice exercises. Some waste oils and spent solvents were disposed of through contractor removal, while some waste paints (contaminated with thinners and solvents), waste oils, and the solvent PD-680 are suspected of having been disposed of in base landfills. Some waste oils, recovered fuels, spent solvents, and cleaners were also discharged to sanitary and storm sewers. These discharges occurred primarily at the washracks. In 1955, an OWS was installed to recover waste materials discharged from the washracks. Materials from the OWS were pumped out and disposed of by private contractors.
- 1971–1975: During this period, most waste oils, spent solvents, and cleaners were disposed of by contractor removal. A private contractor would pump the materials from OWSs and from 55-gallon drums and bowsers. Recovered JP-4 was stored at the fire department training area and burned in practice exercises. Recovered JP-4 was also reused. Some waste paints (contaminated with thinners and solvents), waste oils, and PD-680 are suspected of having been disposed of in the base landfills.
- 1975–1982: The majority of waste oils, spent solvents, and cleaners were disposed of by service contract, either directly or through the Defense Reutilization and Marketing Office (DRMO). Recovered JP-4 was stored at the fire department training area and burned during practice exercises; recovered JP-4 was also reused. PD-680 used at the washracks was discharged to an OWS, which discharged to the sanitary sewers.
- 1982–1994: Waste oils, solvents, and cleaners were collected in 55-gallon drums and stored for fewer than 90 days at 12 hazardous waste accumulation points located throughout the flightline area. These materials were disposed of by contractor removal through the DRMO. Recovered JP-4 fuel was stored at the fire department training area for burning in fire training exercises. Off-base contractors removed waste oils and PD-680 (Type II) from OWSs.

**Table 1.3**  
**Source Information for SWMUs and AOCs**

<b>SWMU</b>	<b>Name</b>	<b>Source</b>
1	Pathological Waste Incinerator	N/A
2	Pathological Waste Storage Shed	N/A
3	Metal Cans	N/A
4	Facility Dumpsters	N/A
5	Bldg. 1628 Waste Accumulation Area	AGE maintenance shop corrosion control
6	Bldg. 1628 Wash Rack and Drain	N/A
7	Bldg. 1628 OWS	N/A
8	Bldg. 1628 Sludge Collection Tank	N/A
9	Bldg. 1628 Work Station Waste Accumulation Area	N/A
10	Bldg. 1617 Work Station Waste Accumulation Area	N/A
11	Bldg. 1617 Waste Accumulation Area	Production of printed circuit boards
12	Bldg. 1619 Waste Accumulation Area	Jet engine repair
13	Bldg. 1710 Waste Accumulation Area	Photographic film developing and developer
14	Bldg. 1060 Bead Blaster Collection Tray	N/A
15	Bldg. 1060 Paint Booth Vault	N/A
16	Bldg. 1060 Waste Accumulation Area	Corrosion control shop
17	Landfill 7	Landfill reportedly filled with clean construction rubble and fill dirt
18	Fire Training Area 1	Waste oils and fuel were burned
19	Fire Training Area 2	Waste oils and solvents were burned; used JP-4 was observed
20	Waste Fuel Storage Tank	Waste oils and solvents were burned; used JP-4 was observed
21	Waste Oil Tank	Waste oils and solvents were burned; used JP-4 was observed
22	Landfill 4	The unit contains paints, thinners, strippers, cadmium batteries, waste solvents, burned waste
23	Landfill 5	Unit contains all types of flightline waste and refuse
24	Waste Burial Area	Unit contains burned drums containing cleaning solvents and lead sludge from flightline
25	Landfill 8	Unit managed wood, metals, construction rubble, asphalt, concrete and trees
26	Landfill 3	Landfill used as a disposal point for waste, primarily construction rubble
27	Landfill 10	Unit managed concrete rubble and tree limbs
28	Landfill 1	Original landfill, no record available
29	Landfill 2	Unit managed rubble, construction materials, and moderate quantities of hazardous waste
30	Landfill 9	Unit managed clean construction rubble and trees
31	Bldg. 1050 Waste Accumulation Area	Pneudraulic shop
32	Bldg. 1410 Waste Accumulation Area	Repair jet engines, assembly/disassembly, cleaning wheels and tires, service batteries
33	Bldg. 1420 Waste Accumulation Area	Maintenance and inspection of munitions trailers

**Table 1.3 (continued)**  
**Source Information for SWMUs and AOCs**

<b>SWMU</b>	<b>Name</b>	<b>Source</b>
34	Bldg. 1194 Waste Accumulation Area	Maintenance of refueling and water servicing vehicles
35	Bldg. 1194 Vehicle Refueling Shop OWS System	OWS, low level of metals
36	Bldg. 1191 Waste Accumulation Area	Vehicle bodywork and painting; maintenance of government vehicle and heavy equipment
37	Bldg. 1191 Vehicle Maintenance Shop OWS	OWS, low level of metals
38	Bldg. 1269 PCB Transformer Building	N/A
39	Bldg. 1643 Waste Accumulation Area	Aircraft maintenance operations
40	Bldg. 1643 OWS	N/A
41	Bldg. 1414 OWS System Field Maintenance Squadron Aerospace Ground Equipment	OWS, low levels of metals
42	Bldg. 1414 Waste Accumulation Area	Maintenance and inspection of AGE
43	Bldg. 1414 Non-Destructive Inspection (NDI) Waste Accumulation Area	N/A
44	Bldg. 1027 OWS at the Aircraft Washing Hangar	OWS, low levels of metals
45	Bldg. 1027 Waste Oil Tank Vault at the Aircraft Washing Hangar	Part of OWS
46	Bldg. 1027 Waste Accumulation Area	N/A
47	Bldg. 1015 Jet Engine Test Cell OWS System	OWS, low levels of metals
48	D1048 Fuel System Floor Drains	N/A
49	Aircraft Washing Area 1	Carries runoff from runway to SWMU 53
50	Aircraft Washing Area 2	Carries runoff from runway to SWMU 53
51	Bldg. 1190 Central Waste Holding	Three wasteholdings area
52	Bldg. 1190 OWS System	OWS, low levels of metals
53	Storm Water Drainage System	Unit received stormwater runoff from areas throughout the base
54	Storm Water Interceptors	Unit consists of stormwater runoff
55	East Gate OWS	N/A
56	Bldg. 1405 Waste Accumulation Area	N/A
57	Bldg. 1432/1434 Waste Accumulation Area	N/A
58	Pesticide Rinse Area	Rinse water from pesticide spray equipment
59	Bldg. 8503 WSA Waste Accumulation Area	Radium, waste cleaner, solvents and thinners, TCE in WSA
60	Bldg. 8503 Radioactive Waste Burial Site	Radium, waste cleaner, solvents and thinners, TCE in WSA
61	Bldg. 1320 Power Production Maintenance Facility Waste Accumulation Area	Maintenance of portable gasoline and diesel generators
62	Landfill 6	Landfill used for base construction activities (hydraulic fluid, construction rubble, miscellaneous trash)
63	Entomology Dry Well	Pesticides and herbicide contaminated rinse water
64	French Underdrain System	Hydrocarbons in unnamed stream
65	WSA Disposal Site	Radium, waste cleaner, solvents and thinners, TCE in WSA

**Table 1.3 (continued)**  
**Source Information for SWMUs and AOCs**

<b>SWMU</b>	<b>Name</b>	<b>Source</b>
66	Sanitary Sewer System	Unit manages sanitary waste from throughout the base and industrial wastewater from various activities
67	Bldg. 1340 OWS	Hydrocarbons in unnamed stream
68	POL Tank Farm	JP-4
AOC 1	Bldg. 1518 Service Station	Hydrocarbons in Base Service Station
AOC 2	Airfield Groundwater Plume	JP-4 in airfield groundwater
AOC 3	Waste Oil Dump	Oil solvents, unknown in waste oil dump
AOC 4	Fuel Hydrant System	Hydrocarbons in groundwater
AOC 5	Grounds Maintenance Yard	N/A
AOC 6	RV Storage Area	Area previously use for motor pool vehicles
AOC 7	Former Base Refueling Area	Hydrocarbon from abandoned gas station
AOC 8	SW Aerospace Museum	N/A
AOC 9	Golf Course Maintenance Yard	N/A
AOC 10	Bldg. 1064 OWS	OWS, low levels of metals
AOC 11	Bldg. 1060 OWS	OWS, low levels of metals
AOC 12	Bldg. 4210 OWS	OWS, low levels of metals
AOC 13	Bldg. 1145 OWS	OWS, low levels of metals
AOC 14	Unnamed Stream	Hydrocarbons in unnamed stream
AOC 15	Bldg. 1190 Storage Shed	Storage shed

## Notes:

N/A: Information Not Available

TCE: Trichloroethylene

Source: "New Compliance Plan Application," March 1996 (1996 CPA), pp. II-22-II-24.

**Table 1.4  
History of Installation Operations**

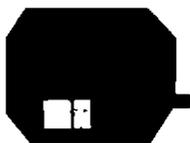
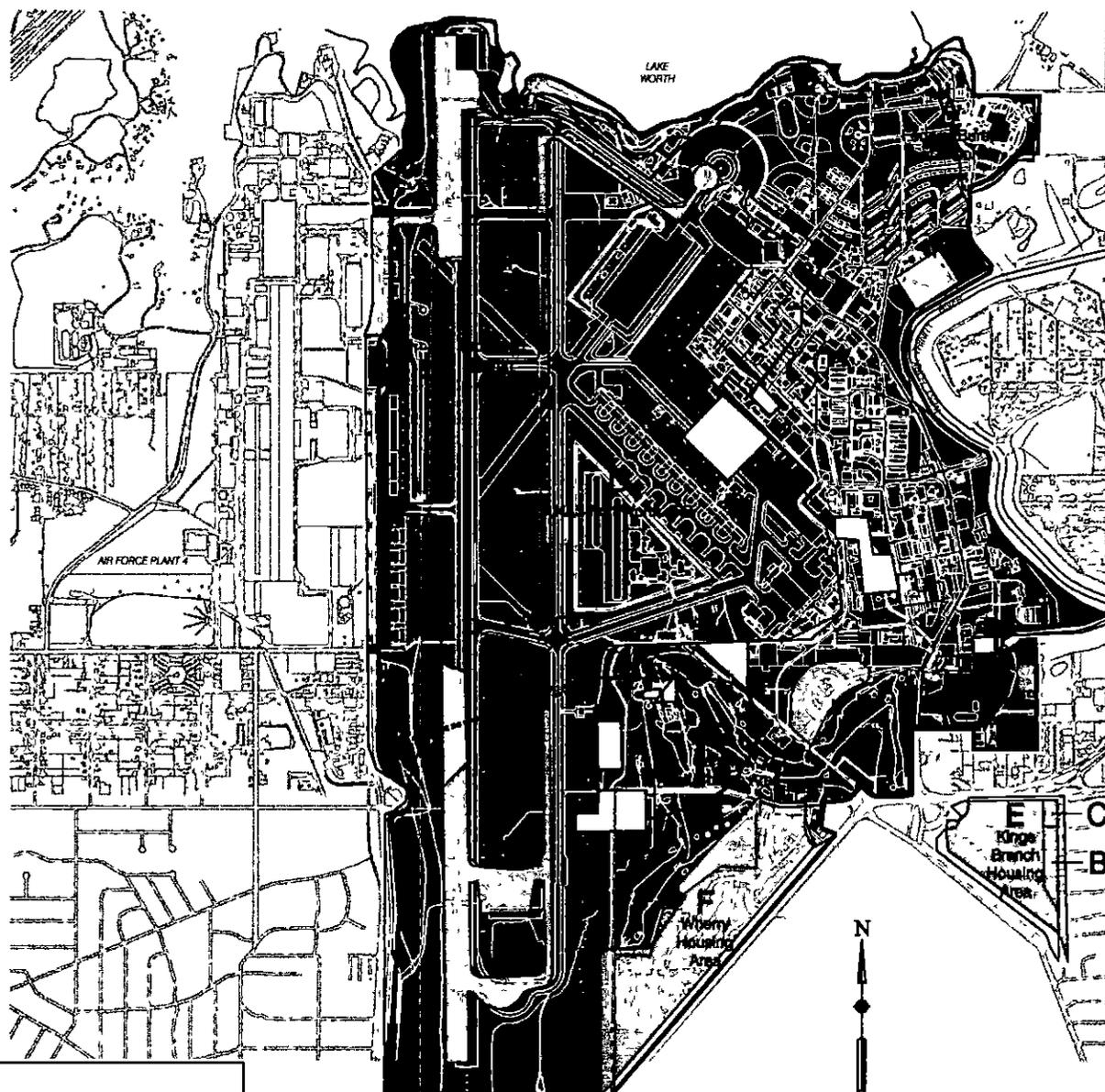
<b>Period</b>	<b>Type of Operation</b>	<b>Primary Aircraft</b>	<b>Hazardous Substance Activities</b>
Pre-1941	Woods and pastures	None	Unknown
1941-1946	Bomber training base	B-24, B-25, B-26, B-32	Most waste oils, recovered fuels, spent solvents, and cleaners burned at fire training areas; some disposed of through contractor removal, landfill disposal, and discharge to storm and sanitary sewers
1946-1948	Bomber training base	B-29	
1948-1958	Bomber training base	B-36B, B-36D	
1958-1964	Bomber training base and air refueling operations	B-52D, B-58, KC-135	
1964-1968	Bomber training base and air refueling operations	B-52D, KC-135	
1968-1971	Bomber training base and air refueling operations	B-52D, KC-135, FB-11	
1971-1975	Bomber training base and air refueling operations	B-52D, KC-135, F-4	Most waste oils, spent solvents, and cleaners disposed of through contractor removal; recovered JP-4 stored and burned at fire training area, some waste disposed of in landfills or sanitary drains
1975-1982	Bomber training base and air refueling operations	B-52D, KC-135, F-4	Most waste oils, spent solvents, and cleaners removed through service contract; recovered JP-4 stored and, burned at fire training area, PD-680 discharged to OWSs
1982-1994	Bomber training base and air refueling operations	B-52D, B-52H, KC-135, F-4	Most waste oils, solvents, and cleaners collected and stored at accumulation points and disposed of through DRMO; recovered JP-4 stored and burned at fire training area. waste oils and PD-680 recovered from OWSs disposed of through DRMO

Source: 1995 BCP, p. 1-6.

# TAB

Section 2

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Off-Site Weapons Storage Area  
 Located approximately 5 miles west  
 of Former Carswell AFB

-  Uncontaminated Property (Category 1)
-  Hazardous Substance Stored - No Release (Category 2)
-  Hazardous Substance Release, Below Action Levels (Category 3)
-  Hazardous Substance Release, All Actions Have Been Taken (Category 4)
-  Hazardous Substance Release, Not All Actions Have Been Taken (Category 5)
-  Hazardous Substance Release, No Actions Taken (Category 6)
-  Areas Requiring Additional Evaluation (Category 7)

Figure 2.1

Former Carswell  
 Air Force Base  
 Property Categorization

-  NAS Fort Worth JRB
-  Former Carswell Air Force Base
-  Parcel Boundary



## **2.0 CONDITION OF PROPERTY/DISPOSAL AND REUSE PLAN**

### **2.1 ENVIRONMENTAL CONDITION OF PROPERTY**

The DOD requires that an environmental baseline study (EBS) be performed before any property can be sold, transferred, leased, or acquired. In early 1984, an EBS was completed to determine the environmental condition of Carswell AFB property. The EBS documented the physical condition of Air Force real property resulting from the storage, use, and disposal of hazardous substances and petroleum products over the installation's history. Furthermore, the study was to establish a baseline for use by the Air Force in making decisions concerning real property transactions. The EBS also addressed the environmental condition of off-base properties adjacent to, or near, the base. Properties on Carswell AFB were classified into one of seven categories:

1. areas where no storage for a year or more, release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas)
2. areas where only storage of hazardous substances or petroleum products has occurred (but no release, disposal, or migration from adjacent areas has occurred)
3. areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, but at concentrations that do not require a removal or remedial action (RA)
4. areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, and all RAs necessary to protect human health and the environment have been taken
5. areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, removal and/or RAs are under way, but all required RAs have not yet been taken
6. areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, but required response actions have not yet been implemented
7. areas that are unevaluated or require additional evaluation

Categories 1 through 4 must be met for deed transfers to take place. Any property falling into Categories 5 through 7 cannot be transferred until all required actions have been taken and the property reclassified into one of the first four categories; i.e., if property condition requirements do not meet the criteria in Categories 1 through 4, no transfer can take place (BCP 1995, pp. 25-29). Figure 2.1 summarizes the status of the environmental condition of base property in terms of the seven categories.

As the results of environmental investigations and remedial activities become available, AFCEE and the AFBCA should develop a process to update and maintain the status of the environmental condition for each parcel or property (BCP 1995, pp. 4-13-4-14).

## **2.2 OFF-BASE PROPERTIES/ON-BASE TENANTS**

The former Carswell AFB includes two off-base properties: the Off-Site WSA and the Kings Branch residential area (1995 BCP, p.1-17). The 247-acre Off-Site WSA is located 5 miles west of the main base and is bordered by rural property, including farmland and private homes. Built in 1956, the Off-Site WSA includes 2 munitions inspection shops, 16 storage buildings, a radioactive waste disposal facility, an emergency power plant, a water storage tank, water wells, and an explosive ordnance disposal range. As part of an investigation conducted in 1984, a former employee at the Off-Site WSA reported that waste cleaners and solvents (suspected paint thinners and TCE) were disposed of on the ground behind the inspection shop. Ordnance material has been removed from a known disposal area; asbestos in the paint shop building has been encapsulated. The radioactive waste disposal area has been approved for partial closure, and the inspection shop site is in remedial action.

Kings Branch is a residential area situated on 44 acres across the street from the Shady Oaks Country Club and bounded on the east and north by older residential developments. It consists of 180 single family and duplex units that were abandoned in 1989, after having provided base housing since 1955. Located within the jurisdiction of Westworth Village and southeast of the main gate of NAS Fort Worth JRB, the units contain encapsulated, non-friable asbestos tiles and floor coverings. PCBs are reported to have been removed from the site. According to the WRA, the 50-year-old buildings have deteriorated considerably and cannot be economically renovated for reuse. Additional clearing and remediation costs are estimated to be \$1.2 million ("Westworth Redevelopment Authority: Economic Development Conveyance Application and Business Plan," 1997, pp. 12-20).

On-base tenants at the former Carswell AFB include the 301st Tactical Fighter Wing, the Navy, the Army and Air Force Exchange Service and Base Exchange, and the Air Force Commissary Service. Relocation of commands from NAS Dallas continues in stages. In addition to the 301st Fighter Wing, current commands/units at NAS JRB Fort Worth include the 10th Air Force, Marine Aircraft Group 41 (MAG 41), Fighter Squadron 201 (VF 201, Navy), Fleet Logistics Support Squadron 59 (VR 59 Navy), Marine Aerial Refueler Transport Squadron 234 (VMGR 234), Marine Fighter Attack Squadron 112 (VMFA 112), and Marine Air Control Squadron 24 (MACS 24). The Federal Bureau of Prisons (FBOP) has a permit to operate on a portion of the former Carswell AFB (1995 BCP, pp.1-19; Conference Call with AFCEE and AFBCA, January 22, 1998 (January 1998 Conference Call)).

## **2.3 STATUS OF DISPOSAL PLANNING PROCESS**

In 1990, the DBCRA authorized the closure of Carswell AFB with retention of an area for continued Air Force operations. A retained portion of the base property was to be used to support continued operations of the 301st Tactical Fighter Wing and AFP 4 run-up stations. Recommendations of the DBCRA made in 1993 allowed for the relocation of several DOD organizations to NAS Fort Worth JRB. The partial record of decision (ROD), published in August 1995, supported the disposal decisions based on the 1990 and 1993 DBCRA decisions.

An additional disposal-related decision was made in April 1993, in which the Secretary of the Air Force declared Kings Branch excess and surplus to accelerate disposal for civilian use (1995 BCP, p. 2-1).

The environmental impact analysis process for base disposal and reuse was initiated in 1991, and a "Final Environmental Impact Statement" (FEIS) was completed in 1994. The proposed alternative considered by the FEIS was based on the reuse proposal developed by the Carswell Redevelopment Authority (CRA) and the FBOP. The CRA, consisting of Tarrant County, the cities of Fort Worth and White Settlement, and the town of Westworth Village, was formed to coordinate the redevelopment efforts associated with the reuse of Carswell AFB. The CRA plan incorporated the reuse plans of the FBOP and accounted for the additional property retained by DOD due to the 1993 DBCRA recommendations. The CRA plan focused on a naval air station, a federal medical center complex, and various industrial, commercial, residential, and recreational uses (1995 BCP, p. 2-1).

The reuse plan developed by the WRA, submitted to the AFBCA in July 1997, modified and updated the plan of its predecessor, the CRA. Under the WRA plan, the former Carswell AFB has been divided into 12 parcels to assist in the disposal and reuse of the base. A listing of the parcel names and reuse designations can be found on Table 2.1. The majority of the base, Parcel D, NAS Fort Worth JRB, has been transferred to the Navy by the DOD. The Air Force has retained a portion of the former Carswell AFB, including Parcel I, the Lockheed Martin Area, which will continue operations as AFP 4, and Parcel J, the Instrument Landing Site, located west of the base, which will be managed by the AFRES. Parcel A has been transferred to the FBOP. Parcels B and C are both public benefit conveyances for the U.S. Department of Health and Human Services and the U.S. Department of Education, respectively. The area on the northern boundary of the former Carswell AFB bordering Lake Worth will be leased ("Westworth Redevelopment Authority: Economic Development Conveyance Application and Business Plan," September 1997 (1997 EDCA), pp. 4-5, 22; AFBCA Disposal and Reuse Map).

Four parcels—E, the Kings Branch Housing Area; F, the Wherry Housing Area; G, the Carswell Golf Course; and H, the Horse Pasture Area—have been proposed for conveyance to private developers. The WRA is facilitating the sale of these four parcels and providing the administration necessary for the most economically beneficial sale. It has been proposed to lease homes in Parcel F and to eventually remove all housing units for commercial development. It has been proposed that Parcel E be developed into a residential area. Under the proposal, Parcel G will continue to be operated as a public golf course and managed by a professional golf course management company, with a schedule of continued maintenance. Parcel H has been proposed for lease to an interested party for maintaining horses with the possibility of being an expansion area for the golf course. It has been proposed that Parcel K be sold in its present condition, if possible (1997 EDCA, pp. 4-21; AFBCA Disposal and Reuse Map). The boundaries of the parcels can be found on Figure 2.2. Table 2.2 presents parcel description for all SWMUs and AOCs.

**Table 2.1**  
**Parcel Designations**

<b>Parcel</b>	<b>Name</b>	<b>Reuse Organization</b>
A	Federal Bureau of Prisons	Federal Transfer to FBOP
B		Public Benefit Conveyance to U.S. Department of Health and Human Services
C		Public Benefit Conveyance to U.S. Department of Education
D	NAS Fort Worth JRB	DOD Transfer to Navy
E	Kings Branch Housing Area	Economic Development Conveyance
F	Wherry Housing Area	Economic Development Conveyance
G	Carswell Golf Course*	Economic Development Conveyance
H	Horse Pasture Area	Economic Development Conveyance
I	Lockheed Martin Area	Air Force Retained for AFP 4
J	Instrument Landing Site	Air Force Retained for AFRES
K	Off-Site Weapons Storage Area	Public Sale
-		Lease Area

- \* Also includes the Environmental Area (G1), which is fenced off and is currently being remediated. This area is currently unavailable for conveyance

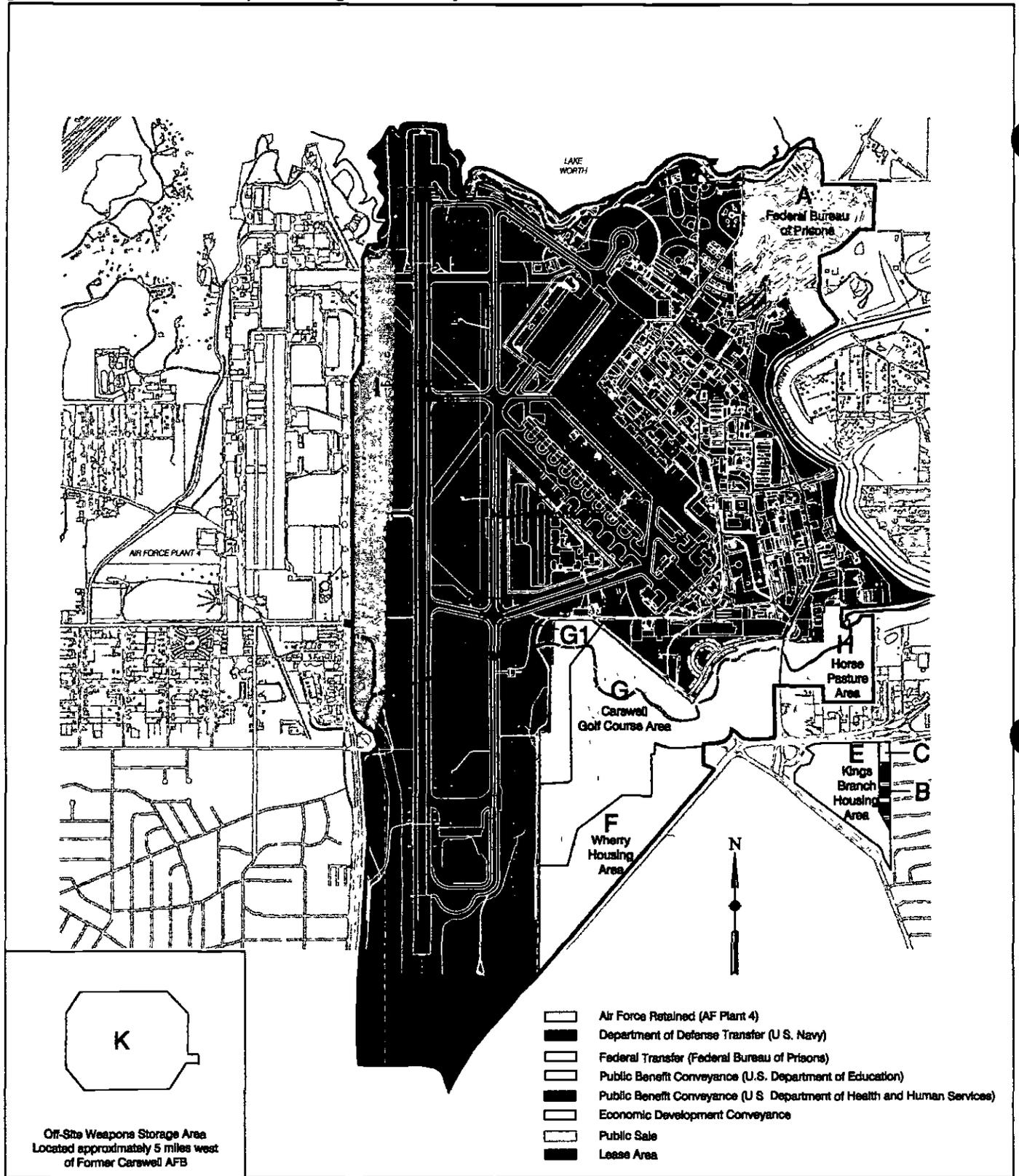


Figure 2.2

Former Carswell  
Air Force Base  
Parcel Locations

--- NAS Fort Worth JRB  
 — Former Carswell Air Force Base  
 — Parcel Boundary



**Table 2.2**  
**Parcel Designations for SWMUs and AOCs**

<b>SWMU/AOC</b>	<b>Site Description</b>	<b>Parcel Designation</b>
SWMU 1	Pathological Waste Incinerator	A
SWMU 2	Pathological Waste Storage Shed	A
SWMU 3	Metal Cans	A
SWMU 4	Facility Dumpsters	*
SWMU 5	Bldg. 1628 Waste Accumulation Area	D
SWMU 6	Bldg. 1628 Wash Rack and Drain	D
SWMU 7	Bldg. 1628 OWS	D
SWMU 8	Bldg. 1628 Sludge Collection Tank	D
SWMU 9	Bldg. 1628 Work Station Waste Accumulation Area	D
SWMU 10	Bldg. 1617 Work Station Waste Accumulation Area	D
SWMU 11	Bldg. 1617 Waste Accumulation Area	D
SWMU 12	Bldg. 1619 Waste Accumulation Area	D
SWMU 13	Bldg. 1710 Waste Accumulation Area	D
SWMU 14	Bldg. 1060 Bead Blaster Collection Tray	D
SWMU 15	Bldg. 1060 Paint Booth Vault	D
SWMU 16	Bldg. 1060 Waste Accumulation Area	D
SWMU 17	Landfill 7	D
SWMU 18	Fire Training Area 1	D
SWMU 19	Fire Training Area 2	D
SWMU 20	Waste Fuel Storage Tank	D
SWMU 21	Waste Oil Tank	D
SWMU 22	Landfill 4	G1
SWMU 23	Landfill 5	D
SWMU 24	Waste Burial Area	D
SWMU 25	Landfill 8	D
SWMU 26	Landfill 3	D
SWMU 27	Landfill 10	D
SWMU 28	Landfill 1	D
SWMU 29	Landfill 2	D
SWMU 30	Landfill 9	D
SWMU 31	Bldg. 1050 Waste Accumulation Area	D
SWMU 32	Bldg. 1410 Waste Accumulation Area	D
SWMU 33	Bldg. 1420 Waste Accumulation Area	D
SWMU 34	Bldg. 1194 Waste Accumulation Area	D

**Table 2.2 (continued)**  
**Parcel Designations for SWMUs and AOCs**

<b>SWMU/AOC</b>	<b>Site Description</b>	<b>Parcel Designation</b>
SWMU 35	Bldg. 1194 Vehicle Refueling Shop OWS System	D
SWMU 36	Bldg. 1191 Waste Accumulation Area	D
SWMU 37	Bldg. 1191 Vehicle Maintenance Shop OWS	D
SWMU 38	Bldg. 1269 PCB Transformer Building	D
SWMU 39	Bldg. 1643 Waste Accumulation Area	D
SWMU 40	Bldg. 1643 OWS	D
SWMU 41	Bldg. 1414 OWS System Field Maintenance Squadron Aerospace Ground Equipment	D
SWMU 42	Bldg. 1414 Waste Accumulation Area	D
SWMU 43	Bldg. 1414 Non-Destructive Inspection (NDI) Waste Accumulation Area	D
SWMU 44	Bldg. 1027 OWS at the Aircraft Washing Hangar	D
SWMU 45	Bldg. 1027 Waste Oil Tank Vault at the Aircraft Washing Hangar	D
SWMU 46	Bldg. 1027 Waste Accumulation Area	D
SWMU 47	Bldg. 1015 Jet Engine Test Cell OWS System	D
SWMU 48	D1048 Fuel System Floor Drains	D
SWMU 49	Aircraft Washing Area 1	D
SWMU 50	Aircraft Washing Area 2	D
SWMU 51	Bldg. 1190 Central Waste Holding	D
SWMU 52	Bldg. 1190 OWS System	D
SWMU 53	Storm Water Drainage System	*
SWMU 54	Storm Water Interceptors	D
SWMU 55	East Gate OWS	D
SWMU 56	Bldg. 1405 Waste Accumulation Area	D
SWMU 57	Bldg. 1432/1434 Waste Accumulation Area	D
SWMU 58	Pesticide Rinse Area	G
SWMU 59	Bldg. 8503 WSA Waste Accumulation Area	K
SWMU 60	Bldg. 8503 Radioactive Waste Burial Site	K
SWMU 61	Bldg. 1320 Power Production Maintenance Facility Waste Accumulation Area	D
SWMU 62	Landfill 6	D
SWMU 63	Entomology Dry Well	D
SWMU 64	French Underdrain System	D, H
SWMU 65	WSA Disposal Site	K

**Table 2.2 (continued)**  
**Parcel Designations for SWMUs and AOCs**

<b>SWMU/AOC</b>	<b>Site Description</b>	<b>Parcel Designation</b>
SWMU 66	Sanitary Sewer System	*
SWMU 67	Bldg. 1340 OWS	H
SWMU 68	POL Tank Farm	D
AOC 1	Bldg. 1518 Service Station	D
AOC 2	Airfield Groundwater Plume	D,F,G,G1,F,I
AOC 3	Waste Oil Dump	D
AOC 4	Fuel Hydrant System	D
AOC 5	Grounds Maintenance Yard	D
AOC 6	RV Storage Area	D
AOC 7	Former Base Refueling Area	D
AOC 8	SW Aerospace Museum	I
AOC 9	Golf Course Maintenance Yard	G
AOC 10	Bldg. 1064 OWS	D
AOC 11	Bldg. 1060 OWS	D
AOC 12	Bldg. 4210 OWS	D
AOC 13	Bldg. 1145 OWS	D
AOC 14	Unnamed Stream	H
AOC 15	Bldg. 1190 Storage Shed	D
AOC 16	Family Camp	G

## Notes:

- \*: Located throughout base
- AOC: Area of Concern
- AFBCA: Air Force Base Conversion Agency
- AFCEE: Air Force Center for Environmental Excellence
- IRP: Installation Restoration Program
- NA: Not Applicable/Not Available
- NR: Not Rated
- OWS: Oil/Water Separator
- POL: Petroleum/Oil/Lubricant
- WSA: Weapons Storage Area

Source: 1997 CRP, pp. 14-16; AFBCA Parcel Disposal and Reuse map; AFCEE Project List, December 22, 1997.

## **2.4 RELATIONSHIP TO ENVIRONMENTAL PROGRAMS**

The disposal and reuse process is based on the requirements for complying with CERCLA and the need to address residual contamination at various sites at the former Carswell AFB. CERCLA, as amended by CERFA, requires the identification of uncontaminated parcels with regulatory concurrence. Remediated parcels are transferred by deed when the approved remedies are acceptable to the USEPA. In identifying uncontaminated parcels, CERFA requires investigation for petroleum product wastes and other hazardous substances. The state of Texas must approve the remediated parcel before transfer. Any required remedial actions must be selected and implemented before transfers to the public can occur (BCP, 1995, p. 2-4).

## **2.5 PROPERTY TRANSFER METHODS**

The only existing legal agreements/interim leases are as follows:

- a lease with the CRA for use of the golf course (Parcel G), dated February 1, 1994
- a permit with the FBOP for the hospital area (Parcel A), dated April 1994

To date, no property at the former Carswell AFB has been determined suitable for transfer by deed.

# TAB

Section 3

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### **3.0 INSTALLATION-WIDE ENVIRONMENTAL PROGRAM STATUS**

This section provides a status report of the environmental restoration program at the former Carswell AFB. This section also summarizes the status of the natural and cultural resources program, and of community involvement with these programs to date.

#### **3.1 RESTORATION PROGRAM STATUS**

##### **3.1.1 Summary of Regulatory Agreements**

In February 1984, an “IRP Records Search for Carswell AFB, Fort Worth, Texas (1984 IRP Records Search) was conducted utilizing funds from SAC to “identify and fully evaluate suspected problems associated with past hazardous material disposal sites on DOD facilities” and to “control migration of hazardous contamination from such facilities, and control hazards to health and welfare” (1984 IRP Records Search, p. ES-1).

The 1984 IRP Records Search identified potential problems at Carswell AFB by reviewing installation records, contacting various regulatory agencies for relevant documents pertaining to the search effort, conducting an on-site visit to interview more than 30 past and present employees, and arranging an aerial overflight by helicopter. A press release announced the study and solicited responses from the public pertaining to past disposal practices at Carswell AFB, the Instrument Landing Site (ILS) Marker Beacon, and the Off-Site WSA (1984 IRP Records Search, pp. ES-1-ES-2).

Results of the 1984 IRP Records Search were as follows:

- identifying 17 disposal or spill sites at Carswell AFB and 5 sites at the Off-Site WSA
- determining that an estimated 55,000 gallons a year of waste oils, fuels, solvents and cleaners were generated at the base from the 1970s to 1983
- identifying the following past hazardous waste disposal practices:
  - disposal during fire department training exercises (1942-1970)
  - removal by contractors (1970-1982)
  - reuse and recycling of JP-4 fuel since 1979

The 1984 IRP Records Search did not find any evidence that hazardous contaminants were migrating outside the boundaries of Carswell AFB, although indirect evidence of contamination and/or contamination migration within the installation boundary was found at the following three sites:

- Fuel and aircraft soap from washracks were seen in the Flightline Drainage Ditch.

- Unburned fuels were seen on the ground at the site of the existing Fire Department Training Area 2.
- A petroleum/oil/lubricant (POL) sheen and odor were observed at the Unnamed Stream.

The surface-water migration of hazardous contaminants was considered high due to the close proximity of identified sites to Farmers Branch Creek, the West Fork of the Trinity River, and Lake Worth. (1984 IRP Records Search, pp. ES-21–ES-8). In March 1989, a RCRA facility assessment (RFA) was conducted for Carswell AFB. The purpose of this RFA was to identify SWMUs and AOCs, determine the releases from them, and make preliminary determinations regarding any contamination of concern and whether further action was necessary. In addition, those SWMUs and AOCs that no longer posed a threat would be screened from any further investigations. This 1989 RFA identified 68 SWMUs and 1 AOC and detailed the history of contaminant releases for each site. Since the 1989 RFA, an additional 15 AOCs have been identified (“RCRA Facility Assessment PR/VSI Report, Carswell AFB, Texas,” March 1989).

In February 1991, the TNRCC issued Carswell AFB a Hazardous Waste Part B Permit (HW-50289), which described the requirements and procedures for investigating RCRA SWMUs (1997 CRP, p. 13). RCRA regulations define a SWMU as any unit into which solid wastes have been placed, or any areas into which solid wastes have been routinely and systematically released. There are currently 68 SWMUs and 16 AOCs at the former Carswell AFB. Table 3.1 provides a complete list of SWMUs and AOCs. The Hazardous and Solid Waste Amendments portion of the permit requires the Air Force to conduct corrective actions for potential releases of hazardous substances from the SWMUs and AOCs. The cleanup activities are being conducted in a manner consistent with CERCLA and the National Contingency Plan. The USEPA and the TNRCC assist the Air Force in the corrective action program decision-making process. In 1995, the TNRCC issued a letter to the AFBCA designating which SWMUs and AOCs required no further action. A total of 17 SWMUs and 1 AOC required no further action as long as there was no further evidence of releases. A RCRA facility investigation (RFI) was required for all other SWMUs and AOCs (RCRA Hazardous Waste Part B Permit (HW-50289), February 13, 1991).

The Air Force and the Navy have signed several memorandums of understanding (MOUs). Appendix D contains the June 8-9, 1993 MOU, the September 23, 1994 MOU, the February 26, 1996 amendment to the original MOU, and the June 19, 1996 MOU as attachments to the February 1997 MOU concerning environmental compliance issues. An MOU is an agreement specifying working relationships among all DOD parties involved in conducting the restoration programs at the former Carswell AFB, and is limited to roles and responsibilities related to environmental cleanup (1997 CRP, pp. 1-2).

The June 1993 MOU established the procedure for the transfer of responsibility of the base from the Air Force to the Navy. The responsibility as host of the installation was to be transferred in increments from the Air Force to the Navy from September 30, 1993 until September 30, 1994 (June 1993 MOU, p. 1).

On September 23, 1994, a second MOU was signed to amend the earlier one. This amendment declares that the Air Force would retain the “responsibility for the final remediation of all environmental conditions” while the Navy would assume host responsibilities for NAS Fort Worth JRB on October 1, 1994. If no agreement could be reached between the Air Force and the Navy, then the Air Force would retain environmental restoration program responsibilities (September 1994 MOU, pp. 1-2). On February 25, 1996, the Air Force amended the September 23, 1994 MOU stating that, because an agreement was not reached with the Navy, the Air Force would assume “both funding and management responsibilities for the cleanup of contamination at the former Carswell AFB attributable to Air Force operations prior to 1 Oct 94” (February 1996 MOU, p. 1).

On June 19, 1996, an MOU was executed stating that the Air Force and Navy had reached an agreement on the cleanup of NAS Fort Worth JRB. This MOU designated the responsibility of each party as it pertained to the environmental cleanup (June 1996 MOU, pp. 1-2). The most recent MOU, signed in February 1997, details the responsibilities for environmental compliance for NAS Fort Worth JRB. The Air Force will transfer to the Navy the responsibility of management and funding for all environmental compliance programs at NAS Fort Worth JRB. The MOU also lists those underground storage tanks (USTs) and aboveground storage tanks (ASTs) that are the responsibility of the Air Force to remediate and close (February 1997 MOU, p. 2).

The environmental programs at the former Carswell AFB are funded through two funds. BRAC funds are used to investigate and clean up those properties that are being transferred to the public. Navy property is being investigated and cleaned up with funds by AFCEE. Estimated cleanup costs at NAS Fort Worth originally totaled \$184 million (1997 CRP, p. 1). The on-going environmental program at the former Carswell AFB is operating under a Defense-State Memorandum of Agreement completed in 1992. Under this agreement, the DOD provides financial reimbursement to the state of Texas for any staff time spent on projects for the former Carswell AFB (1997 CRP, p.16).

The AFBCA has a partnering agreement with AFP 4 because contaminated groundwater has migrated east beyond the boundary of AFP 4 and onto the former Carswell AFB. This agreement delineates the responsibilities and procedures for implementing the cleanup of the contaminated groundwater at AFP 4. AFP 4 is responsible for cleaning up the trichloroethylene (TCE) groundwater plume migrating from AFP 4 towards the former Carswell AFB (1995 BCP, p. 3-1).

### **3.1.2 Restoration Sites and Areas of Concern**

Sixty-eight SWMUs and 16 AOCs that have been identified at the former Carswell AFB. Forty-two of these SWMUs and AOCs also have IRP designations. All of the SWMUs and AOCs are regulated under the state issued RCRA Part B permit, which requires RFIs for all sites not designated as requiring no further action (NFA) by the TNRCC. The management of the SWMUs and AOCs is split between AFCEE and the AFCBA. AFCEE is managing 40 SWMUs and 9 AOCs under DERA, and the AFBCA is managing 6 SWMUs and 5 AOCs

under BRAC. Five SWMUs and one AOC are managed jointly by AFCEE and the AFBCA. The AFBCA is investigating and remediating all jointly managed sites and must have all remedies in place on these sites by September 30, 1998. As of October 1, 1998, all AFBCA sites will be transferred to AFCEE for completion of remediation and long-term monitoring (LTM) (January 1998 Conference Call). A total of 17 SWMUs and 1 AOC have been approved by the TNRCC as NFA under RCRA (1997 CRP, p.16). Table 3.1 lists all SWMUs and AOCs, their study area, IRP designation, and the party or parties responsible for their management. The locations of the SWMUs and AOCs are presented on Figures 3.1, 3.2, and 3.3.

SWMUs and AOCs include landfills, fire training areas, waste accumulation areas, OWSs, a radioactive waste site, USTs and ASTs, washracks and aircraft wash areas, sewer and drainage systems, PCB transformers, pesticides, and areas contaminated by spills or dumping.

#### **3.1.2.1 Underground Storage Tanks**

A total of 106 USTs were located on the former Carswell AFB. Twenty six of these tanks are active, and no actions are planned for them. Thirteen tanks are scheduled for remediation or removal. The remaining 67 tanks have either been removed or are out of service ("Site Characterization Summary Informal Technical Information Report," 1996 (1996 SCSITIR); 1997 MOU, Attachment 6) The status of these USTs is provided in Table 3.2.

#### **3.1.2.2 Aboveground Storage Tanks**

The AFBCA is responsible for only one AST; all others are managed by the Navy. This one AST is located on the golf course and is currently being operated by the contractor that manages the golf course (January 1998 Conference Call).

#### **3.1.2.3 Oil/Water Separators**

Eleven OWSs on the former Carswell AFB were pumped and cleaned during the spring of 1993. Sixteen of the SWMUs (SWMUs 7, 8, 35, 37, 40, 41, 44, 45, 47, 52, 55 and 67) and AOCs (AOCs 10, 11, 12 and 13) contain OWSs and associated collection tanks. All 16 of the OWS sites are having the separators removed in the remedial action stage (AFCEE, Estimated Schedule to Complete, 1998) (1998 AFCEE-ESC)).

HydroGeologic, Inc. — Draft MAP/BCP  
Former Carswell Air Force Base

Figure 3.2

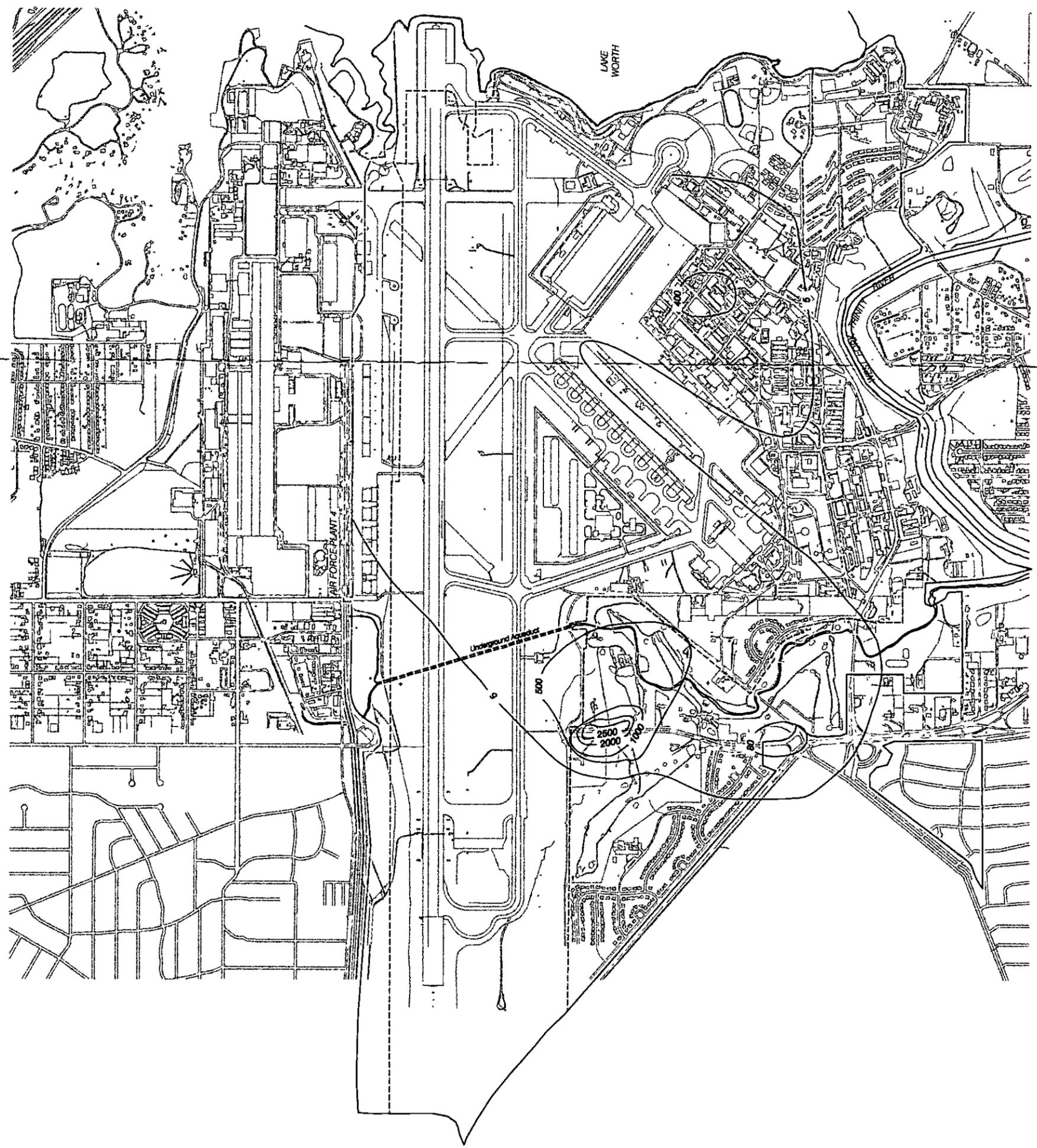
### Former Carswell AFB AOC 2 (TCE Groundwater Plume) Location

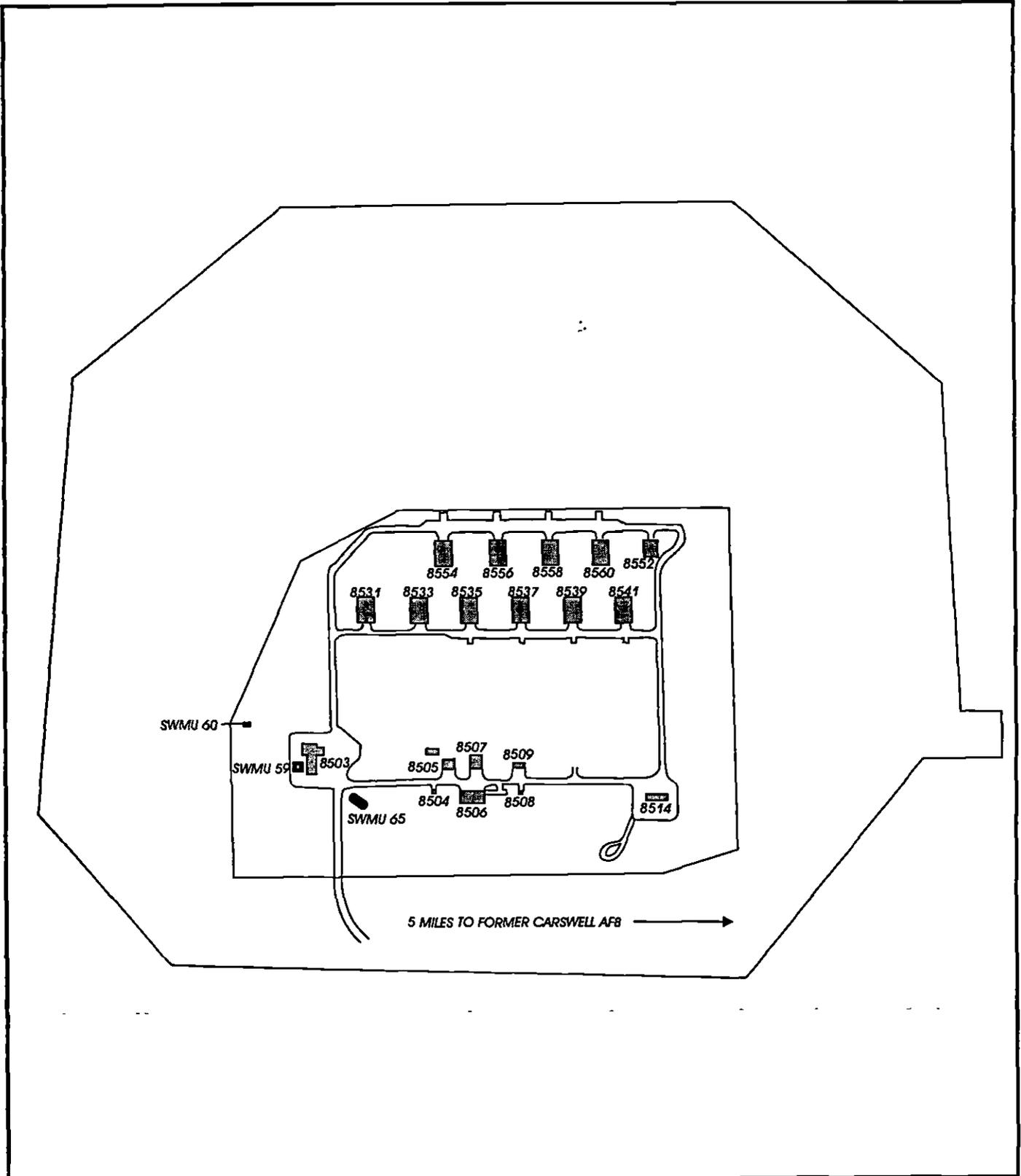
#### LEGEND

- NAS Fort Worth JRB
- Former Carswell Air Force Base
- ~ Surface Water
- ~ Interpolated Trichloroethylene Contour (µg/L)

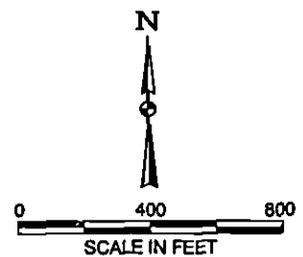


Filename: AFCEE\NAS Ft Worth\Mgmt\ActionPlan\SWMU-AOC.dwg  
Revised: 01/29/98  
Project: AFC001-D05  
Map Source: Jacobs, 1996





**Figure 3.3**  
**Off-Site Weapons Storage Area**  
**SWMU Locations**



**Table 3.1  
Description and Status of SWMUs and AOCs  
Former Carswell AFB**

SWMU / AOC	Category*	Name	Management Responsibility	Current Status**	Comments
SWMU 1	1	Pathological Waste Incinerator	BRAC	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995
SWMU 2	1	Pathological Waste Storage Shed	BRAC	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995
SWMU 3	1	Metal Cans	BRAC	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995
SWMU 4	1	Facility Dumpsters	BRAC	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995
SWMU 5	4	Bldg. 1628 Waste Accumulation Area	DERA	RA planned	Solvent and battery storage; evidence of release; now Bldg. 1627
SWMU 6	3	Bldg. 1628 Washrack and Drain	DERA	RFI planned	Active; part of 301st Fighter Wing
SWMU 7	4	Bldg. 1628 OWS	DERA	RA underway	
SWMU 8	4	Bldg. 1628 Sludge Collection Tank	DERA	RA underway	
SWMU 9	1	Bldg. 1628 Work Station Waste Accumulation Area	DERA	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995
SWMU 10	1	Bldg. 1617 Work Station Waste Accumulation Area	DERA	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995
SWMU 11	4	Bldg. 1617 Waste Accumulation Area	DERA	RA planned	Inactive; circuit board production: no evidence of release; part of 301st Fighter Wing
SWMU 12	4	Bldg. 1619 Waste Accumulation Area	DERA	RA planned	Inactive; fuels and oils; evidence of possible releases; part of 301st Fighter Wing
SWMU 13	4	Bldg. 1710 Waste Accumulation Area	DERA	RA planned	Photography laboratory
SWMU 14	1	Bldg. 1060 Bead Blaster Collection Tray	DERA	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995
SWMU 15	1	Bldg. 1060 Paint Booth Vault	DERA	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995

Table 3.1 (continued)  
Description and Status of SWMUs and AOCs  
Former Carswell AFB

SWMU/ AOC	Category*	Name	Management Responsibility	Current Status**	Comments
SWMU 16	4	Bldg. 1060 Waste Accumulation Area	DERA	RA planned	Paints and solvents; evidence of releases; replaced with active waste accumulation area (Bldg. 1059)
SWMU 17	3	Landfill 7	DERA	RFI underway	Inactive; construction rubble; no evidence of releases
SWMU 18	1	Fire Training Area 1	BRAC	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995
SWMU 19	2	Fire Training Area 2	BRAC/DERA	Remedial excavation completed	Closure documents submitted to TNRCC, August 1997
SWMU 20	2	Waste Fuel Storage Tank	BRAC/DERA	Associated with SWMU 19	Closure documents submitted to TNRCC, August 1997
SWMU 21	2	Waste Oil Tank	BRAC/DERA	Associated with SWMU 19	Closure documents submitted to TNRCC, August 1997
SWMU 22	3	Landfill 4	BRAC	RFI and RD underway	RA begins early 1998
SWMU 23	3	Landfill 5	BRAC	RFI and RD underway	RA begins early 1998
SWMU 24	3	Waste Burial Area	BRAC	RFI and RD underway	RA begins early 1998
SWMU 25	3	Landfill 8	BRAC/DERA	RFI underway	
SWMU 26	3	Landfill 3	DERA	LTM underway	Current location thought incorrect; limited site investigation proposed
SWMU 27	3	Landfill 10	DERA	RFI underway	Active for street debris disposal
SWMU 28	3	Landfill 1	DERA	LTM underway	Current location thought incorrect; limited site investigation proposed
SWMU 29	3	Landfill 2	DERA	RFI underway	Inactive; partially covered by Bldg. 1055; no evidence of releases
SWMU 30	3	Landfill 9	DERA	RFI underway	Inactive

**Table 3.1 (continued)**  
**Description and Status of SWMUs and AOCs**  
**Former Carswell AFB**

SWMU/ AOC	Category*	Name	Management Responsibility	Current Status**	Comments
SWMU 31	4	Bldg. 1050 Waste Accumulation Area	DERA	RA planned	Inactive; oils and solvents; no evidence of releases
SWMU 32	4	Bldg. 1410 Waste Accumulation Area	DERA	RA planned	Oils, fuels, and solvents; evidence of releases; replaced with active waste accumulation area (Bldg. 1415)
SWMU 33	4	Bldg. 1420 Waste Accumulation Area	DERA	RA planned	Solvents and oils; evidence of releases; replaced with active waste accumulation area (Bldg. 1436)
SWMU 34	4	Bldg. 1194 Waste Accumulation Area	DERA	RA planned	Inactive; solvents and oils; evidence of releases
SWMU 35	4	Bldg. 1194 Vehicle Refueling Shop OWS System	DERA	RA underway	
SWMU 36	4	Bldg. 1191 Waste Accumulation Area	DERA	RA planned	Oils and fuels; evidence of releases
SWMU 37	4	Bldg. 1191 Vehicle Maintenance Shop OWS	DERA	RA underway	
SWMU 38	1	Bldg. 1269 PCB Transformer Building	BRAC	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995
SWMU 39	4	Bldg. 1643 Waste Accumulation Area	DERA	RA planned	Inactive
SWMU 40	4	Bldg. 1643 OWS System	DERA	RA underway	Submitted as NFA; approval by TNRCC pending background study.
SWMU 41	4	Bldg. 1414 OWS System, Field Maintenance Squadron, Aerospace Ground Equipment	DERA	RA underway	Inactive
SWMU 42	4	Bldg. 1414 Waste Accumulation Area	DERA	RA planned	Inactive; oils and fuels, no evidence of releases; possibly replaced by Bldg. 1415
SWMU 43	1	Bldg. 1414 NDI Waste Accumulation Area	DERA	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995

**Table 3.1 (continued)**  
**Description and Status of SWMUs and AOCs**  
**Former Carswell AFB**

<b>SWMU/ AOC</b>	<b>Category*</b>	<b>Name</b>	<b>Management Responsibility</b>	<b>Current Status**</b>	<b>Comments</b>
SWMU 44	4	Bldg. 1027 O/W Separation System at the Aircraft Washing Hangar	DERA	RA underway	
SWMU 45	4	Bldg. 1027 Waste Oil Tank Vault at the Aircraft Washing Hangar	DERA	RA underway	Part of Bldg. 1027 OWS System
SWMU 46	1	Bldg. 1027 Waste Accumulation Area	DERA	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995
SWMU 47	4	Bldg. 1015 Jet Engine Test Cell OWS System	DERA	RA underway	
SWMU 48	1	D1048 Fuel System Floor Drains	DERA	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995
SWMU 49	3	Aircraft Washing Area 1	DERA	RFI Planned	Inactive; carried runoff from runway to SWMU 53
SWMU 50	3	Aircraft Washing Area 2	DERA	RFI Planned	Inactive; carried runoff from runway to SWMU 53
SWMU 51	4	Bldg. 1190 Central Waste Holding	DERA	RA planned	Active 90-day central holding area; solvents, miscellaneous hazardous waste
SWMU 52	2	Bldg. 1190 OWS System	DERA	RA underway	Discharges to SWMU 53; submitted as NFA; approval by TNRCC pending results of background study
SWMU 53	3	Storm Water Drainage System	DERA	RFI planned	Partially investigated and remediated
SWMU 54	3	Storm Water Interceptors	DERA	RFI planned	Active; monitored under the National Pollutant Discharge Elimination System
SWMU 55	4	East Gate OWS	DERA	RA underway	

**Table 3.1 (continued)  
Description and Status of SWMUs and AOCs  
Former Carswell AFB**

SWMU/ AOC	Category*	Name	Management Responsibility	Current Status**	Comments
SWMU 56	1	Bldg. 1405 Waste Accumulation Area	DERA	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995
SWMU 57	1	Bldg. 1432/1434 Waste Accumulation Area	DERA	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995
SWMU 58	2	Pesticide Rinse Area	BRAC	RFI completed 1996	Closure documents submitted to TNRCC, October 1997
SWMU 59	4	Bldg. 8503 WSA Waste Accumulation Area	BRAC	RA to be completed early 1998	Closure documents will follow
SWMU 60	2	Bldg. 8503 Radioactive Waste Burial Site	BRAC	Partial closure approval,	Closure approval pending results of background study per TNRCC letter dated November 5, 1996
SWMU 61	4	Bldg. 1320 Power Production Maintenance Facility Waste Accumulation Area	DERA	RA planned	Oils, diesel fuel and solvents; replaced with Bldg. 1319
SWMU 62	3	Landfill 6	DERA	RFI underway	Construction debris, nonfriable asbestos, and oils; inactive (Navy uses for soil stockpiles)
SWMU 63	1	Entomology Dry Well	DERA	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995
SWMU 64	4	French Underdrain System	DERA	LTM/LTO underway	Partial removal of an associated OWS; remedial action plan submitted to TNRCC, September 1997
SWMU 65	1	WSA Disposal Site	BRAC	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995
SWMU 66	2	Sanitary Sewer System	BRAC/DERA	Closure plan submitted	Portions that are located off NAS Fort Worth JRB property are under investigation
SWMU 67	4	Bldg. 1340 OWS	DERA	RA underway	

**Table 3.1 (continued)**  
**Description and Status of SWMUs and AOCs**  
**Former Carswell AFB**

<b>SWMU/ AOC</b>	<b>Category*</b>	<b>Name</b>	<b>Management Responsibility</b>	<b>Current Status**</b>	<b>Comments</b>
SWMU 68	4	POL Tank Farm	DERA	LTM underway	
AOC 1	2	Bldg. 1518 Service Station	BRAC/DERA	Closure plan submitted	Site characterization in progress
AOC 2	3	Airfield Groundwater Plume	DERA	LTM underway	Commingled fuels and TCE plume from several potential sources; TCE plume integrated with AFP 4 plume
AOC 3	1	Waste Oil Dump	DERA	Closed under RCRA	NFA per TNRCC letter dated March 2, 1995
AOC 4	3	Fuel Hydrant System	DERA	LTM underway	All stations removed; includes "Spot 35" in airfield parking lot
AOC 5	2	Grounds Maintenance Yard	BRAC	Closure plan submitted	Closure documents submitted to TNRCC, September 1997
AOC 6	3	RV Storage Area	DERA	RFI underway	Active; motor pool parking lot
AOC 7	4	Former Base Refueling Area	DERA	RD underway	Remedial action plan submitted to TNRCC, September 1997
AOC 8	2	SW Aerospace Museum	BRAC	RFI complete	Closure documents submitted to TNRCC, September 1997
AOC 9	2	Golf Course Maintenance Yard	BRAC	RA complete	Closure documents submitted to TNRCC, October 1997
AOC 10	4	Bldg. 1064 OWS	DERA	RA underway	
AOC 11	4	Bldg. 1060 OWS	DERA	RA underway	
AOC 12	4	Bldg. 4210 OWS	DERA	RA underway	

**Table 3.1 (continued)**  
**Description and Status of SWMUs and AOCs**  
**Former Carswell AFB**

SWMU/ AOC	Category*	Name	Management Responsibility	Current Status**	Comments
AOC 13	4	Bldg. 1145 OWS	DERA	RA underway	
AOC 14	4	Unnamed Stream	BRAC	RA underway	Closure/compliance documentation begun
AOC 15	4	Bldg. 1190 Storage Shed	DERA	RA planned	
AOC 16		Family Camp	BRAC		

\*Category Index:

- 1 - Closed Sites
- 2 - To Be Closed Sites
- 3 - Further Investigation Sites
- 4 - Corrective Action Sites

\*\* Current Status was obtained from AFCEE and AFBCA estimated schedules

Notes:

- AOC - Area of Concern
- BRAC - Base Realignment and Closure
- DERA - Defense Environmental Restoration Account
- IRP - Installation Restoration Program
- LTM - Long-Term Monitoring
- LTO - Long-Term Observation
- N/A - Information Not Available
- NDI - Non-Destructive Inspection
- NFA - No Further Action
- OWS - Oil/Water Separator
- PCB - Polychlorinated Biphenyl
- POL - Petroleum/Oil/Lubricant
- RA - Remedial Action
- RCRA - Resource Conservation Recovery Act
- RFI - RCRA Facility Investigation
- RRR - Risk Reduction Rule
- SWMU - Solid Waste Management Unit
- TNRCC - Texas Natural Resource Conservation Commission
- WAA - Waste Accumulation Area
- WSA - Weapons Storage Area

Source: 1997 CPA, Table A; 1997 CRP, pp. 14-16

**Table 3.2**  
**Summary of Underground Storage Tanks**

Tank ID/ Bldg. No.	SWMU/AOC	Facility	Substance	Comments	Action
1015-1	SWMU 47	Engine Test Cell	JP-4	Active; recently upgraded with spill/overflow protection; cathodic protection to be updated	None
1027-0	SWMUs 44/45	OWS	Waste Oil	Active; associated with OWS	Remove; confirmation sampling; closure; groundwater monitoring
1040-1		Water Fire Pump	Diesel	Removed June 1994, replaced with AST	Confirmation sampling; closure; groundwater monitoring
1049-1		A/C Maint. Dock	Unknown	Tank does not exist; no record	None
1050-1	SWMU 31	A/C Maint. Hangar	Heating Oil	Exempt; to be used by Navy, Marines	None
1064-1		Vehicle Fueling Station	Diesel	Active; replacement tank recently installed by Navy (in former LPST location)	Confirmation sampling; closure; groundwater monitoring
1064-2		Vehicle Fueling Station	Diesel	Active; replacement tank recently installed by Navy (in former LPST location)	Confirmation sampling; closure; groundwater monitoring
1064-3		Vehicle Fueling Station	Mogas	Active; replacement tank recently installed by Navy (in former LPST location)	Confirmation sampling; closure; groundwater monitoring
1064-4		Vehicle Fueling Station	Mogas	Active; replacement tank recently installed by Navy (in former LPST location)	Confirmation sampling; closure; groundwater monitoring
1140-1		Old Hobby Shop	Waste Oil	Removed September 1989	Confirmation sampling; closure; groundwater monitoring
1140-2		Old Hobby Shop	Waste Oil	Removed September 1989	Confirmation sampling; closure; groundwater monitoring
1145-1	AOC 13	Auto Hobby Shop	Waste Oil	Active; associated with OWS	Remove; confirmation sampling; closure; groundwater monitoring

**Table 3.2 (continued)**  
**Summary of Underground Storage Tanks**

Tank ID/ Bldg. No.	SWMU / AOC	Facility	Substance	Comments	Action
1170-1	SWMU 68	POL Pump Station	JP-8	Bldg. number should be 1168-1	Remedial action part of SWMU 68
1170-2	SWMU 68	POL Pump Station	JP-8	Bldg. number should be 1169-1	Remedial action part of SWMU 68
1170-3	SWMU 68	POL Tank Farm (fuel loading area)	JP-4	Navy remedial project; only two condensation tanks in fuel loading area	Remedial action part of SWMU 68
1191-1	SWMU 37	Vehicle Maintenance Shop	Waste Oil	Removed October 1993; TNRCC to review closure report	Confirmation sampling; closure; groundwater monitoring
1191-2	SWMU 37	Vehicle Maintenance Shop	Waste Oil	Active; associated with OWS	Remove; confirmation sampling; closure; groundwater monitoring
1194-1	SWMU 35	Refueling Maintenance Shop	Waste Oil	Active; associated with OWS	Remove; confirmation sampling; closure; groundwater monitoring
1411-1		AGE Refueling	Mogas	Out of service March 1995; removed 1996	Closure; groundwater monitoring
1411-2		AGE Refueling	Mogas	Out of service March 1995; removed 1996	Closure; groundwater monitoring
1411-3		AGE Refueling	Diesel	Out of service March 1995; removed 1996	Closure; groundwater monitoring
1411-4		AGE Refueling	JP-4	Tank does not exist; no record	None
1420-1	SWMU 33	AGE Shop	Heating Oil	Active; exempt	None
1423-1		Air Freight Terminal	Waste Oil	Active; associated with OWS	Remove; confirmation sampling; closure; groundwater monitoring
1425-1		Fire Station	Diesel	Active	None
1427-1		Rapcon Support	Diesel	Removed November 1990	Confirmation sampling; closure; groundwater monitoring
1518-2	AOC 1	AAFES Service Station	Mogas	Removed May 1993; site characterization work plan submitted April 1996	Remedial action part of SWMU 68

Table 3.2 (continued)  
Summary of Underground Storage Tanks

Tank ID/ Bldg. No.	SWMU/AOC	Facility	Substance	Comments	Action
1518-3	AOC 1	AAFES Service Station	Mogas	Removed May 1993; site characterization work plan submitted April 1996	Remedial action part of SWMU 68
1518-4	AOC 1	AAFES Service Station	Mogas	Removed May 1993; site characterization work plan submitted April 1996	Remedial action part of SWMU 68
1518-5	AOC 1	AAFES Service Station	Waste Oil	Out of service March 1995; removed May 1996	Remedial action part of SWMU 68
1627-1	SWMUs 5-9	Vehicle Fueling Station	Mogas	Tank does not exist; see number 1628-1	None
1627-2	SWMUs 5-9	Vehicle Fueling Station	Diesel	Tank does not exist; see number 1628-2	None
1627-3	SWMUs 5-9	Vehicle Fueling Station	JP-4	Tank does not exist; see number 1628-3	None
1628-1	SWMUs 5-9	AGE Fueling	Mogas	Removed May 1993; USACE remediating - soil and groundwater contamination.; February 1994 LSA report; additional wells/monitoring to be done	Long-term groundwater monitoring
1628-2	SWMUs 5-9	AGE Fueling	Diesel	Removed May 1993; USACE remediating - soil and groundwater contamination.; February 1994 LSA report; additional wells/monitoring to be done	Long-term groundwater monitoring
1628-3	SWMUs 5-9	AGE Fueling	JP-4	Removed May 1993; USACE remediating - soil and groundwater contamination.; February 1994 LSA report; additional wells/monitoring to be done	Long-term groundwater monitoring
1628-4	SWMUs 5-9	OWS	Waste Oil	Active; associated with OWS	Remove; confirmation sampling; closure; groundwater monitoring

**Table 3.2 (continued)**  
**Summary of Underground Storage Tanks**

Tank ID/ Bldg. No.	SWMU/AOC	Facility	Substance	Comments	Action
1629-1		Security	Diesel	Remove October 1993	Confirmation sampling; closure; groundwater monitoring
1643-1	SWMU 39	301 A/C Maintenance Hangar	Heating Oil	Active; exempt	None
1643-2	SWMU 39	301 A/C Maintenance Hangar	Heating Oil	tank does not exist; no record	None
1655-1		301 A/C Maintenance Shop	Oil/Water	Active	None
1656-1		301 A/C Maintenance Dock	N-Hydrazine	Exempt; supposedly contains fire suppressant instead of N- Hydrazine	None
1658-1		Electric Power Generator Plant	Diesel	Removed October 1990	Confirmation sampling; closure; groundwater monitoring
1749-1		Electric Power Station Bldg.	Diesel	Tank does not exist; no record	None
1750-1		Communication Relay Station	Diesel	Out of service March 1995; removed May 1996	Confirmation sampling; closure; groundwater monitoring
1750-2		Communication Relay Station	Diesel	Clean-closed/abandoned in place (filled w/concrete); may be removed when overlying bldg. is demolished	None
3000-1		Hospital DEG	Diesel	Air Force upgraded spill/overflow, will upgrade cathodic protection; FBOP to assume responsibility	None
3000-2		Hospital DEG	Diesel	Air Force upgraded spill/overflow, will upgrade cathodic protection; FBOP to assume responsibility	None

**Table 3.2 (continued)**  
**Summary of Underground Storage Tanks**

Tank ID/ Bldg. No.	SWMU/AOC	Facility	Substance	Comments	Action
3001-1		Hospital Boiler Facility	Diesel	Air Force upgraded spill/overflow, will upgrade cathodic protection; FBOP to assume responsibility	None
3001-2		Hospital Boiler Facility	Heating Oil	exempt; Air Force upgraded spill/overflow, will upgrade cathodic protection; FBOP to assume responsibility	None
3001-3		Hospital Boiler Facility	Heating Oil	Removed	None
3190-1		Youth Center	Heating Oil	Active	None
3359-1		Reserve Fire Team Facility	Diesel	Active	None
3360-1		Electric Power Generator Plant	Diesel	Active; Air Force upgraded spill/overflow, will upgrade cathodic protection	None
4102-1		Air Surveillance Radar DEG	Diesel	Out of service March 1995; removed May 1996	Confirmation sampling; closure; groundwater monitoring
4111-1		Electric Power Generator Plant	Diesel	Active; Air Force upgraded spill/overflow, will upgrade cathodic protection	None
4115-1		Old GCA Site DEG	Diesel	Removed January 1991	Confirmation sampling; closure; groundwater monitoring
4127-1		Electric Power Generator Plant	Diesel	Active; Air Force upgraded spill/overflow, will upgrade cathodic protection	None
4135-1		Electric Power Generator Plant	Diesel	Tank does not exist; no record.	None
4136-1		TACAN Station DEG	Diesel	Removed January 1991	Confirmation sampling; closure; groundwater monitoring
4136-2		TACAN Station DEG	Diesel	Active; Air Force upgraded spill/overflow, will upgrade cathodic protection	None

**Table 3.2 (continued)**  
**Summary of Underground Storage Tanks**

Tank ID/ Bldg. No.	SWMU/AOC	Facility	Substance	Comments	Action
4141-1		Electric Power Generator Plant	Diesel	Active; Air Force upgraded spill/overflow, will upgrade cathodic protection	None
4143-1		Communication Transmitter DEG	Diesel	Active; Air Force upgraded spill/overflow, will upgrade cathodic protection	None
4145-1		Electric Power Generator Plant	Diesel	Active; Air Force upgraded spill/overflow, will upgrade cathodic protection	None
4150-1	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4150-2	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4150-3	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4150-4	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4150-5	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4150-6	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4152-1	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4152-2	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4152-3	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4152-4	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4152-5	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4152-6	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4153-1	AOC 4	Hydrant Refueling	JP-4	Removed May 1995	Remedial action part of AOC 4
4153-2	AOC 4	Hydrant Refueling	JP-4	Removed May 1995	Remedial action part of AOC 4

Table 3.2 (continued)  
Summary of Underground Storage Tanks

Tank ID/ Bldg. No.	SWMU/AOC	Facility	Substance	Comments	Action
4153-3	AOC 4	Hydrant Refueling	JP-4	Removed May 1995	Remedial action part of AOC 4
4153-4	AOC 4	Hydrant Refueling	JP-4	Removed May 1995	Remedial action part of AOC 4
4153-5	AOC 4	Hydrant Refueling	JP-4	Removed May 1995	Remedial action part of AOC 4
4153-6	AOC 4	Hydrant Refueling	JP-4	Removed May 1995	Remedial action part of AOC 4
4154-1	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4154-2	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4154-3	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4154-4	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4154-5	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4154-6	AOC 4	Hydrant Refueling	JP-4	Removed July 1994	Remedial action part of AOC 4
4155-1		Airfield Lighting DEG	Diesel	Active; Air Force upgraded spill/overflow, will upgrade cathodic protection	Remedial action part of AOC 4
4170-1		Hydrant Refueling	JP-4	Removed September 1992	Remedial action part of AOC 4
4170-2		Hydrant Refueling	JP-4	Removed September 1992	Remedial action part of AOC 4
4170-3		Hydrant Refueling	JP-4	Removed September 1992	Remedial action part of AOC 4
4170-4		Hydrant Refueling	JP-4	Removed September 1992	Remedial action part of AOC 4
4170-5		Hydrant Refueling	JP-4	Removed September 1992	Remedial action part of AOC 4
4170-6		Hydrant Refueling	JP-4	Removed September 1992	Remedial action part of AOC 4

**Table 3.2 (continued)**  
**Summary of Underground Storage Tanks**

Tank ID/ Bldg. No.	SWMU/AOC	Facility	Substance	Comments	Action
4171-1		Electric Power Generator Plant	Diesel	Active; Air Force upgraded spill/overflow, will upgrade cathodic protection	None
4205-1		Rocket Assembly Storage	Waste Oil	Active; floor drain holding tank associated with OWS; Air Force upgraded spill/overflow, will upgrade cathodic protection	None
4210-1	AOC 12	Missile Assembly Shop	JP-10	Out of service March 1995; removed May 1996	Confirmation sampling; closure report; groundwater monitoring
4210-2	AOC 12	Missile Assembly Shop	JP-10	Out of service March 1995; removed May 1996	Confirmation sampling; closure report; groundwater monitoring
4210-3	AOC 12	Missile Assembly Shop	JP-10	Out of service March 1995; removed May 1996	Confirmation sampling; closure report; groundwater monitoring
4210-4	AOC 12	Missile Assembly Shop	Heating Oil	Active; exempt	None
4210-5	AOC 12	Missile Assembly Shop	Waste JP-10	Out of service March 1995; removed May 1996	Confirmation sampling; closure report; groundwater monitoring
4210-6	AOC 12	Missile Assembly Shop	Oil/Water	Active	None
4215-1		Special Weapons Shop	Heating Oil	Active; exempt	None
4216-1		Electric Power Generator Plant	Diesel	Active; USAF upgraded spill/overflow, will upgrade cathodic protection	None
8500-1		WSA	Heating Oil	Removed October 1990	None
8503-1	SWMU 59	WSA	Heating Oil	Removed September 1990	None
8505-1		WSA	Diesel	Removed October 1990	None
8507-1		WSA	Heating Oil	Removed October 1990	None
8514-1		WSA	Diesel	Removed November 1990	None

**Table 3.2 (continued)**  
**Summary of Underground Storage Tanks**

Tank ID/ Bldg. No.	SWMU/AOC	Facility	Substance	Comments	Action
8514-2		WSA	Heating Oil	Removed October 1990	None
	SWMU 20	Waste Fuel Storage Tank	Waste Fuel	Removed	None
	SWMU 21	Waste Oil Tank	Waste Oil	Removed	None
	AOC 7	Abandoned Service Station	Unknown	Status of tank removal unknown	Remedial action part of AOC 7

Shaded rows indicate tanks that were removed or never existed.

Notes:

AAFES- Army Air Force Exchange Services  
 AGE- Aerospace Ground Equipment  
 AOC - Area of Concern  
 AST - Aboveground Storage Tank  
 FBOP- Federal Bureau of Prisons  
 GCA- Ground Controlled Approach  
 OWS - Oil/Water Separator  
 POL - Petroleum/Oil/ Lubricant  
 SWMU - Solid Waste Management Unit  
 TACAN - Tactical Airborne Navigation  
 TNRCC - Texas Natural Resource Conservation Commission  
 USACE - U.S. Army Corp of Engineers  
 UST - Underground Storage Tank  
 WSA - Weapons Storage Area

#### **3.1.2.4 Solid Waste Management Areas**

There are currently no active on-base landfills at the former Carswell AFB. A licensed contractor removes solid waste to Lincrest Landfill, which is off-base. Nine on-base sites were used for the disposal of solid waste in the past. These sites are currently being investigated. (1995 BCP, pp. 3-15).

#### **3.1.2.5 Radioactive Waste**

The Off-Site WSA contains a radioactive waste burial site (SWMU 60). The radioactive waste burial site has been approved for partial closure by the TNRCC. Complete closure approval is pending the results of a background study (1997 CPA, Table A).

### **3.2 NATURAL AND CULTURAL RESOURCES PROGRAM STATUS**

The information in this section is summarized from the July 1994 FEIS. This section summarizes the natural and cultural resources that exist on the former Carswell AFB. Natural resources described here include state and federal protected species, sensitive habitats, wetlands, surface waters, and floodplains. Cultural resources described here include paleontological, prehistorical, and historical sites and structures.

#### **3.2.1 Natural Resources**

In 1992 an analysis of natural resources was conducted at the former Carswell AFB. A reconnaissance survey of the base was conducted in early June 1992 to gain information concerning the affected environment. Additional input was obtained from the U.S. Fish and Wildlife Service (USFWS) and the Texas Department of Parks and Wildlife (TDPW) regarding threatened and endangered species. A literature review was conducted and field verified. Aerial photographs taken in November 1990 and the "Carswell AFB Base Comprehensive Plan" were also reviewed to assist in the analysis. The study defined the region of influence (ROI) for biological resources as "all areas on the base (including the Off-Site WSA), and sensitive habitats located near the base and the off-base easement areas surrounding the Off-Site WSA." These areas were assessed to determine the level of impact to biological resources (1994 FEIS, pp. 3-107-3-108).

##### **3.2.1.1 Threatened and Endangered Species (State and Federal)**

The Air Force conducted informal consultations with the USFWS and the TDPW concerning threatened and endangered species potentially occurring in the vicinity of the former Carswell AFB. These two agencies identified 12 bird, 2 reptile, and 1 sensitive plant species that potentially exist in Tarrant County. The state and federal listing status of these species is presented on Table 3.3. The likelihood of the species occurring at the former Carswell AFB is described below (1994 FEIS, pp. 3-114-3-115).

The TDPW identified the auriculate false foxglove plant as historically present in Tarrant County. However, no suitable habitat exists within the ROI for this plant, and it may have been extirpated from the state (1994 FEIS, p. 3-115).

Of the 12 listed bird species that may occur in Tarrant County, 10 are migrants that rest and feed on Lake Worth and its shores for part of the year. These migrants include the Arctic peregrine falcon, American peregrine falcon, bald eagle, piping plover, reddish egret, whooping crane, wood stork, brown pelican, white-faced ibis, and interior least tern. None of the migrants are expected to nest in the vicinity of the main base or at the Off-Site WSA. The golden-cheeked warbler and the black-capped vireo require specific habitats that are not present within the ROI (1994 FEIS, p. 3-116).

Two federal-listed candidate reptile species may occur in Tarrant County. One is the Texas horned lizard, which lives on grassy hillsides, and the other is the Texas garter snake, which prefers prairie seeps and wet grassy swales. There is a slight potential that these reptile species could be present in the 4-acre unmowed horse pasture on the eastern side of the main base. The garter snake may also reside along the drainages on the main base, but prefers grassy areas to woody vegetation. Neither of the two species was observed on the main base or at the Off-Site WSA. Suitable habitat has been fragmented on the base, and much of it has been repeatedly mowed or heavily grazed; as a result, the grassland habitat on the former Carswell AFB is not expected to contain either of the reptiles. These same reptile species are not expected to occur in the fenced Off-Site WSA, but may be present in the pasture lands outside the fences (1994 FEIS, p. 3-116).

### **3.2.1.2 Sensitive Habitats**

Sensitive habitats include those areas that require special consideration when contemplating a change in land use, such as wetlands under the jurisdiction of the Clean Water Act (discussed under Section 3.3.1.3, Wetlands), plant communities designated as unusual or of limited distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, or crucial summer/winter habitats). This includes areas associated with a protected species, or those areas critical for a life need of a species or population (1994 FEIS, p. 3-116).

The shore of Lake Worth is in the Central-North American Migratory Flyway, and is considered sensitive habitat due to its importance to migratory birds. Some of the migratory birds using Lake Worth are state- and federal-listed species. The great blue heron rookeries by the Fort Worth Nature Center on the north shore of Lake Worth are sensitive nesting areas. The birds are especially vulnerable to human intrusion during the nesting season. These rookeries are protected by the TDPW (1994 FEIS, p. 3-118).

**Table 3.3**  
**Threatened, Endangered, and State-Ranked Species Potentially Occurring in the Vicinity**  
**of the Former Carswell AFB**

Common Name	Species	Status	
		Federal	State
Piping plover	<i>Charadrius melodus</i>	T	T
Mountain plover	<i>Charadrius montanus</i>	C1	-
Black Tern	<i>Chidonias niger</i>	C2	-
Golden-cheeked warbler	<i>Dendroica chrysoparia</i>	E	E
Reddish egret	<i>Egretta rufescens</i>	C2	T
American peregrine falcon	<i>Falco peregrinus anatum</i>	E	E
Arctic peregrine falcon	<i>Falco peregrinus tundrius</i>	T	T
Whooping crane	<i>Grus americana</i>	E	E
Bald eagle	<i>Haliaeetus leucocephalus</i>	E	E
Wood stork	<i>Mycteria americana</i>	-	T
Brown pelican	<i>Pelecanus occidentalis</i>	E	E
White-faced ibis	<i>Plegadis chichi</i>	C2	T
Interior least tern	<i>Sterna antillarum</i>	E	E
Black-capped vireo	<i>Vireo atricapillus</i>	E	E
Texas horned lizard	<i>Phrynosoma cornutum</i>	C2	T
Texas garter snake	<i>Thamnophis sirtalis annectens</i>	C2	-
Auriculate false foxglove	<i>Agalinis auriculata</i>	C2	X*

- Notes: E = Listed as endangered.  
T = Listed as threatened.  
C = Candidate, Category 2. Information indicates that proposing to list as endangered or threatened is possibly appropriate, but substantial data on biological vulnerability and threats are not currently known to support immediate preparation of rules. Further biological research and field study is necessary to ascertain status and/or taxonomic validity.  
X = Apparently extirpated from state.  
\* Globally imperiled, very rare, 6 to 20 occurrences (endangered throughout range).

Source: TDPW, 1992; USFWS, 1991, 1992; 1994 FEIS, p. 3-115.

### 3.2.1.3 Wetlands

The former Carswell AFB has 0.6 acres of jurisdictional wetlands designated by the U.S. Army Corps of Engineers (USACE). Jurisdictional wetland areas on base are found in the natural drainage stream southeast of AFP 4, totaling approximately 0.5 acres, and on the west side of the Off-Site WSA, totaling approximately 0.1 acres. The Off-Site WSA wetland is of low quality due to its lack of species diversity. The rest of the hydrophytic vegetation at the Off-Site WSA is located in man-made drainage ditches, and therefore, does not qualify as a jurisdictional (protected) wetland (1994 FEIS, p. 3-116).

### 3.2.1.4 Surface Waters

The former Carswell AFB and all of Tarrant County are located within the Trinity River watershed. Surface water resources in the vicinity of the base include the West Fork and

Kings Branch of the Trinity River, Farmers Branch Creek, Lake Worth, two ponds located in the golf course area, and one small pond in the Off-Site WSA (1994 FEIS, p. 3-83).

Lake Worth, a man-made reservoir on the West Fork of the Trinity River, is located north of the former Carswell AFB and is owned and operated by the city of Fort Worth. The reservoir is used for recreation and as a public water supply for the surrounding communities, including the base. Water from Farmers Branch Creek is used to irrigate the on-base golf course. White Settlement and Sansom Park obtain water from 12 and 9 groundwater wells, respectively, but, when required, they purchase surface water from Fort Worth. The former Carswell AFB purchased 0.93 million gallons per day (MGD), 0.77 MGD, and 0.76 MGD of water from Fort Worth in 1989, 1990, and 1991, respectively. The availability of surface water was adequate at the time of base closure (1994 FEIS, pp. 3-83-3-84).

The potential for contamination of surface water is present at several locations on the former Carswell AFB. Potential for migration of hazardous contaminants through the surface water is considered high, primarily due to the proximity of identified sites to Farmers Branch Creek and Lake Worth. In addition, shallow groundwater carrying dissolved contaminants may discharge to these surface waters. Surface drainage at the former Carswell AFB is collected by the storm drainage system and is routed into the sewer system, or into an outfall into Lake Worth. The outfall is permitted under the National Pollutant Discharge Elimination System (NPDES), and monitoring results document compliance with permit discharge limitations. An underground drainage culvert conducts surface runoff generated from areas west of the base eastward to Farmers Branch Creek (1994 FEIS, pp. 3-85-3-86).

The Trinity River drainage area has been identified as the Dallas/Fort Worth designated area for water quality management planning under the purview of the North Central Texas Council of Governments (NCTCOG). The TNRCC is the state-level agency charged with the protection of Texas waters. NCTCOG monitoring has found water in the West Fork of the Trinity River below the former Carswell AFB to be low in dissolved oxygen, and occasionally high in pH compared to relevant guidelines (1994 FEIS, pp. 3-85-3-86).

The waters of Lake Worth are moderately hard, and contain slightly elevated salt levels during the warm summer season. Historically, Lake Worth has experienced problems with high sediment loads. Lake Worth was included in the 1990 “Nonpoint Source Report” for having known problems with sedimentation from agricultural and vacant lands (1992 NCTCOG). The sedimentation problems have been reduced by using Eagle Mountain Lake as a sediment trap (1994 FEIS, p. 3-86).

### **3.2.1.5 Flood Plains**

Portions of the former Carswell AFB lie within the 100-year flood plain; these areas occur along the peripheries of the West Fork of the Trinity River, Lake Worth, Farmers Branch Creek, the Off-Site WSA, and Kings Branch. Localized flooding occurs during heavy rainfall along the northern base perimeter and local depressions (1994 FEIS, p. 3-85).

### **3.2.2 Cultural Resources**

When federal property is conveyed to a private party or a non-federal agency, historic properties lose legal protections. Mitigation of potential impacts must be considered by the Air Force before the property is conveyed. Impacts resulting from the change in ownership can be mitigated by placing preservation covenants on the lease or disposal document. In compliance with the National Historic Preservation Act (NHPA), the Air Force performed a Section 106 review with the Texas State Historic Preservation Officer (SHPO) (Texas Historical Commission) in order to properly manage its historic properties. The results of field surveys performed in 1990 by the National Park Service, field surveys performed in 1991 and 1992 by Texas Tech University, and record and literature searches performed in 1992 by the Air Force as part of the FEIS are summarized here (1994 FEIS, p. 3-118–3-119).

#### **3.2.2.1 Paleontological Resources**

Cretaceous period (65 to 145 million years ago) fossils are common to the former Carswell AFB area. Literature searches and field reconnaissance in June 1992 confirmed the presence of fossils along the western boundary of the base and at the Off-Site WSA. However, these resources are not considered unusual, and there are no listed or eligible National Natural Landmarks on the base (1994 FEIS, p. 3-122).

#### **3.2.2.2 Prehistoric and Historic Sites**

Buck Oaks Farm, a historical structure within the boundaries of NAS Fort Worth JRB, was listed on the NRHP in 1987 (1997 CRP, p. 10). In April 1990 the Texas SHPO toured the former Carswell AFB to assess the status of cultural resources. Further surveys conducted in 1990 by the National Park Service identified other historic and prehistoric sites, but none of them qualified for the NRHP. The National Park Service intensively surveyed approximately 320 acres considered the least disturbed on the former Carswell AFB, and identified five sites of interest. Neither the one prehistoric nor the four historic sites were considered eligible for the NRHP. The SHPO concurred with the findings on the five sites, and concluded that no further archaeological investigations would be required for the former Carswell AFB. The Kings Branch housing area and a 9-acre tract adjacent to the noncommissioned officers' club in the northeast corner of the base were also surveyed; no cultural resources were identified. No evidence of Native American settlements or activities were found (1994 FEIS, pp. 3-119–3-120).

Texas Tech University conducted an historic buildings survey of the former Carswell AFB in 1991 and 1992; 31 buildings, 1 structure (a concrete water tower), and the Thompson family cemetery were evaluated and photographed during the survey. Of these 33 properties, the survey concluded that 4 could be eligible for the NRHP. The four properties included the following:

- Building 218 - Golf Clubhouse
- Building 233 - Golf Course Maintenance Shop
- Building 260 - Hyde House
- Structure 1809 - Concrete Water Tower

Subsequent to the Texas Tech University survey, changes in Air Force policy regarding the eligibility of some World War II and Cold War facilities have necessitated a reevaluation of the former Carswell AFB buildings and structures. A revision of the initial survey report is in progress, and a final determination on NRHP-eligible properties will be coordinated with the Texas SHPO (1994 FEIS, pp. 3-120-3-122).

### **3.3 COMMUNITY INVOLVEMENT STATUS**

Community relations efforts that address restoration issues have two regulatory drivers, the environmental restoration process and the National Environmental Policy Act (NEPA) process. Community relations efforts to support the environmental restoration efforts are ongoing, while NEPA community relations activities only occur when a NEPA document is prepared, such as when Carswell AFB was declared surplus. The status of both processes is summarized below.

A community relations plan was written in 1997 to support the environmental restoration process. Community interviews indicated that NAS Fort Worth JRB has good relations with neighboring communities, and that there are mild concerns with possible contamination of the water supply in Lake Worth, environmental cleanup, base housing, air quality, and noise.

One important component of community relations efforts is the formation and maintenance of an RAB. The RAB for the former Carswell AFB, originally formed in 1991, was combined with the RAB for AFP 4 in 1996 to form a joint RAB. RAB membership includes community representatives as well as base staff (1997 CRP, pp. 21-25). Other community relations elements that will continue or be added in 1998 include the following:

- coordination of community relations activities through one Air Force person, Mr. Olen Long of AFBCA
- public meetings when remedial investigation/feasibility study (RI/FS) and engineering evaluation/cost analysis (EE/CA) reports become available for public review
- public comment periods of 30 days when the preferred cleanup alternative has been published
- release of information through fact sheets mailed to interested parties and public officials

- release of information through press releases and paid public notices
- maintenance of an information telephone line to answer environmental questions
- maintenance of an administrative record
- maintenance of an information repository at the base
- semiannual facility tours
- additional community interviews and revisions to the community relations plan on a biannual basis

As part of the NEPA process to support the disposal and reuse of the former Carswell AFB, the FEIS was prepared in 1994. Public comments were solicited through public meetings, public notices, and press releases. Comments generated through this process were addressed in the FEIS. No additional NEPA document is expected to be needed to support the restoration efforts (1997 CRP, pp. 27-32).

# TAB

Section 4

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## **4.0 INSTALLATION-WIDE ENVIRONMENTAL PROGRAM STRATEGY**

This chapter describes and summarizes the installation-wide environmental restoration program strategy for the former Carswell AFB. It also describes the strategies for protecting natural and cultural resources and for maintaining community involvement in the environmental restoration process. The base has had an active environmental restoration program since 1984.

### **4.1 RESTORATION PROGRAM STRATEGY**

SWMUs and AOCs are the primary designations for contaminated or potentially contaminated sites. The cleanup priorities of the sites and their relative risks are presented in Table 4.1 (AFCEE Project List, December 22, 1997). The cleanup strategy is as follows: (1) to cleanup all high relative risk sites to a lower relative risk, or have remedial systems in place by the end of fiscal year 2002; (2) to clean up all medium relative risk sites to lower relative risk, or have remedial systems in place by the end of fiscal year 2008; and (3) to clean up all low relative risk sites by the end of fiscal year 2015 (Environmental Restoration Execution Strategy, August 1996 (1996 ERES), pp. 1-1-1-2).

The cleanup strategy, as it applies to USTs, is to remove all nonessential USTs and to leave in place those that are to be used by the 301st Tactical Fighter Wing and other base operators. Thirteen USTs have been scheduled for remediation or removal. A total of 26 active tanks will remain operable. Four of the active USTs have been upgraded and will be transferred from the AFBCA to the FBOP. Six of the active USTs will remain active for use by the 301st Fighter Wing, and 16 will remain active for use by the Navy (1996 SCSITIR, Table 4.1; 1997 MOU, Attachment 7).

All ASTs at the former Carswell AFB, with the exception of one, have been transferred to the Navy. The one exception is located on the golf course and is managed by the AFBCA's contractor that operates the course (January 1998 Conference Call).

### **4.2 NATURAL AND CULTURAL RESOURCES**

The objective of the natural and cultural resources program is to maintain compliance with state and federal programs to protect valuable resources. Both natural and cultural resources have been adequately characterized at the base. The following sections describe the strategy for protecting known resources during environmental restoration activities at the base. For a fuller discussion of literature and field surveys on which this information is based, see Section 3.0.

#### **4.2.1 Threatened and Endangered Species (State and Federal)**

State- and federal-listed species and those species protected under the Migratory Bird Treaty Act may use the shore of Lake Worth to feed and rest during migratory seasons. The birds should be disturbed as little as possible when they are present (1995 BCP, p. 4-11).

**Table 4.1**  
**Relative Risk Designations for SWMUs and AOCs**

<b>SWMU/AOC</b>	<b>Site Description</b>	<b>Relative Risk</b>
SWMU 1	Pathological Waste Incinerator	NA
SWMU 2	Pathological Waste Storage Shed	NA
SWMU 3	Metal Cans	NA
SWMU 4	Facility Dumpsters	NA
SWMU 5	Bldg. 1628 Waste Accumulation Area	NA
SWMU 6	Bldg. 1628 Wash Rack and Drain	NR
SWMU 7	Bldg. 1628 OWS	Medium
SWMU 8	Bldg. 1628 Sludge Collection Tank	Low
SWMU 9	Bldg. 1628 Work Station Waste Accumulation Area	NR
SWMU 10	Bldg. 1617 Work Station Waste Accumulation Area	NA
SWMU 11	Bldg. 1617 Waste Accumulation Area	NR
SWMU 12	Bldg. 1619 Waste Accumulation Area	NR
SWMU 13	Bldg. 1710 Waste Accumulation Area	NR
SWMU 14	Bldg. 1060 Bead Blaster Collection Tray	NA
SWMU 15	Bldg. 1060 Paint Booth Vault	NA
SWMU 16	Bldg. 1060 Waste Accumulation Area	NR
SWMU 17	Landfill 7	Medium
SWMU 18	Fire Training Area 1	NA
SWMU 19	Fire Training Area 2	Low
SWMU 20	Waste Fuel Storage Tank	Low
SWMU 21	Waste Oil Tank	Low
SWMU 22	Landfill 4	NA
SWMU 23	Landfill 5	NA
SWMU 24	Waste Burial Area	NA
SWMU 25	Landfill 8	Medium
SWMU 26	Landfill 3	Medium
SWMU 27	Landfill 10	Medium
SWMU 28	Landfill 1	Medium
SWMU 29	Landfill 2	NR
SWMU 30	Landfill 9	Medium
SWMU 31	Bldg. 1050 Waste Accumulation Area	NR
SWMU 32	Bldg. 1410 Waste Accumulation Area	NR
SWMU 33	Bldg. 1420 Waste Accumulation Area	NR
SWMU 34	Bldg. 1194 Waste Accumulation Area	NR

**Table 4.1 (continued)**  
**Relative Risk Designations for SWMUs and AOCs**

<b>SWMU/AOC</b>	<b>Site Description</b>	<b>Relative Risk</b>
SWMU 35	Bldg. 1194 Vehicle Refueling Shop OWS System	Low
SWMU 36	Bldg. 1191 Waste Accumulation Area	NR
SWMU 37	Bldg. 1191 Vehicle Maintenance Shop OWS	Low
SWMU 38	Bldg. 1269 PCB Transformer Building	NA
SWMU 39	Bldg. 1643 Waste Accumulation Area	NR
SWMU 40	Bldg. 1643 OWS	NR
SWMU 41	Bldg. 1414 OWS System Field Maintenance Squadron Aerospace Ground Equipment	Low
SWMU 42	Bldg. 1414 Waste Accumulation Area	NR
SWMU 43	Bldg. 1414 Non-Destructive Inspection (NDI) Waste Accumulation Area	NA
SWMU 44	Bldg. 1027 OWS at the Aircraft Washing Hangar	Low
SWMU 45	Bldg. 1027 Waste Oil Tank Vault at the Aircraft Washing Hangar	NR
SWMU 46	Bldg. 1027 Waste Accumulation Area	NA
SWMU 47	Bldg. 1015 Jet Engine Test Cell OWS System	Low
SWMU 48	D1048 Fuel System Floor Drains	NA
SWMU 49	Aircraft Washing Area 1	NR
SWMU 50	Aircraft Washing Area 2	NR
SWMU 51	Bldg. 1190 Central Waste Holding	NR
SWMU 52	Bldg. 1190 OWS System	Low
SWMU 53	Storm Water Drainage System	Medium
SWMU 54	Storm Water Interceptors	NR
SWMU 55	East Gate OWS	NR
SWMU 56	Bldg. 1405 Waste Accumulation Area	NA
SWMU 57	Bldg. 1432/1434 Waste Accumulation Area	NA
SWMU 58	Pesticide Rinse Area	NA
SWMU 59	Bldg. 8503 WSA Waste Accumulation Area	NA
SWMU 60	Bldg. 8503 Radioactive Waste Burial Site	NA
SWMU 61	Bldg. 1320 Power Production Maintenance Facility Waste Accumulation Area	NR
SWMU 62	Landfill 6	Medium
SWMU 63	Entomology Dry Well	NA
SWMU 64	French Underdrain System	Medium
SWMU 65	WSA Disposal Site	NA
SWMU 66	Sanitary Sewer System	NR

**Table 4.1 (continued)  
Relative Risk Designations for SWMUs and AOCs**

<b>SWMU/AOC</b>	<b>Site Description</b>	<b>Relative Risk</b>
SWMU 67	Bldg. 1340 OWS	Medium
SWMU 68	POL Tank Farm	Medium
AOC 1	Bldg. 1518 Service Station	High
AOC 2	Airfield Groundwater Plume	Medium
AOC 3	Waste Oil Dump	NA
AOC 4	Fuel Hydrant System	Medium
AOC 5	Grounds Maintenance Yard	NA
AOC 6	RV Storage Area	NR
AOC 7	Former Base Refueling Area	High
AOC 8	SW Aerospace Museum	NA
AOC 9	Golf Course Maintenance Yard	NA
AOC 10	Bldg. 1064 OWS	Low
AOC 11	Bldg. 1060 OWS	Low
AOC 12	Bldg. 4210 OWS	Low
AOC 13	Bldg. 1145 OWS	Low
AOC 14	Unnamed Stream	NA
AOC 15	Bldg. 1190 Storage Shed	NR
AOC 16	Family Camp	NA

## Notes:

AOC: Area of Concern  
 AFBCA: Air Force Base Conversion Agency  
 AFCEE: Air Force Center for Environmental Excellence  
 IRP: Installation Restoration Program  
 NA: Not Applicable/Not Available  
 NR: Not Rated  
 OWS: Oil/Water Separator  
 POL: Petroleum/Oil/Lubricant  
 WSA: Weapons Storage Area

Source: 1997 CRP, pp. 14-16; AFBCA Parcel Disposal and Reuse Map; AFCEE Project List, December 22, 1997.

#### **4.2.2 Sensitive Habitats**

Great blue heron rookeries on the north shore of Lake Worth, across from the base, should be disturbed as little as possible by overflights or human intrusion during nesting season (1995 BCP, p. 4-11).

#### **4.2.3 Wetlands**

The USACE must be consulted in the planning stages of a project if wetlands are expected to be impacted by a project. In addition, the Air Force reviews any project that might impact wetlands, and by Presidential Order to all government agencies, has a policy of no net loss of wetlands (1995 BCP, p. 4-12).

#### **4.2.4 Surface Water**

Surface water should not be impacted by chemical contaminants, fertilizers, or sediment in order to maintain compliance with state and federal laws. Storm water runoff is required to be monitored in addition to long standing stream monitoring requirements under the NPDES program (1995 BCP, p. 4-12).

#### **4.2.5 Flood Plains**

Portions of the former Carswell AFB are within the 100-year flood plain. Federal regulations limit construction of structures within flood plains (1994 FEIS, p. 3-85).

#### **4.2.6 Paleontological Resources**

Although fossils are present in outcrops at NAS Fort Worth JRB, no significant paleontological resources have been identified (1995 BCP, p. 4-12).

#### **4.2.7 Prehistoric and Historic Sites**

Only one site, Buck Oaks Farm, is listed on the NRHP. NRHP sites are protected; activities that might affect the structures are to be reviewed by the SHPO (1997 CRP, p. 10).

#### **4.2.8 Other Applicable Categories**

No other natural or cultural resources are known to be present at the former Carswell AFB.

### **4.3 COMMUNITY INVOLVEMENT STRATEGY**

The strategy for community relations concerning restoration-related activities is documented in the 1997 CRP. AFCEE and the AFCBA are responsible for implementing the community relations activities described therein. In addition, community involvement for AFP 4

remediation activities beneath the former Carswell AFB will continue to be incorporated into the AFP 4 CRP (1995 BCP, p. 4-13).

Quarterly RAB meetings will continue to be held to inform the local community of restoration and compliance issues and activities. Public meetings will be held when RI/FS and EE/CA reports become available for public review. The meetings provide a forum for explaining preferred cleanup alternatives, answering questions, and accepting public comments. There will be a public comment period for a least 30 days after a cleanup alternative has been published, except in those cases when a delay would adversely impact human health or the environment. The responsiveness summary will document the public comments received during the comment period and their consideration in selecting a final remedial action. There will be public notices concerning decision documents, public comment periods, public meetings, and the availability of the administrative record and information repository. In addition, a community relations and news media coordinator has been established as a point of contact to answer community inquires concerning environmental investigations and cleanup activities (1997 CRP, pp. 27-32).

The Air Force has compiled a mailing list that will be used to distribute fact sheets, newsletters, and other relevant information. The fact sheets contain concise, nontechnical reports about the restoration programs. They also contain schedules and progress reports, explain technical issues, and respond to community concerns and information needs. In addition, there is an information telephone line at the AFBCA office to respond to public concerns and to answer questions. Tours will be given at NAS Fort Worth JRB about three times per month and will show points of interest throughout the base and progress on IRP sites. There will be periodic revisions of the CRP to assess changing or new concerns as activities progress from study to cleanup (1997 CRP, pp. 29-32).

AFCEE and the AFBCA will implement the CRP for the former Carswell AFB IRP. AFCEE will complete and maintain the administrative record for the former Carswell AFB and AFP 4 restoration-related documents. In addition, the information repository will continue to be maintained with documents on site activities and general information about the IRP and BRAC program at the former Carswell AFB. An update for the repository is planned for February 1998. AFCEE and the AFBCA will coordinate with AFP 4 concerning remediation activities as necessary (1997 CRP, pp. 30-32).

# TAB

Section 5

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## **5.0 ENVIRONMENTAL MASTER SCHEDULES**

This chapter presents the former Carswell AFB master schedule of anticipated environmental restoration activities. Planned restoration activities are graphically summarized in Tables 5.1 and 5.2.

### **5.1 ENVIRONMENTAL RESTORATION PROGRAM**

#### **5.1.1 Response Schedules**

The planned environmental restoration schedule for the former Carswell AFB is summarized in Tables 5.1 and 5.2. This schedule is based upon the following general assumptions:

- funding for the fiscal year 1998 program will be approved and projects funded in the quarter in which they are executed
- contract award will occur within 90 days of receipt of funding
- the remedial design phase contractor will write the decision documents and be the inspector for the RA

The overall site-wide project objectives are as follows:

- a preference toward remediation versus investigation: investigations should be driven by data collection necessary for design or closure
- a desire to complete remedial actions by fiscal year 2002 for all high priority sites
- an acknowledgment of overall site-wide issues, including the effects associated with the groundwater plume originating at AFP 4
- a need to develop an overall site-wide approach that emphasizes cost-effective and timely responses in addressing regulatory concerns

The cost estimating assumptions for specific sites are as follows:

- Site closure will be documented according to TNRCC's risk reduction rule (RRR) Standards 2 or 3. It should be noted that the costs for closure documentation are based on current TNRCC RRRs. Changes to the RRRs may result in an increase (or decrease) in the closure documentation costs.

- All OWSs at the facility are inactive and will be removed. It is assumed that a certain volume of affected soil will need to be removed from each OWS. The removal will be completed as one project by a single contractor. Waste oil/sludge tanks associated with OWSs also will be removed.
- All waste accumulation areas (WAAs) will be investigated and remediated (if necessary) under one project by a single contractor. For cost-estimating purposes, it was assumed that 25 percent of the WAAs will require remediation.
- The study costs include the costs for conducting limited RFIs. Tasks priced under the limited RFIs include record review, work plan development, field sampling plan/sampling analysis plan preparation, quality assurance program plan/health and safety plan modification, data validation, data evaluation, and other miscellaneous tasks. Costs associated with sampling (e.g., geoprobe, geophysical, and initial groundwater sampling) and laboratory analytical costs also are included in this cost category.
- The design costs include costs associated with remedial design activities.
- The remedial action costs include costs associated with construction and construction-related activities (e.g., contracting mobilization), including, but not limited to, construction materials, transport and disposal fees, and borrow material for backfills. Remedial action costs also cover preparation of the remedial action plans, closure documentation for those sites where data was collected to support closure but no remedial action was undertaken, and for those sites that are NFA (1996 ERES, pp. 3-17-3-18).

### **5.1.2 Requirements by Fiscal Year**

Anticipated funding requirements for restoration activities through fiscal year 2017 are presented in Appendix A, Table A.1 and Table A.2.

## **5.2 BRAC CLEANUP TEAM AND RESTORATION ADVISORY BOARD MEETING SCHEDULES**

The BCT and RPM meetings are required for the ongoing environmental restoration activities. It is recommended that regularly scheduled meetings involving AFCEE, the AFBCA, the WRA, regulators, AFP 4, the 301st Tactical Fighter Wing, and other relevant participants be held to meet the objective of the partnering agreement and MOUs, as well as to ensure timely and coordinated decisions and to promote communications.

The RAB meetings have been held on a quarterly basis since January 1994. Future agenda items include BCP status, restoration activities status, programming/funding status and requirements, and CERCLA Section 120(h) considerations. Tables 5.3 and Table 5.4 show the BCT/RPM and RAB meeting schedules.

**Table 5.1**  
**AFCEE Estimated Schedule to Complete**  
**Former Carswell Air Force Base**

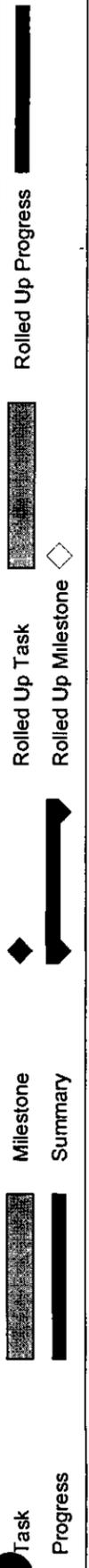
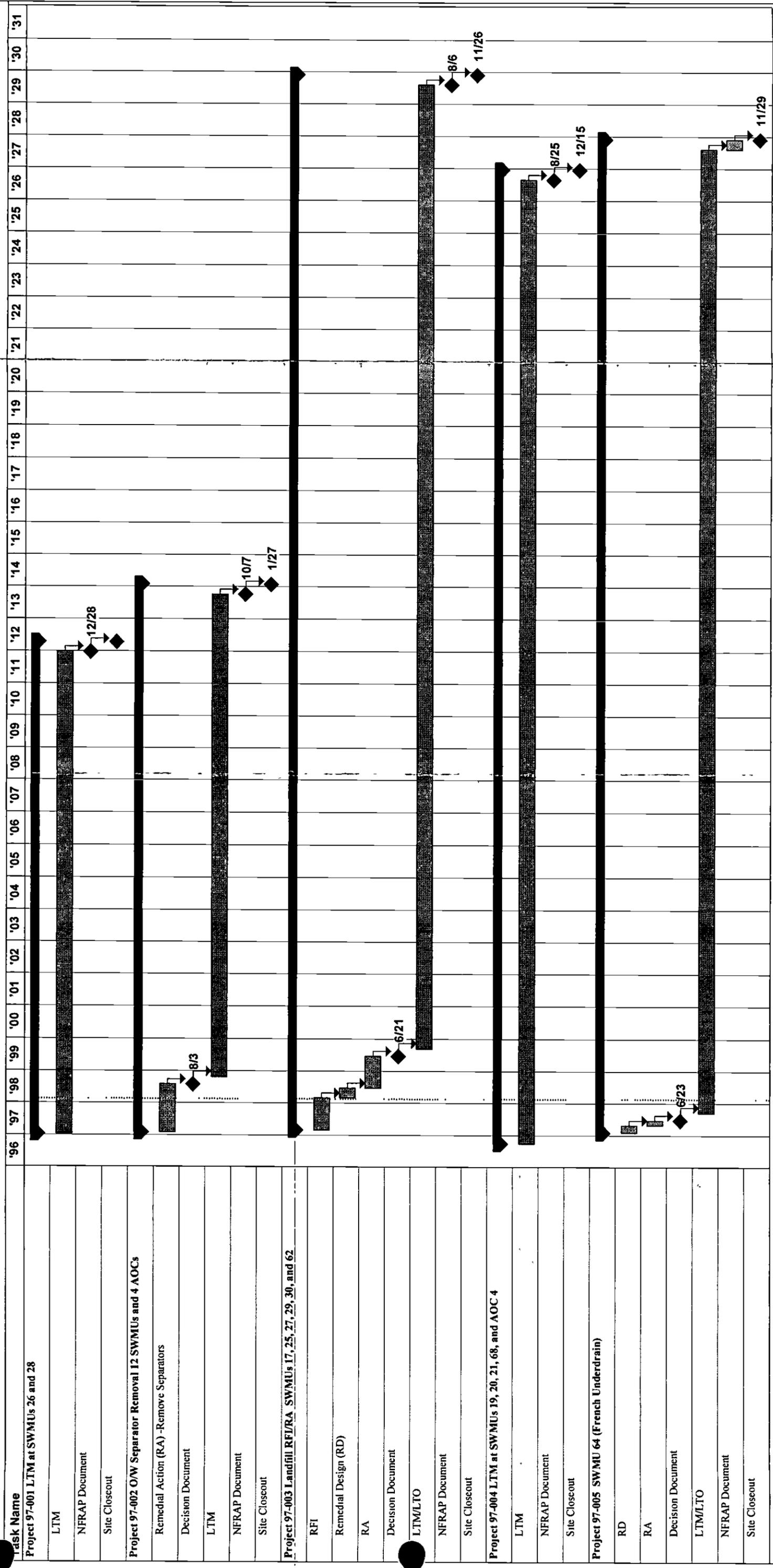


Table 5.1 (continued)  
 AFCEE Estimated Schedule to Complete  
 Former Carswell Air Force Base

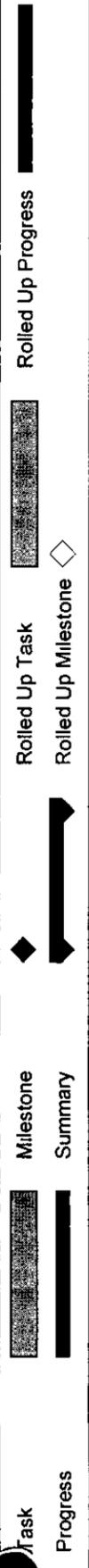
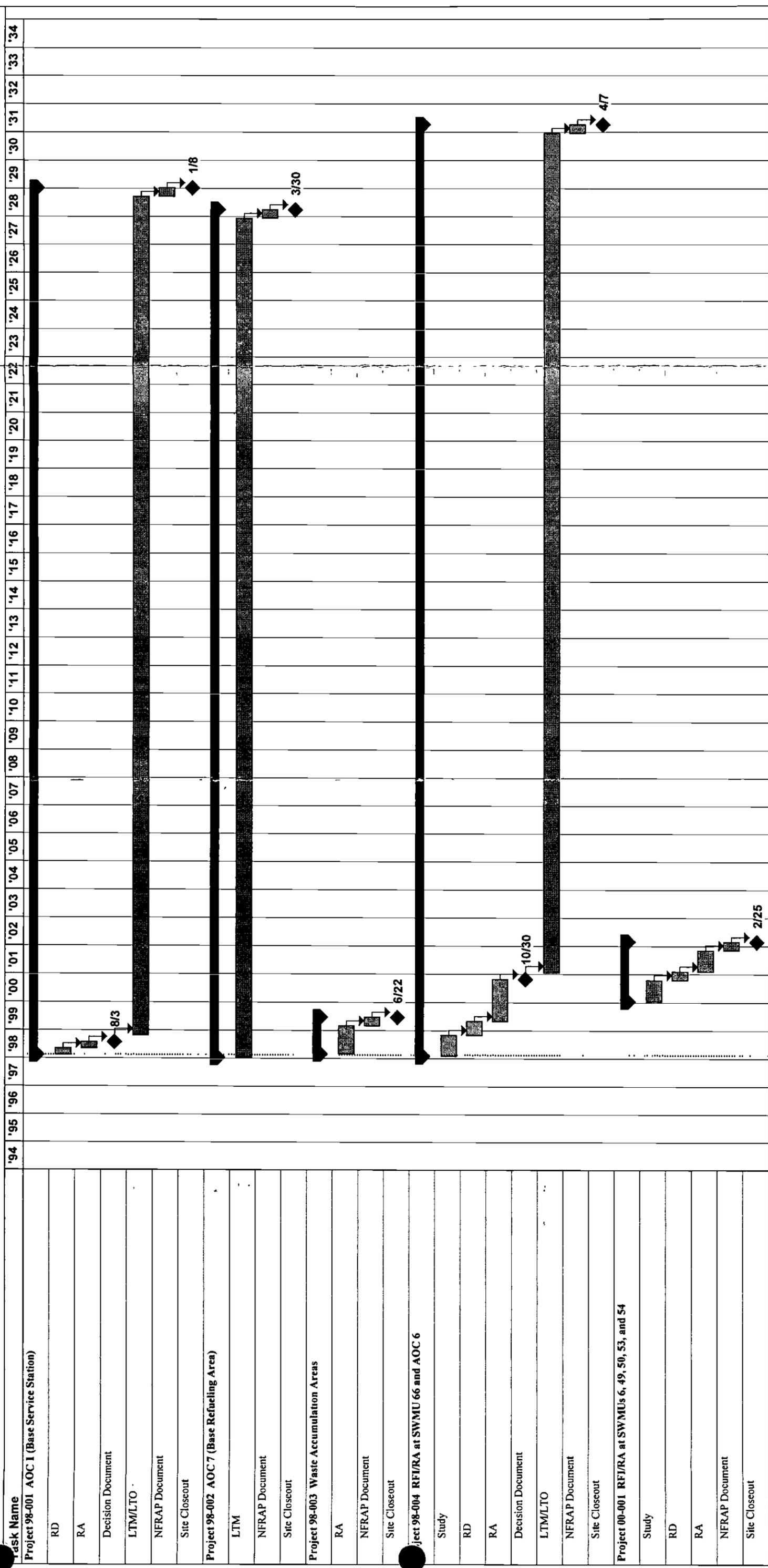




Table 5.2 (continued)  
AFBCA Estimated Schedule to Complete  
Former Carswell Air Force Base

Task Name	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	
Landfill 4																						
Landfill 4																						
Landfill 4																						
SWMU 23																						
Landfill 5																						
Landfill 5																						
Landfill 5																						
Landfill 5																						
Landfill 5																						
Landfill 5																						
Landfill 5																						
Landfill 5																						
Landfill 5																						
SWMU 24																						
Waste Burial Area																						
Waste Burial Area																						
Waste Burial Area																						
Landfill 4																						
Waste Burial Area																						
Waste Burial Area																						
Waste Burial Area																						
Waste Burial Area																						
Waste Burial Area																						
Waste Burial Area																						
Waste Burial Area																						
Waste Burial Area																						
Task																						

Summary

No Further Action



Table 5.2 (continued)  
AFBCA Estimated Schedule to Complete  
Former Carswell Air Force Base

Task Name	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14
Landfill 8																DDPF 10-7003					
Landfill 8																					
Landfill 8																					
Landfill 8																					
SWMU 58																					
Pesticide Rinse Area																					
Pesticide Rinse Area																					
SWMU 59																					
B8503 WSA Waste Accumul																					
B8503 WSA Waste Accumul																					
SWMU 60																					
B8503 Radioactive Waste B																					
B8503 Radioactive Waste B																					
SWMU 65																					
WSA Disposal Site																					
WSA Disposal Site																					
SWMU 66																					
Sanitary Sewer System																					
Sanitary Sewer System																					
Sanitary Sewer System																					
AOC 5																					
Grounds Maintenance Yard																					
Grounds Maintenance Yard																					
AOC 8																					
SW Aerospace Museum																					
SW Aerospace Museum																					
AOC 9																					
Golf Course Maintenance Yard																					
Golf Course Maintenance Yard																					
Golf Course Maintenance Yard																					
AOC 14																					

Task No Further Action Summary

Table 5.2 (continued)  
 AFBCA Estimated Schedule to Complete  
 Former Carswell Air Force Base

Task Name	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	
Unnamed Stream	DDPF 94-7016	RA Unnamed Stream	AOC 14																			
Unnamed Stream		DDPF 96-8125	CK 300	AOC 14																		
Unnamed Stream																						
Rail Right of Way			DDPF98-8126	Rail R/W																		

◆ No Further Action Projected

Task  No Further Action  Summary 

BCT/RPM meetings are held the second Thursday of every quarter.

**Table 5.3**  
**BCT/RPM Team Meeting Schedule**

<b>1998</b>	<b>1999</b>	<b>2000</b>
February 12	February 11	February 10
May 14	May 13	May 11
August 13	August 12	August 10
November 12	November 11	November 9

**Table 5.4**  
**RAB Team Meeting Schedule**

<b>1998</b>	<b>1999</b>	<b>2000</b>

# TAB

Section 6

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## **6.0 TECHNICAL AND OTHER ISSUES TO BE RESOLVED**

This section summarizes technical issues that impact the installation restoration program being conducted at the former Carswell AFB.

### **6.1 DATA INTEGRATION AND MANAGEMENT**

This section summarizes issues that need to be resolved with regard to managing information gathered and used in the base environmental restoration program.

#### **6.1.1 Action Items**

The following actions are necessary to ensure that an effective information management system is in place for the base environmental restoration program:

- Establish an on-site central data file. This central file will be a natural extension to the existing IRP Information Management System (IRPIMS) sampling and analysis database, and will also include non-IRP data (e.g., past and present land uses and natural resources).
- Require all contractors working at the base to submit all data to the central file in a standardized electronic format. Maintain one integrated database to ensure comprehensive data storage and retrieval.
- Use the central file clearinghouse to distribute quality assured data in standard formats to parties with a need for a basewide perspective in activities at the base, including contractors, Air Force decision makers, and regulators.
- Improve the data analysis capabilities within the base so that data can be analyzed as received. Thus, the results of recent field and laboratory work can be fed back into the planning loop more quickly, helping to redirect field efforts as they happen and to determine when enough data is available to support a decision.

#### **6.1.2 Rationale**

Given the number of agencies and contractors associated with the base environmental restoration programs at both the former Carswell AFB and AFP 4, it is important that all parties involved be able to share data for decision making. The establishment and maintenance of an electronic database containing sampling, analytical, and other non-IRP data is the most efficient method of sharing data among parties.

### **6.1.3 Status/Strategy**

Most of the data concerning the former Carswell AFB has been loaded into IRPIMS. Data will continue to be submitted as it is gathered. AFCEE is maintaining and compiling the data for input into IRPIMS for the continuing environmental restoration effort (1995 BCP, pp. 6-2-6-3).

## **6.2 BACKGROUND LEVELS**

This section summarizes the issues relating to the determination of natural (background) concentrations of elements and compounds in the environment of the former Carswell AFB prior to the introduction of contamination.

### **6.2.1 Action Items**

No further action is needed.

### **6.2.2 Rationale**

Background concentration values of elements in soil, groundwater, surface water, and sediments must be determined before risk assessments can be conducted. The values must be representative of what is naturally occurring and must be approved by the USEPA and state regulators.

### **6.2.3 Status/Strategy**

A basewide background study conducted at the former Carswell AFB determined the background concentrations of 24 inorganic compounds in a variety of media. Values for these background concentrations can be found in the “Basewide Background Study, January 1997, NAS Fort Worth JRB.”

## **6.3 RELATIVE RISK EVALUATION AND CLEANUP STANDARDS**

This section summarizes issues pertaining to relative risk evaluations, which were conducted as part of the environmental restoration program at the former Carswell AFB.

### **6.3.1 Rationale**

A relative risk evaluation is required by the ERP management guidance to be included as part of IRP budget submissions. According to the guidance, the “evaluated relative risk posed to human health and environment at each IRP site is an important factor in determining IRP priorities and negotiating schedules for site cleanup with regulatory agencies.” Relative risk was incorporated into the site cleanup goals by the Office of the Deputy Under Secretary of Defense for Environmental Security (1996 ERES, p. 2-2).

### **6.3.2 Status/Strategy**

Relative risk site evaluations are used by AFCEE and the AFBCA to rank SWMUs and AOCs. The evaluation is based on site-specific information concerning the toxicity and migration pathways of contaminant chemicals and the existence of human or ecological receptors to place sites into high, medium, or low relative risk categories. The community also provides input for the relative risk evaluations. The DOD utilizes the results of these evaluations to assist in prioritizing cleanup work (1997 CRP, p. 12).

Risk assessments have been conducted on a case-by-case basis; however, no formal strategy for performing risk assessments has been established. In addition, cleanup standards have not been agreed upon between the Air Force and the TNRCC. The Air Force will use the Texas RRR, Subpart S of Chapter 335, Part I of Title 30 of the Texas Administrative Code, as the protocol for risk assessments to be conducted at the former Carswell AFB. These standards are for contaminants in soil and groundwater at sites where cleanup to background levels cannot be reasonably achieved. When federal- or state-mandated cleanup standards for a specific hazardous waste or constituent in soils do not exist, the approach for providing remediation criteria for contaminated soils is to conduct a risk assessment specific to the site in question and to use health-based criteria to develop site cleanup standards.

The USEPA has provided health-based criteria for a number of hazardous compounds and elements based on oral and inhalation exposure routes in its RFI guidance (“Interim Final RCRA Facility Investigation” (RFI), Volume I of IV, “Development of an RFI Work Plan and General Considerations for RFIs,” May 1989). These health-based criteria are provided for known carcinogens (Table 8.6 of the RFI guidance) and systemic toxicants (Table 8.7 of the RFI guidance). The criteria are subject to change and should be confirmed by the appropriate regulatory agency prior to use. For many compounds listed in Table 6.2 of the RFI guidance, no guidance levels have been developed (1995 BCP, p. 6-6).

## **6.4 INTERIM MONITORING OF GROUNDWATER AND SURFACE WATER**

Basewide groundwater sampling began in the second quarter of fiscal year 1995 and continued through the first quarter of fiscal year 1996. Groundwater sampling was restarted in the first quarter of fiscal year 1997 and will continue through fiscal year 1998 (1996 GSAP). Currently, no surface water sampling is being performed by the Air Force.

## **6.5 INITIATIVES FOR ACCELERATING CLEANUP**

Initiatives to accelerate cleanup have been incorporated into the IRP. Response actions have been accelerated as much as is currently feasible without development of new technologies (1995 BCP, p. 6-6). In some instances, RD/RA phases will be performed concurrently with IRA phases. The IRP was modified so that the RI/FS studies could be conducted as parallel activities instead of serial activities (1997 CPA). AFCEE will be combining more phases to accelerate work. The RI and CMS phases can be overlapped. In some instances, the RFI, RA, and closure documents can be completed at the same time. AFCEE will be conducting

RFIs to closure, and RFIs to RAs without CMS (December 15, 1997 Conference Call with AFCEE).

## **6.6 REMEDIAL ACTIONS**

The goal is to have all sites into the RA phase by the year 2000, after which only LTM will occur.

## **6.7 REVIEW OF SELECTED TECHNOLOGIES FOR APPLICATION OF EXPEDITED SOLUTIONS**

AFCEE and the AFBCA are currently working together in order to determine and select the best available remediation technologies. Phytoremediation is a new technology utilizing plants for contaminant remediation. Certain plants can clean up soil and groundwater by way of their ability to take up and remove, or degrade, contaminants from the environment (Ground-Water Remediation Technologies Analysis Center, Phytoremediation, October 1996, p. ii-3). A study at Texas A&M University is being conducted to determine the feasibility of using buffalo grass to remove TCE from the soil (January 1998 Conference Call).

Monitored natural attenuation is an option for remediation of contaminants through naturally occurring processes in soil and groundwater. These processes of natural degradation act to reduce the quantity and concentration of contamination ("Technical Protocol for Evaluation Natural Attenuation of Chlorinated Solvents in Groundwater," November 1996, pp. 1-1-1-2).

## **6.8 IDENTIFICATION OF CLEAN PROPERTIES**

Although no clean properties have been identified, SWMU 58, Golf Course Maintenance, has been submitted to the state for status as a clean property. Additional sites will be identified after they have undergone remedial efforts.

## **6.9 PARTNERING (USING INNOVATIVE MANAGEMENT, COORDINATION, AND COMMUNICATION TECHNIQUES)**

Partnering has been ongoing with AFP 4 since fiscal year 1993. Regulatory involvement includes the USEPA, the TNRCC, and local agencies.

# TAB

Section 7

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Appendix A

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**APPENDIX A  
DRAFT MAP/BCP  
FORMER CARSWELL AIR FORCE BASE**

**Table A.1**  
**AFCEE Projected Costs to Complete**

Project Number	SWMU/AOC	Site Description	Site ID	Phase	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004 To Finish	Totals		
97-001	SWMU 26	Landfill 3	LF003	LTO	0	0	0	10,000	10,000	10,000	100,000	130,000		
				LTM	118,429	79,111	35,308	24,000	24,000	24,000	24,000	24,000	130,000	434,848
				TOTALS	118,429	79,111	35,308	34,000	34,000	34,000	230,000	230,000	230,000	564,848
				LTO	0	0	0	10,000	10,000	10,000	100,000	100,000	100,000	130,000
97-002	SWMU 28	Landfill 1	LF001	LTM	118,428	79,111	35,308	24,000	24,000	24,000	130,000	434,847		
				TOTALS	118,428	79,111	35,308	34,000	34,000	34,000	230,000	230,000	564,847	
				RA	81,500	0	0	0	0	0	0	0	0	81,500
				LTM	0	0	35,308	6,000	6,000	22,000	6,000	6,000	22,000	75,308
97-002	SWMU 7	Bldg. 1628 OWS	SD000	TOTALS	81,500	0	35,308	6,000	6,000	6,000	22,000	156,808		
				RA	81,500	0	0	0	0	0	0	0	81,500	
				LTM	0	0	35,307	0	0	0	0	0	0	35,307
				TOTALS	81,500	0	35,307	0	0	0	0	0	0	116,807
97-002	SWMU 8	Bldg. 1628 Sludge Collection Tank	SD014	LTO	81,500	0	0	0	0	0	0	81,500		
				LTM	0	0	0	0	0	0	0	0	0	
				RA	81,500	0	0	0	0	0	0	0	0	
				TOTALS	81,500	0	0	0	0	0	0	0	0	81,500
97-002	SWMU 35	Bldg. 1194 Vehicle Refueling Shop OWS System	SD002	LTO	0	0	0	0	0	0	0	0		
				LTM	0	0	0	0	0	0	0	0	0	
				RA	81,500	0	0	0	0	0	0	0	0	
				TOTALS	81,500	0	0	0	0	0	0	0	0	81,500
97-002	SWMU 37	Bldg. 1191 Vehicle Maintenance Shop OWS	SD003	LTO	0	0	0	0	0	0	0	0		
				LTM	0	0	0	0	0	0	0	0	0	
				RA	81,500	0	0	0	0	0	0	0	0	
				TOTALS	81,500	0	0	0	0	0	0	0	0	81,500
97-002	SWMU 40	Bldg. 1643 OWS System	SD004	LTO	0	0	0	0	0	0	0	0		
				LTM	0	0	0	0	0	0	0	0	0	
				RA	81,500	0	0	0	0	0	0	0	0	
				TOTALS	81,500	0	0	0	0	0	0	0	0	81,500

Table A.1 (continued)  
AFCEE Projected Costs to Complete

Project Number	SWMU/AOC	Site Description	Site ID	Phase	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004 To Finish	Totals	
97-002 (cont)	SWMU 41	Bldg. 1414 OWS, Field Maintenance Squadron, Aerospace Ground Equipment	SD005	RA	81,501	0	0	0	0	0	0	81,501	
				LTM	0	0	35,308	6,000	6,000	22,000	75,308		
				TOTALS	81,501	0	35,308	6,000	6,000	22,000	156,809		
	SWMU 44	Bldg. 1027 OWS System at the Aircraft Washing Hangar	SD006	RA	81,500	0	0	0	0	0	0	0	81,500
				LTM	0	0	35,308	0	0	0	35,308		
				TOTALS	81,500	0	35,308	0	0	0	116,808		
	SWMU 45	Bldg. 1027 Waste Oil Tank Vault at the Aircraft Washing Hangar	SD015	RA	81,500	0	0	0	0	0	0	0	81,500
				LTM	0	0	35,307	0	0	0	35,307		
				TOTALS	81,500	0	35,307	0	0	0	116,807		
	SWMU 47	Bldg. 1015 Jet Engine Test Cell OWS System	SD007	RA	81,500	0	0	0	0	0	0	0	81,500
LTM				0	0	35,308	0	0	0	35,308			
TOTALS				81,500	0	35,308	0	0	0	116,808			
SWMU 52	Bldg. 1190 OWS System	SD008	RA	81,500	0	0	0	0	0	0	0	81,500	
			LTM	0	0	35,308	0	0	0	35,308			
			TOTALS	81,500	0	35,308	0	0	0	116,808			
SWMU 55	East Gate OWS	SD009	RA	81,500	0	0	0	0	0	0	0	81,500	
			LTM	0	0	35,307	0	0	0	35,307			
			TOTALS	81,500	0	35,307	0	0	0	116,807			

Table A.1 (continued)  
AFCEE Projected Costs to Complete

Project Number	SWMU/AOC	Site Description	Site ID	Phase	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004 To Finish	Totals	
97-002 (cont)	AOC 10	Bldg. 1064 OWS	SD010	RA	81,500	0	0	0	0	0	0	81,500	
				LTM	0	0	35,308	0	0	0	0	0	35,308
				<b>TOTALS</b>	<b>81,500</b>	<b>0</b>	<b>35,308</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	AOC 11	Bldg. 160 OWS	SD011	RA	81,500	0	0	0	0	0	0	0	81,500
				LTM	0	0	35,308	0	0	0	0	0	35,308
				<b>TOTALS</b>	<b>81,500</b>	<b>0</b>	<b>35,308</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	AOC 12	Bldg. 4210 OWS	SD012	RA	81,500	0	0	0	0	0	0	0	81,500
				LTM	0	0	35,307	0	0	0	0	0	35,307
				<b>TOTALS</b>	<b>81,500</b>	<b>0</b>	<b>35,307</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	AOC 13	Bldg. 1145 OWS	SD013	RA	81,500	0	0	0	0	0	0	0	81,500
				LTM	0	0	35,307	0	0	0	0	0	35,307
				<b>TOTALS</b>	<b>81,500</b>	<b>0</b>	<b>35,307</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
97-003	SWMU 17	Landfill 7	LF005	FS	0	141,167	0	0	0	0	0	141,167	
				RA	0	250,000	436,666	0	0	0	0	686,666	
				LTO	0	0	0	10,000	10,000	10,000	10,000	10,000	10,000
	SWMU 25	Landfill 8	LF006	LTM	0	0	0	32,000	32,000	32,000	16,000	186,000	266,000
				<b>TOTALS</b>	<b>0</b>	<b>391,167</b>	<b>436,666</b>	<b>42,000</b>	<b>42,000</b>	<b>26,000</b>	<b>296,000</b>	<b>1,233,833</b>	
				FS	0	141,167	0	0	0	0	0	0	141,167
	SWMU 27	Landfill 10	LF008	RA	0	250,000	436,670	42,000	42,000	42,000	26,000	296,000	1,092,670
				<b>TOTALS</b>	<b>0</b>	<b>391,167</b>	<b>436,670</b>	<b>42,000</b>	<b>42,000</b>	<b>26,000</b>	<b>296,000</b>	<b>1,233,837</b>	
				FS	0	141,166	0	0	0	0	0	0	141,166
	SWMU 29	Landfill 2	LF002	RA	0	250,000	436,666	0	0	0	0	0	686,666
				LTO	0	0	0	10,000	10,000	10,000	10,000	10,000	140,000
				LTM	0	0	0	32,000	32,000	16,000	186,000	186,000	266,000
<b>TOTALS</b>	<b>0</b>	<b>391,166</b>	<b>436,666</b>	<b>42,000</b>	<b>42,000</b>	<b>26,000</b>	<b>296,000</b>	<b>1,233,832</b>					

**Table A.1 (continued)  
AFCEE Projected Costs to Complete**

Project Number	SWMU/AOC	Site Description	Site ID	Phase	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004 To Finish	Totals	
97-003 (cont)	SWMU 30	Landfill 9	LF007	FS	0	141,167	0	0	0	0	0	141,167	
				RA	0	250,000	436,666	0	0	0	0	686,666	
				LTO	0	0	0	10,000	10,000	10,000	10,000	110,000	140,000
				LTM	0	0	0	32,000	32,000	42,000	42,000	186,000	266,000
				TOTALS	0	391,167	436,666	42,000	26,000	26,000	26,000	1,233,832	
				LTM	0	141,166	0	0	0	0	0	141,166	
97-004	SWMU 62	Landfill 6	LF004	RA	0	250,000	436,666	0	0	0	0	686,666	
				LTO	0	0	0	10,000	10,000	10,000	10,000	140,000	
				LTM	0	0	0	32,000	32,000	42,000	42,000	266,000	
				TOTALS	0	391,166	436,666	42,000	26,000	26,000	26,000	1,233,832	
				LTM	118,428	79,111	35,308	6,000	6,000	6,000	6,000	326,847	
				TOTALS	118,428	79,111	35,308	6,000	6,000	6,000	6,000	326,847	
97-004	SWMU 19	Fire Training Area 2	FT001	LTM	118,428	79,112	35,308	48,000	48,000	24,000	178,000	530,848	
				TOTALS	118,428	79,112	35,308	48,000	48,000	24,000	24,000	530,848	
				LTM	118,429	79,111	35,308	0	0	0	0	232,848	
				TOTALS	118,429	79,111	35,308	0	0	0	0	232,848	
				LTM	118,429	79,111	35,308	32,000	32,000	16,000	16,000	354,848	
				TOTALS	118,429	79,111	35,308	32,000	32,000	16,000	16,000	354,848	
97-005	SWMU 64	French Underdrain System	ST003	RA	81,500	0	0	0	0	0	0	81,500	
				LTM	0	79,111	35,308	16,000	16,000	8,000	66,000	220,419	
				TOTALS	81,500	79,111	35,308	16,000	16,000	8,000	66,000	301,919	
				LTM	0	79,111	35,308	28,000	28,000	14,000	108,000	292,419	
				TOTALS	0	79,111	35,308	28,000	28,000	14,000	108,000	292,419	
				TOTALS	0	79,111	35,308	28,000	28,000	14,000	108,000	292,419	
98-001	AOC 1	Bldg. 1518 Service Station	ST004	LTM	0	79,111	35,308	28,000	28,000	14,000	108,000	292,419	
				TOTALS	0	79,111	35,308	28,000	28,000	14,000	108,000	292,419	
				LTM	0	79,111	35,308	28,000	28,000	14,000	108,000	292,419	
				TOTALS	0	79,111	35,308	28,000	28,000	14,000	108,000	292,419	
				LTM	0	79,111	35,308	28,000	28,000	14,000	108,000	292,419	
				TOTALS	0	79,111	35,308	28,000	28,000	14,000	108,000	292,419	

**Table A.1 (continued)**  
**AFCEE Projected Costs to Complete**

Project Number	SWMU/AOC	Site Description	Site ID	Phase	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004 To Finish	Totals
98-002	AOC 7	Former Base Refueling Area	ST002	LTM	118,429	79,111	35,308	12,000	12,000	6,000	52,000	314,848
				TOTALS	118,429	79,111	35,308	12,000	12,000	6,000	52,000	314,848
98-003	SWMU 5	Bldg. 1628 Waste Accumulation Area	SS002	RA	66,734	0	0	0	0	0	0	66,734
				TOTALS	66,734	0	0	0	0	0	0	66,734
	SWMU 11	Bldg. 1617 Waste Accumulation Area	SS003	RA	66,734	0	0	0	0	0	0	66,734
				TOTALS	66,734	0	0	0	0	0	0	66,734
	SWMU 12	Bldg. 1619 Waste Accumulation Area	SS004	RA	66,734	0	0	0	0	0	0	66,734
				TOTALS	66,734	0	0	0	0	0	0	66,734
	SWMU 13	Bldg. 1710 Waste Accumulation Area	SS005	RA	66,734	0	0	0	0	0	0	66,734
				TOTALS	66,734	0	0	0	0	0	0	66,734
	SWMU 16	Bldg. 1060 Waste Accumulation Area	SS006	RA	66,733	0	0	0	0	0	0	66,733
				TOTALS	66,733	0	0	0	0	0	0	66,733
	SWMU 31	Bldg. 1050 Waste Accumulation Area	SS007	TOTALS	66,733	0	0	0	0	0	0	66,733
				RA	66,733	0	0	0	0	0	0	66,733
	SWMU 32	Bldg. 1410 Waste Accumulation Area	SS008	TOTALS	66,733	0	0	0	0	0	0	66,733
				RA	66,733	0	0	0	0	0	0	66,733
				TOTALS	66,733	0	0	0	0	0	0	66,733

Table A.1 (continued)  
AFCEE Projected Costs to Complete

Project Number	SWMU/AOC	Site Description	Site ID	Phase	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004 To Finish	Totals	
98-003 (cont)	SWMU 33	Bldg. 1420 Waste Accumulation Area	SS009	RA	66,733	0	0	0	0	0	0	66,733	
		<b>TOTALS</b>			66,733	0	0	0	0	0	0	66,733	
	SWMU 34	Bldg. 1194 Waste Accumulation Area	SS010	RA	66,733	0	0	0	0	0	0	66,733	
		<b>TOTALS</b>			66,733	0	0	0	0	0	0	66,733	
	SWMU 36	Bldg. 1191 Waste Accumulation Area	SS011	RA	66,733	0	0	0	0	0	0	66,733	
		<b>TOTALS</b>			66,733	0	0	0	0	0	0	66,733	
	SWMU 39	Bldg. 1643 Waste Accumulation Area	SS012	RA	66,733	0	0	0	0	0	0	66,733	
		<b>TOTALS</b>			66,733	0	0	0	0	0	0	66,733	
	SWMU 42	Bldg. 1414 Waste Accumulation Area	SS013	RA	66,733	0	0	0	0	0	0	66,733	
		<b>TOTALS</b>			66,733	0	0	0	0	0	0	66,733	
	SWMU 51	Bldg. 1190 Central Waste Holding	SS014	RA	66,733	0	0	0	0	0	0	66,733	
		<b>TOTALS</b>			66,733	0	0	0	0	0	0	66,733	
	SWMU 61	Bldg. 1320 Power Production Maintenance Facility Waste Accumulation Area	SS015	RA	66,733	0	0	0	0	0	0	66,733	
		<b>TOTALS</b>			66,733	0	0	0	0	0	0	66,733	
	AOC 15	Bldg. 1190 Storage Shed	SS016	RA	66,734	0	0	0	0	0	0	0	66,734
		<b>TOTALS</b>			66,734	0	0	0	0	0	0	0	66,734

Table A.1 (continued)  
AFCEE Projected Costs to Complete

Project Number	SWMU/AOC	Site Description	Site ID	Phase	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004 To Finish	Totals
98-004	SWMU 66	Sanitary Sewer System	WP001	RA	753,000	534,500	0	48,000	48,000	24,000	274,000	1,681,500
				LTM	0	0	35,307	0	0	0	0	35,307
				<b>TOTALS</b>	<b>753,000</b>	<b>534,500</b>	<b>35,307</b>	<b>48,000</b>	<b>48,000</b>	<b>24,000</b>	<b>274,000</b>	<b>1,716,807</b>
AOC 6	RV Storage Area	SS001	RA	753,000	534,500	0	24,000	24,000	24,000	46,000	1,405,500	
			LTM	0	0	35,307	0	0	0	0	35,307	
			<b>TOTALS</b>	<b>753,000</b>	<b>534,500</b>	<b>35,307</b>	<b>24,000</b>	<b>24,000</b>	<b>46,000</b>	<b>1,440,807</b>		
00-001	SWMU 6	Bldg. 1628 Washrack and Drain	SD016	RI/FS	0	0	110,000	0	0	0	0	110,000
				<b>TOTALS</b>	<b>0</b>	<b>0</b>	<b>110,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>110,000</b>	
				SWMU 49	Aircraft Washing Area 1	SD017	0	0	110,000	0	0	0
SWMU 50	Aircraft Washing Area 2	SD018	RI/FS	0	0	110,000	0	0	0	0	0	110,000
			<b>TOTALS</b>	<b>0</b>	<b>0</b>	<b>110,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>110,000</b>		
			SWMU 53	Storm Water Drainage System	SD019	0	0	110,000	0	0	0	0
SWMU 54	Storm Water Interceptors	SD020	RI/FS	0	0	110,000	0	0	0	0	0	110,000
			<b>TOTALS</b>	<b>0</b>	<b>0</b>	<b>110,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>110,000</b>		
			<b>GRAND TOTALS</b>	<b>4,640,001</b>	<b>4,128,000</b>	<b>4,088,000</b>	<b>564,000</b>	<b>564,000</b>	<b>376,000</b>	<b>3,188,000</b>	<b>17,548,001</b>	

Notes:

- AOC: Area of Concern
- LTM: Long-Term Monitoring
- LTO: Long Term-Observation
- N/A: Information Not Available
- NDI: Non-Destructive Inspection
- OWS: Oil/Water Separator
- PCB: Polychlorinated Biphenyl
- POL: Petroleum/Oil/ Lubricant
- RA: Remedial Action
- RCRA: Resource Conservation Recovery Act
- RFI: RCRA Facility Investigation
- SWMU: Solid Waste Management Unit
- WAA: Waste Accumulation Area
- WSA: Weapons Storage Area

Source: AFCEE Cost to Complete, December 22, 1997.

Table A.2  
AFBCA Projected Costs to Complete

Project Number	SWMU/AOC	Site Description	Site ID	Phase	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004 To Finish	Totals			
95-8021	AOC 16	Family Camp		RFI	0	552,000	0	0	0	0	0	0	0	0	0	552,000		
				RD	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				RA	0	0	1,441,000	0	0	0	0	0	0	0	0	0	0	1,441,000
				LTM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				TOTALS	0	552,000	1,441,000	0	0	0	0	0	0	0	0	2,093,000		
95-8022	SWMU 58	Golf Course Maintenance Area	WP-11	RFI	146,000	0	0	0	0	0	0	0	0	0	0	146,000		
				RD	0	0	0	0	0	0	0	0	0	0	0	0	0	
				RA	0	400,000	0	0	0	0	0	0	0	0	0	0	0	400,000
				LTM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				TOTALS	146,000	400,000	0	0	0	0	0	0	0	0	0	546,000		
96-8120A Revised	SWMU 25	Landfill 8 *Needs Site Investigation (Golf Course)	LF-08	RFI	0	355,000	0	0	0	0	0	0	0	0	0	0	355,000	
				RD	0	0	0	0	0	0	0	0	0	0	0	0	0	
				RA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				LTM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				TOTALS	0	355,000	0	0	0	0	0	0	0	0	0	355,000		
96-8120B Revised	SWMU 25	Landfill 8 *Needs Site Investigation (Golf Course)	LF-08	RFI	0	0	0	0	0	0	0	0	0	0	0	0	0	
				RD	0	0	0	0	0	0	0	0	0	0	0	0	0	
				RA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				LTM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				TOTALS	0	0	0	0	0	0	0	0	0	0	0			
94-7016	SWMU 64	French Underdrain System	SD-13	RFI	0	0	0	0	0	0	0	0	0	0	0	0	0	
				RD	0	0	0	0	0	0	0	0	0	0	0	0	0	
				RA	0	2,341,000	0	0	0	0	0	0	0	0	0	0	0	0
				LTM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				TOTALS	0	2,341,000	0	0	0	0	0	0	0	0	0	2,341,000		
95-7104 Revised	SWMU 22	Landfill 4	LF-04	RFI	0	106,000	0	0	0	0	0	0	0	0	0	0	106,000	
				RD	0	130,000	0	0	0	0	0	0	0	0	0	0	0	130,000
				RA	0	0	2,402,000	0	0	0	0	0	0	0	0	0	0	2,402,000
				LTM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				TOTALS	0	236,000	2,402,000	0	0	0	0	0	0	0	0	2,638,000		
94-7206	AOC 7	Former Base Refueling Area	ST-16	Risk/CMs	0	477,000	0	0	0	0	0	0	0	0	0	0	477,000	
				RD	0	0	80,000	0	0	0	0	0	0	0	0	0	0	80,000
				RA	0	0	0	1,892,000	0	0	0	0	0	0	0	0	0	1,892,000
				LTM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				TOTALS	0	477,000	80,000	1,892,000	0	0	0	0	0	0	0	2,349,000		

Table A.2 (continued)  
AFBCA Projected Costs to Complete

Project Number	SWMU/AOC	Site Description	Site ID	Phase	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004 To Finish	Totals		
92-0084		Clean and Close TSDF		RFI	0	0	0	0	0	0	0	0	0	0	0		
				RD	0	0	0	0	0	0	0	0	0	0	0	0	
				RA	0	85,000	0	0	0	0	0	0	0	0	0	0	85,000
				LTM	0	0	0	0	0	0	0	0	0	0	0	0	0
				TOTALS	0	85,000	0	0	0	0	0	0	0	0	0	0	0
96-8110	SWMU 38	Bldg. 1269 PCB Transformer Building		RFI	0	0	0	0	0	0	0	0	0	0	0	0	
				RD	0	0	0	0	0	0	0	0	0	0	0	0	
				RA	0	84,900	0	0	0	0	0	0	0	0	0	0	84,900
				LTM	0	0	0	0	0	0	0	0	0	0	0	0	0
				TOTALS	0	84,900	0	0	0	0	0	0	0	0	0	0	0
96-8112A	SWMU 66	Sanitary Sewer System		RFI	0	1,589,000	0	0	0	0	0	0	0	0	0	1,589,000	
				RD	0	143,000	0	0	0	0	0	0	0	0	0	0	143,000
				RA	0	0	0	0	0	0	0	0	0	0	0	0	0
				LTM	0	0	0	0	0	0	0	0	0	0	0	0	0
				TOTALS	0	1,732,000	0	0	0	0	0	0	0	0	0	0	0
96-8112B	SWMU 66	Sanitary Sewer System		RFI	0	0	0	0	0	0	0	0	0	0	0	0	
				RD	0	0	0	0	0	0	0	0	0	0	0	0	0
				RA	0	0	1,218,000	0	0	0	0	0	0	0	0	0	1,218,000
				LTM	0	0	0	0	0	0	0	0	0	0	0	0	0
				TOTALS	0	1,218,000	0	0	0	0	0	0	0	0	0	0	0
96-8117 Revised	SWMU 59	Bldg. 8503 WSA Waste Accumulation Area		RFI	0	1,486,000	0	0	0	0	0	0	0	0	0	1,486,000	
				RD	0	54,000	0	0	0	0	0	0	0	0	0	0	54,000
				RA	0	0	427,000	0	0	0	0	0	0	0	0	0	427,000
				LTM	0	0	0	0	33,600	33,600	33,600	33,500	33,500	33,500	33,500	168,000	336,000
				TOTALS	0	1,540,000	427,000	0	33,600	33,600	33,600	33,500	33,500	33,500	33,500	168,000	1,835,668
95-8026		Wherry Housing Remove CFCs		RFI	0	0	0	0	0	0	0	0	0	0	0	0	
				RD	0	0	0	0	0	0	0	0	0	0	0	0	0
				RA	0	0	0	16,000	0	0	0	0	0	0	0	0	16,000
				LTM	0	0	0	0	0	0	0	0	0	0	0	0	0
				TOTALS	0	0	0	16,000	0	0	0	0	0	0	0	0	0

Table A.2 (continued)  
AFBCA Projected Costs to Complete

Project Number	SWMU/AOC	Site Description	Site ID	Phase	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004 To Finish	Totals	
96-8105	SWMUs 1, 2, and 3	Investigate/Remediate Hospital Area (FBOP)	ZZ001	RFI	0	828,000	0	0	0	0	0	0	0	0	828,000	
		RFI		0	0	0	0	0	0	0	0	0	0	0	0	
		<b>TOTALS</b>		0	828,000	0	0	0	0	0	0	0	0	0	0	828,000
96-8124		Lake Whitney Annex		RFI	0	0	0	1,353,000	0	0	0	0	0	0	0	1,353,000
		RD		0	0	0	160,000	0	0	0	0	0	0	0	160,000	
		RA		0	0	0	0	1,342,000	0	0	0	0	0	0	0	1,342,000
		LTM		0	0	0	0	0	0	10,000	10,000	10,000	10,000	10,000	10,000	70,000
<b>TOTALS</b>	0	0	0	1,513,000	1,342,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	70,000	2,885,070		
96-8125		Compliance Documentation		RFI	0	0	0	0	0	0	0	0	0	0	0	0
		RD		0	0	0	0	0	0	0	0	0	0	0	0	0
		RA		0	0	0	400,000	0	0	0	0	0	0	0	0	400,000
		LTM		0	0	0	0	0	0	10,000	10,000	10,000	10,000	10,000	10,000	70,000
<b>TOTALS</b>	0	0	0	400,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	70,000	500,000		
96-8126		Rail Right-of-Way	AOC-22	RFI	0	0	225,000	0	0	0	0	0	0	0	0	225,000
		RD		0	0	0	0	0	0	0	0	0	0	0	0	0
		RA		0	0	0	260,000	0	0	0	0	0	0	0	0	260,000
		LTM		0	0	0	0	0	0	3,000	3,000	3,000	3,000	3,000	18,000	30,000
<b>TOTALS</b>	0	0	225,000	260,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	18,000	18,000	515,000		
96-8123		Well Construction (Phytoremediation)		RFI	0	0	0	0	0	0	0	0	0	0	0	0
		RD		0	0	0	0	0	0	0	0	0	0	0	0	0
		RA		0	99,600	0	0	0	0	0	0	0	0	0	0	99,600
		LTM		0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTALS</b>	0	99,600	0	0	0	0	0	0	0	0	0	0	0	99,600		
96-812		Groundwater Treatment	LF-04.05	RFI	0	0	0	0	0	0	0	0	0	0	0	0
		RD		0	0	0	0	0	0	0	0	0	0	0	0	0
		RA		0	100,000	100,000	0	0	0	0	0	0	0	0	0	200,000
		LTM		0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTALS</b>	0	100,000	100,000	0	0	0	0	0	0	0	0	0	0	200,000		
<b>GRAND TOTALS</b>					146,000	6,631,500	8,134,035	4,081,000	1,491,800	170,400	190,400	190,400	190,400	1013	21,726,948	

Notes:  
 AOC: Area of Concern  
 LTM: Long-Term Monitoring  
 LTO: Long-Term Observation  
 N/A: Information Not Available  
 NDI: Non-Destructive Inspection  
 OWS: Oil/Water Separator  
 PCB: Polychlorinated Biphenyl  
 POL: Petroleum/Oil/Lubricant  
 RA: Remedial Action  
 RCRA: Resource Conservation Recovery Act  
 RFI: RCRA Facility Investigation  
 SWMU: Solid Waste Management Unit  
 WAA: Waste Accumulation Area  
 WSA: Weapons Storage Area

Source: AFBCA Carswell BRAC Projects, January 1998

1 2 4 5 6 7 8

# TAB

Appendix B

**APPENDIX B  
DRAFT MAP/BCP  
FORMER CARSWELL AIR FORCE BASE**

**Table B.1**  
**Site Deliverables**

SWMU/AOC	Site ID	PA/SI or RFA	RI/FS or RFI/CMS	RD/RA or CMI	LTM or O&M	Closeout or Closure
SWMU 1	NA	X	X	X		X
SWMU 2	NA	X	X	X		X
SWMU 3	NA	X	X	X		X
SWMU 4	NA	X	X	X		X
SWMU 5	SS002	X	X	@		
SWMU 6	SD016	X	@			
SWMU 7	SD000	X	X	@		
SWMU 8	SD014	X	X	@		
SWMU 9	NA	X	X	X		X
SWMU 10	NA	X	X	X		X
SWMU 11	SS003	X	X	@		
SWMU 12	SS004	X	X	@		
SWMU 13	SS005	X	X	@		
SWMU 14	NA	X	X	X		X
SWMU 15	NA	X	X	X		X
SWMU 16	SS006	X	X	@		
SWMU 17	LF005	X	@		@	
SWMU 18	NA	X	X	X		X
SWMU 19	FT001	X	X	X	@	@
SWMU 20	FT001	X	X	X	@	@
SWMU 21	FT001	X	X	X	@	@
SWMU 22	NA	X	@	@		
SWMU 23	NA	X	@	@		
SWMU 24	NA	X	@	@		
SWMU 25	LF006	X	@			
SWMU 26	LF003	X	X		@	
SWMU 27	LF008	X	@			
SWMU 28	LF001	X	X		@	
SWMU 29	LF002	X	@			
SWMU 30	LF007	X	@			
SWMU 31	SS007	X	X	@		
SWMU 32	SS008	X	X	@		
SWMU 33	SS009	X	X	@		
SWMU 34	SS010	X	X	@		
SWMU 35	SD002	X	X	@		
SWMU 36	SS011	X	X	X		
SWMU 37	SD003	X	X	X		
SWMU 38	NA	X	X	X		X
SWMU 39	SS012	X	X	@		
SWMU 40	SD004	X	X	@	@	
SWMU 41	SD005	X	X	@	@	
SWMU 42	SS012	X	X	@		
SWMU 43	NA	X	X	X		X
SWMU 44	SD006	X	X	@		
SWMU 45	SD015	X	X	@		
SWMU 46	NA	X	X	X		X

**Table B.1 (continued)**  
**Site Deliverables**

SWMU/AOC	Site ID	PA/SI or RFA	RI/FS or RFI/CMS	RD/RA or CMI	LTM or O&M	Closeout or Closure
SWMU 47	SD007	X	X	@		
SWMU 48	NA	X	X	X		X
SWMU 49	SD017	X	@			
SWMU 50	SD018	X	@			
SWMU 51	SS014	X	X	@		
SWMU 52	SD008	X	X	@	@	
SWMU 53	SD019	X	@			
SWMU 54	SD020	X	@			
SWMU 55	SD009	X	X	@		
SWMU 56	NA	X	X	X		X
SWMU 57	NA	X	X	X		X
SWMU 58	NA	X	X	X		@
SWMU 59	NA	X	X	@		
SWMU 60	NA	X	X	X		@
SWMU 61	SS015	X	X	@		
SWMU 62	LF004	X	@			
SWMU 63	NA	X	X	X		X
SWMU 64	ST003	X	X	X	@	
SWMU 65	NA	X	X	X		X
SWMU 66	WP001	X	@			@
SWMU 67	ST003	X	X	@		
SWMU 68	ST001	X	X	X	@	
AOC 1	ST004	X	X	X	@	@
AOC 2	WP002	X	@		@	
AOC 3	NA	X	X	X	@	X
AOC 4	ST005	X	X	X	@	
AOC 5	NA	X	@			@
AOC 6	SS001	X	@			
AOC 7	ST002	X	X	@		
AOC 8	NA	X	X	X		@
AOC 9	NA	X	X	X	@	@
AOC 10	SD010	X	X	@		@
AOC 11	SD011	X	X	@		@
AOC 12	SD012	X	X	@		@
AOC 13	SD013	X	X	@		@
AOC 14	NA	X	X	@		
AOC 15	SS016	X	X	@		
AOC 16	NA					

**Notes:**

X:	Phase has been completed	@:	Current phase
CMI:	Corrective Measures Implementation	PA/SI:	Preliminary Assessment/Site Inspection
LTM:	Long-Term Monitoring	RD/RA:	Remedial Design/Remedial Action
NA:	Not Applicable	RFA:	RCRA Facility Assessment
O&M:	Operation and Maintenance	RFI/CMS:	RCRA Facility Investigation/Corrective Measures Study
		RI/FS:	Remedial Investigation/Feasibility Study

Source: AFCEE Estimated Schedule to Complete NAS Fort Worth JRB; AFBCA Carswell AFB Compliance Schedule

# TAB

*Appendix C*

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**APPENDIX C  
DRAFT MAP/BCP  
FORMER CARSWELL AIR FORCE BASE**

John Hall, Chairman  
Pam Reed, Commissioner  
Peggy Garner, Commissioner  
Dan Pearson, Executive Director



681 111

## TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

*Protecting Texas by Reducing and Preventing Pollution*

March 2, 1995

Mr. Ohlen Long  
Site Manager  
Headquarters, Air Force Base Disposal Agency  
Location H, Bldg. 1215  
Carswell Air Force Base, Texas 76127-5000

RE: Carswell Air Force Base,  
Texas Natural Resource Conservation Commission Hazardous  
Waste Permit No. HW50289,  
Solid Waste Registration No. 65004,  
EPA ID NO. TX0571924042,  
Designation of Solid Waste Management Units and Areas of  
Concern for Investigation and/or Corrective Measures

### Determination of a Need for an RFI and Current Condition Report

Dear Mr. Long:

The TNRCC has recently completed its review of the 68 RCRA Solid Waste Management Units (SWMU) and 15 Areas of Concern (AOC) identified to date on Naval Air Station Fort Worth, also known as Carswell Air Force Base. Our review included the RCRA Facility Assessment (RFA) conducted in 1989; Hazardous Waste Permit No. 50289 issued in 1991; TNRCC's letter dated April 22, 1994; and the decisions resulting from the TNRCC's inspections of June 15, 1994, July 29, 1994, and February 13, 1995. Part V. I. of the permit allows the TNRCC to require investigation of units where a release may have occurred. Also, 30 Texas Administrative Code (TAC) §305.62 (d) states that "If good cause exists, the executive director may initiate and the Commission may order an amendment to a permit and the executive director may request an updated application if necessary".

Based on the above mentioned documents and inspections, the TNRCC has determined that a total of 50 SWMU's and 14 AOC's require investigations and/or corrective measures. The 18 remaining SWMU's and one AOC are designated for No Further Action (NFA) at this time. The NFA designation will remain so long as there is no further evidence of a release to the environment from these units.

Mr. Ohlen Long  
Carswell Air Force Base  
Page 2 of 3

Seventeen (17) of the SWMU's noted for RFI's on the attached table are also designated for RFI's in Carswell's Hazardous Waste Permit No. 50289. Another 21 of the SWMU's were designated for RFI's in TNRCC's letter dated April 22, 1994. However, the RFI required in TNRCC's letter of April 22, 1994, for SWMU No. 43 (Bldg. 1414, Non-Destructive Inspection Waste Accumulation Area) is hereby revised to NFA, based upon further TNRCC inspection and review. TNRCC's letter dated November 30, 1994, required RFI's for SWMU No. 45 (Bldg. 1027) and SWMU No. 47 (Bldg. 1015) in addition to nine (9) AOC's. Eleven (11) additional SWMU's (No. 11, 17, 34, 39, 40, 44, 49, 50, 58, 60, and 66) are designated for RFI's by this letter. A total of 14 AOC's are identified for investigation. Waste Oil Dump at DP-17 was designated for NFA by TNRCC's letter dated September 22, 1993. The attached table lists the TNRCC's designation for each specific SWMU/AOC, as of February 16, 1995.

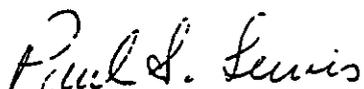
Those waste management units identified as SWMU's in the 1989 RFA and designated for an RFI in this letter require an investigation in accordance with Provision VIII of Hazardous Waste Permit No. 50289. In order to expedite the investigative process, the TNRCC will not require a permit amendment for the additional SWMU's until after the first phase of the investigation is completed. After the first phase of the investigation, Carswell AFB may be required to amend the permit to add those SWMU's that are shown to have released industrial solid waste or municipal hazardous waste to the environment.

The magnitude of the investigation for SWMU and AOC will depend on the unit's/area's size, condition, siting characteristics, and the constituents it managed. Those investigations and/or corrective actions already initiated need not be repeated, unless requested elsewhere. Please provide a schedule for submittal of the RFI Work Plans with a prioritization of the tasks and the rationale for the prioritization within 60 days of receipt of this letter.

Mr. Ohlen Long  
Carswell Air Force Base  
Page 3 of 3

The TNRCC looks forward to assisting the Air Force and Navy in developing the scope of work necessary to economically and adequately characterize releases to the environment. If you have any questions or need further assistance with this matter, please contact Mr. Geoffrey Meyer in my section at (512) 239-2577.

Sincerely,



Paul Lewis, Manager  
Corrective Action Section  
Industrial and Hazardous Waste Division

Enclosure

PL:gm

cc w/ enclosure

David Neleigh, EPA Region 6  
Don C. Eubank, TNRCC Region 4  
Charles Mauk, TNRCC Permits  
Wade Wheatley, TNRCC Permits

cc: Tennie Larson, IHW Corrective Action Section (CA070/103)

**BEST AVAILABLE  
COPY  
Attachment**

**SWMU and AOC Designation  
Carswell Air Force Base /  
Naval Air Station Ft. Worth  
February 16, 1995**

<b>SWMU No. AOC</b>	<b>Unit Description</b>	<b>Designation</b>
1	Pathological Waste Incinerator	NFA
2	Pathological Waste Storage Shed	NFA
3	Metal Cans	NFA
4	Facility Dumpsters	NFA
5	Bldg. 1628 Waste Accumulation Area	RFI
6	Bldg. 1628 Wash Rack and Drain	RFI
7	Bldg. 1628 Oil/Water Separator	RFI
8	Bldg. 1628 Sludge Collection Tank	RFI
9	Bldg. 1628 Work Station Waste Accumulation Area	NFA
10	Bldg. 1617 Work Station Waste Accumulation Area	NFA
11	Bldg. 1617 Waste Accumulation Area	RFI
12	Bldg. 1619 Waste Accumulation Area	RFI
13	Bldg. 1710 Waste Accumulation Area	RFI
14	Bldg. 1060 Bead Blaster Collection Tray	NFA
15	Bldg. 1060 Paint Booth Vault	NFA
16	Bldg. 1060 Waste Accumulation Area	RFI
17	Landfill No. 7	RFI
18	Fire Training Area No. 1	NFA
19	Fire Training Area No. 2	RFI
20	Waste Fuel Storage Tank	RFI
21	Waste Oil Tank	RFI

**SWMU and AOC Designation  
Carswell Air Force Base /  
Naval Air Station Ft. Worth  
February 16, 1995**

<b>SWMU No./ AOC</b>	<b>Unit Description</b>	<b>Designation</b>
22	Landfill No. 4	RFI
23	Landfill No. 5	RFI
24	Waste Burial Area	RFI
25	Landfill No. 8	RFI
26	Landfill No. 3	RFI
27	Landfill No. 10	RFI
28	Landfill No. 1	RFI
29	Landfill No. 2	RFI
30	Landfill No. 9	RFI
31	Bldg. 1050 Waste Accumulation Area	RFI
32	Bldg. 1410 Waste Accumulation Area	RFI
33	Bldg. 1420 Waste Accumulation Area	RFI
34	Bldg. 1194 Waste Accumulation Area	RFI
35	Bldg. 1194 Vehicle Refueling Shop Oil/Water Separation System	RFI
36	Bldg. 1191 Waste Accumulation Area	RFI
37	Bldg. 1191 Vehicle Maintenance Shop Oil/Water Separator	RFI
38	Bldg. 1269 PCB Transformers Building	NFA
39	Bldg. 1643 Waste Accumulation Area	RFI
40	Bldg. 1643 Oil/Water Separation System	RFI
41	Bldg. 1414 Oil/Water Separation System Field Maintenance Squadron Aerospace Ground Equipment	RFI
42	Bldg. 1414 Waste Accumulation Area	RFI
43	Bldg. 1414 Non-Destructive Inspection (NDI) Waste Accumulation Area	NFA

**BEST AVAILABLE  
COPY  
Attachment**

**SWMU and AOC Designation  
Carswell Air Force Base /  
Naval Air Station Ft. Worth  
February 16, 1995**

<b>SWMU No./ AOC</b>	<b>Unit Description</b>	<b>Designation</b>
44	Bldg. 1027 Oil/Water Separation Sysytem at the Aircraft Washing Hanger	RFI
45	Bldg. 1027 Waste Oil Tank Vault at the Aircraft Washing Hanger	RFI
46	Bldg. 1027 Waste Accumulation Area	NFA
47	Bldg. 1015 Jet Engine Test Cell Oil/Water Separator	RFI
48	Bldg. 1048 Fuel System Floor Drains	NFA
49	Aircraft Washing Area No. 1	RFI
50	Aircraft Washing Area No. 2	RFI
51	Bldg. 1190 Central Waste Holding Area	RFI
52	Bldg. 1190 Oil/Water Separation System	RFI
53	Storm Water Drainage System	RFI
54	Storm Water Interceptors	RFI
55	East Gate Oil/Water Separator	RFI
56	Bldg. 1405 Waste Accumulation Area	NFA
57	Bldg. 1432/1434 Waste Accumulation Area	NFA
58	Pesticide Rinse Area	RFI
59	Bldg. 8503 Weapons Storage Area Waste Accumulation Area	RFI
60	Bldg. 8503 Radioactive Waste Burial Site	RFI
61	Bldg. 1320 Power Production Maintenance Facility Waste Accumulation Area	RFI
62	Landfill No. 6	RFI
63	Entomology Dry Well	NFA
64	French Underdrain System	RFI
65	Weapons Storage Area Disposal Site	NFA

**BEST AVAILABLE  
COPY  
Attachment**

**SWMU and AOC Designation  
Carswell Air Force Base /  
Naval Air Station Ft. Worth  
February 16, 1995**

<b>SWMU No./ AOC</b>	<b>Unit Description</b>	<b>Designation</b>
66	Sanitary Sewer System	RFI
67	Bldg. 1340 Oil/Water Separator	RFI
68	POL Tank Farm	RFI
AOC	ST-16. Bldg. 1518 Service Station	RFI
AOC	OT-18, Airfield TCE Plume	RFI
AOC	DP-17, Waste Oil Dump	NFA
AOC	Fuel Hydrant System	RFI
AOC	Grounds Maintenance Yard	RFI
AOC	RV Parking Area	RFI
AOC	Base Refueling Area	RFI
AOC	SW Aerospace Museum	RFI
AOC	Golf Course Maintenance Area	RFI
AOC	Bldg. 1064 Oil/Water Separator	RFI
AOC	Bldg. 1060 Oil/Water Separator	RFI
AOC	Bldg. 4210 Oil/Water Separator	RFI
AOC	Bldg. 1145 Oil/Water Separator	RFI
AOC	Unnamed Stream	RFI
AOC	Bldg. 1190 Storage Shed	RFI

Barry R. McBea, *Chairman*  
 R. B. "Ralph" Marquez, *Commissioner*  
 John M. Baker, *Commissioner*  
 Dan Pearson, *Executive Director*



## TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

*Protecting Texas by Reducing and Preventing Pollution*

November 5, 1996

Mr. Charles A. Rice  
 Team Chief  
 Base Closure Restoration Division  
 Air Force Center for Environmental Excellence  
 8001 Inner Circle Drive, Suite 2  
 Brooks AFB, Texas 78235-5328

**CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**

Re: Naval Air Station Ft. Worth IRB/Carswell AFB (NAS Ft. Worth)  
 TNRCC Solid Waste Registration No. 65004  
 EPA ID No. TX0571924042  
 Hazardous Waste Permit No. 50289  
 Solid Waste Management Unit (SWMU) 60  
 Request for Revised Approval for Actions To Be Taken for Project 94-7007, Normally  
 Occurring Radioactive Material Removal, Dated September 23, 1996

### Partial Closure Approval

Dear Mr. Rice:

The Texas Natural Resource Conservation Commission (TNRCC) Federal Facilities Team received your supplemental report dated September 23, 1996, and received on September 28, 1996. The report states that radium levels observed in the soils at Solid Waste Management Unit (SWMU) 60, a Low Level Radioactive Waste site, are at or below background levels. As such, the Air Force's closure activities for the soils at this site have been completed in accordance with the TNRCC Risk Reduction Rules (RRR) Standard No. 1, pursuant to 30 Texas Administrative Code (TAC) Chapter 335 Subchapters A and S.

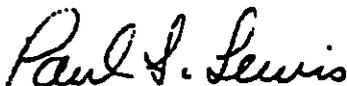
In order to attain RRR Standard No. 1, all industrial solid waste and municipal hazardous waste and waste residues must be removed or decontaminated from affected media (i.e., soil, surface water, groundwater, air) to naturally occurring background levels. We cannot approve final closure of SWMU 60 until the Air Force completes its study of background radium in groundwater. The background investigation was approved by the TNRCC in our letter of October 24, 1996. Once the Air Force has established that the groundwater at this site has attained RRR Standard No. 1, no further action will be required at SWMU 60.

Mr. Charles A. Rice  
Page 2  
November 5, 1996

Please be aware of the continuing obligation of 30 TAC §335.8(b)(5), which requires the Air Force to conduct additional remedial activities in the event that a substantial change in circumstances at the facility, or area, results in an unacceptable threat to human health or the environment. Finally, 30 TAC §335.4 requires that persons associated with a site are under the continuing obligation to assure that municipal hazardous waste and industrial solid waste are managed in a manner which does not cause the discharge or imminent threat of discharge of waste into or adjacent to waters in the state, a nuisance, or the endangerment of the public health and welfare. A TNRCC field inspector may review your Final Report and may conduct a closure inspection of the site.

If you have any questions or need further assistance with this matter, please contact Mr. Geoffrey Meyer in the Corrective Action Section in Austin at (512) 239-2577, mail code MC127, or via the e-mail address gmeyer@tnrcc.state.tx.us.

Sincerely,



Paul S. Lewis, Manager  
Corrective Action Section  
Industrial and Hazardous Waste Division

PL/GM

cc: Mr. Joel Sanders, Southern Division, Naval Facilities Engineering Command, P.O. Box 190010, North Charleston, SC 29419-9010  
Ms. Stacy Gent, Department Head, Environmental Department/Code 110, Department of the Navy, Building 1215, NAS JRB Ft. Worth, Texas 76127-6200  
Mr. Ohlen Long, P.E., AFBCA, 6550 White Settlement Road, Ft. Worth, Texas 76114-3520  
Mr. Michael W. S. Hayes, Esq., GM-0905-14//CAR(sel), JAGC, USNR Counsel, Office of the Asst. General Counsel, 4400 Dauphine St., New Orleans, LA 70146-5000  
Ms. Judith R. McCulley, USEPA Region 6  
Mr. Tim Sewell, TNRCC Region 4 Office, Duncanville  
Ms. Ginny King, Natural Resource Trustees, PCD Division (MC 142)

Barry R. McBee, *Chairman*  
R. B. "Ralph" Marquez, *Commissioner*  
John M. Baker, *Commissioner*  
Dan Pearson, *Executive Director*



681 120

## TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

*Protecting Texas by Reducing and Preventing Pollution*

July 16, 1997

Mr. Charles A. Rice  
Team Chief  
Base Closure Restoration Division  
HQ AFCEE/ERB  
3207 North Road  
Brooks AFB, Texas 78235-5363

Re: Review of the Draft Assessment Report Form (ARF) and Plan B Risk Assessment - Base Gas Station and Base Service Station, NAS Fort Worth - Carswell Field, Fort Worth (Tarrant County), Texas (LPST ID No. 104524, Facility ID No. 009696, Priority 2.6)

Dear Mr. Rice:

We have completed our review of the Draft Assessment Report Form (ARF) and Plan B Risk Assessment, submitted to this Office on June 1997. After careful review of all the data provided and pursuant to Title 30, Texas Administrative Code (TAC), Section 334.71 - 334.85, we conclude the submitted draft documents satisfy the requirements of RG-175 entitled *Guidance for Risk-Based Assessments at LPST Sites in Texas*, and RG-36 entitled *Risk-Based Corrective Action for Leaking Storage Tank Sites*. Please proceed to submit the above-mentioned documents in their final stage so that the 30-day mandated review can take place.

We appreciate your cooperation in this matter. Please note that all correspondence must include the LPST ID Number and should be submitted to both the local TNRCC Regional office and to the Central Office in Austin. Should you have any questions, please contact me at 512/239-2200.

Sincerely,

A handwritten signature in cursive script, appearing to read "Antonio Peña".

Antonio Peña, P.E.  
Federal Facilities Coordinator  
Responsible Party Remediation Section  
Petroleum Storage Tank Division

ARP/keh  
104524.dft

cc: Sam Barrett, TNRCC Region 4 Field Office  
(1101 East Arkansas Lane, Arlington, Texas 76010-6499)  
Mr. Olen Long (AFBCA/OL-H)  
(6550 White Settlement Road, Ft. Worth, TX 76114-3520)

Barry R. McBee, *Chairman*  
R. B. "Ralph" Marquis, *Commissioner*  
John M. Baker, *Commissioner*  
Dan Pearson, *Executive Director*



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681 121

## TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

*Protecting Texas by Reducing and Preventing Pollution*

September 16, 1997

### **CERTIFIED MAIL**

Mr. Charles Rice  
HQ AFCEE/ERB  
3207 North Road  
Brooks AFB, Texas 78235-5363

**Re: Subsurface Hydrocarbon Contamination at the Base Gas Station (BGS) and Base Service Station (BSS), NAS Fort Worth, Carswell AFB (Tarrant County), Texas (LPST ID No. 104524 - Priority 3.2 - Facility ID No. 009696)**

Dear Mr. Rice:

We have completed our review of the investigation and remedial procedures addressing subsurface contamination at the above referenced facility as provided in the final Risk-Based Assessment (RBA) and Plan B Risk Assessment reports submitted by your consultant, IT International Technology Corporation on August 17, 1997. After careful review of all available information, we are in general concurrence with your consultant's recommendation for a no further corrective action status at these sites, however, additional groundwater sampling is required to monitor Chemicals of Concern (COCs) and plume stability.

Please submit a workplan for two semi-annual groundwater sampling events according to the following plan:

**Base Gas Station: Monitor wells MW-3, MW-5 and MW-6;**

**Base Service Station: Monitor Wells BSS-B, MW-2, MW-10 and MW-11.**

**Surface Water: Take an upgradient and downgradient water sample from the Fork Trinity River.**

In addition, upon review of the RBA reports the following deficiency was noted. Please submit the following items:

**Attachment 14: Texas Natural Resource Conservation Commission (TNRCC) Form 0019 for all wells was missing for both the BGS and BSS.**

Mr. Charles Rice  
Page 2

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Upon completion of the above mentioned items, a report which addresses the above concerns should be submitted to this Office. Upon receipt, this project will be reevaluated and a determination made as to whether closure or further corrective action is warranted. The LPST and Facility ID Numbers should be included in all correspondence.

If you have any questions concerning this letter, please contact me at 512/239-2200. Your cooperation in this matter is appreciated.

Sincerely,



Antonio Peña  
Coordinator, Team II  
Responsible Party Remediation Section  
Petroleum Storage Tank Division

ARP/kch  
104524.rsk

cc: Sam Barrett, TNRCC Region 4 Field Office, 817/795-2519  
(1101 East Arkansas Lane, Arlington, Texas 76010-6499)

Barry R. McBee, *Chairman*  
R. B. "Ralph" Marquez, *Commissioner*  
John M. Baker, *Commissioner*  
Dan Pearson, *Executive Director*



681 123

## TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

*Protecting Texas by Reducing and Preventing Pollution*

October 21, 1997

### CERTIFIED MAIL

Mr. Charles Rice  
Team Chief  
Base Closure Restoration Division  
HQ AFCEE/ERB  
3207 North Road  
Brooks AFB, Texas 78235-5363

Re: Subsurface Hydrocarbon Contamination at the Base Gas Station (BGS) and Base Service Station (BSS), NAS Fort Worth, Carswell AFB (Tarrant County), Texas  
(LPST ID No. 104524 - Priority 3.2 - Facility ID No. 009696)

Dear Mr. Rice:

We have completed our review of the investigation and remedial procedures addressing subsurface contamination at the above referenced facility as provided in the Groundwater Sampling and Monitoring Workplan submitted on September 26, 1997. After careful review of all available information, we conclude that the workplan satisfy the requirements stipulated in our September 16, 1997 letter. Additionally, we reiterate our concurrence with the recommendation for no further corrective action at the subject sites. Please be advised that if the results of the requested monitoring period indicate an increasing or erratic contaminant trend with time, you may be requested to extend the monitoring period or develop target cleanup concentrations under Plan B of our RBCA guidance.

If you have any questions concerning this letter, please contact me at 512/239-2200. Your cooperation in this matter is appreciated.

Sincerely,

A handwritten signature in cursive script, appearing to read "Antonio Peña".

Antonio Peña  
Coordinator, Team II  
Responsible Party Remediation Section  
Petroleum Storage Tank Division

ARP/keh  
104524.gws

cc: Sam Barrett, TNRCC Region 4 Field Office, 817/795-2519  
(1101 East Arkansas Lane, Arlington, Texas 76010-6499)

# TAB

Appendix D

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**APPENDIX D**  
**DRAFT MAP/BCP**  
**FORMER CARSWELL AIR FORCE BASE**

MEMORANDUM OF UNDERSTANDING  
FOR ENVIRONMENTAL COMPLIANCE  
AT NAVAL AIR STATION FORT WORTH, JOINT RESERVE BASE  
CARSWELL FIELD

A. PREAMBLE

1. Parties to this Agreement: For purposes of this Memorandum of Understanding (MOU), "Navy" will identify those parties affiliated with the Department of the Navy and "Air Force" will identify those parties affiliated with the Department of the Air Force.
  
2. Background: A Memorandum of Understanding (MOU) was signed by the acting Secretaries of the Air Force and Navy on 08 and 09 June 1993 (Attachment 1) outlining the general terms under which the Air Force would transfer responsibility for portions of the former Carswell Air Force Base (Carswell AFB) to the Navy. These portions of the former Carswell AFB have been identified as Naval Air Station (NAS) Fort Worth Joint Reserve Base (JRB) (Attachment 2). A final target date of 30 September 1994 for the transfer of host responsibilities from the Air Force to the Navy was established in that original MOU. On 23 September 1994, the Navy and Air Force executed another MOU (Attachment 3) to amend the earlier MOU. The Navy assumed "host responsibilities" for NAS Fort Worth JRB, on 1 October 1994, but did not assume several key environmental program responsibilities.  
  
In a 26 February 1996 letter (Attachment 4) to the Deputy Assistant Secretary of the Navy (Environment and Safety), the Deputy Assistant Secretary of the Air Force (Environment, Safety, and Occupational Health) interpreted and amended the original MOU. That amendment confirmed the Air Force's acceptance of funding and management responsibility for the final remediation of all environmental restoration requirements which are attributable to Carswell AFB operations which occurred prior to 1 October 1994. In an MOU dated 19 June 1996 (Attachment 5), the parties reached agreement on the cleanup of NAS Fort Worth JRB (Carswell Field). The 19 June 1996 Cleanup MOU will control in the event that it conflicts on cleanup issues with this Compliance MOU.
  
3. Applicability: This Compliance MOU applies only to NAS Fort Worth JRB as depicted in Attachment 2. Notwithstanding the provisions of this MOU, Navy and Air Force may negotiate alternative terms in an Inter-Service Support Agreement (ISSA).

## B. GENERAL PROVISIONS AND PROGRAM ADMINISTRATION

1. Navy will be the focal point for all environmental compliance matters and provide advice and consultation on all environmental laws, regulations and policies. Navy will recommend the appropriate course of action to resolve environmental discrepancies and interface with regulatory agencies and the public on behalf of Air Force. Specifically, upon accepting full responsibility for the environmental compliance program at NAS Fort Worth JRB, Navy will be the single point of formal contact to environmental regulators, federal and state, for all environmental compliance activities at NAS Fort Worth JRB, including the interpretation of regulations and the coordination of inspections, reports and correspondence. Navy will act as the central repository for all environmental records required to be maintained by law or regulation and will be the lead environmental compliance agency at NAS Fort Worth JRB, responsible for all compliance programs. There will be no areas on NAS Fort Worth JRB which are independent of Navy's control as lead environmental compliance agency. Except as otherwise specified in this MOU, there will be no environmental programs on NAS Fort Worth JRB which are independent of Navy's control as lead environmental compliance agency.
2. Navy will provide general operational environmental policy guidance, e.g. OPNAVINST 5090.1B, as well as detailed requirements and procedures for environmental document processing, coordination, and approval for Air Force actions.
3. Navy will make reasonable efforts to accommodate mission needs of Air Force when implementing environmental programs.
4. On the date this MOU is executed, Navy will assume full responsibility for funding all environmental compliance expenses and managing the NAS Fort Worth JRB environmental compliance program, except as otherwise specified in this MOU. Air Force will provide Navy with the environmental compliance budget information (for prior year, current year, and any future years available), as well as a list of current contractors/contracts utilized for environmental compliance services to insure a smooth transition of the program. Air Force agrees to allow Navy to utilize current Air Force contractors/contracts, on a reimbursable basis, until Navy can obtain its own contractors/contracts for environmental compliance services. Navy and Air Force will work together to apportion financial responsibility for current environmental compliance expenses while the execution of this MOU is pending.
5. Navy and Air Force will work together to expeditiously obtain the recognition of the transfer of the pertinent environmental compliance programs to Navy by the regulators of NAS Fort Worth JRB.

6. Within 30 days of the execution of this MOU, Navy will request by letter that Air Force transfer to Navy all of the records required to be maintained by law and regulation for all of the environmental compliance programs at NAS Fort Worth JRB. Within 30 days of the request from Navy, Air Force will transfer the requested records and do so by preparing a formal letter of transmittal for each group of records being transferred which verifies the content of the records, certifying that all compliance records maintained by Air Force have been transferred. Air Force will identify in this letter any records known to be missing at the time of transfer.
7. Air Force will reimburse Navy to the extent penalties for violations of environmental laws or regulations are attributable to Air Force conduct. If noncompliance with an environmental law or regulation is attributable to Air Force activities, Air Force will take all necessary actions to bring the activity into compliance.
8. Air Force will comply with applicable environmental laws, standards, rules, regulations, permit conditions, and policies. Air Force will make environmental compliance requirements that pertain to its mission known to Navy's property use planning function.
9. Air Force is responsible for the actions of its contractors and will require its contractors to understand and comply with the provisions herein.
10. Air Force will participate in applicable Navy environmental programs.
11. Air Force will grant Navy's environmental management personnel and its authorized contractors access to Air Force facilities. Regulators, who are performing official duties, will be granted access to Air Force facilities after coordinating their access with Navy. However, the access of Regulators shall be managed in conformity with Air Force and Navy regulations and security requirements, as well as in a manner minimizing interference with any military operations at NAS Fort Worth JRB.
12. Air Force environmental standards for facilities shall apply to Air Force owned facilities. For example, Air Force asbestos and lead-based paint standards would apply to renovations funded by Air Force at facilities owned by Air Force.

### C. ENVIRONMENTAL MONITORING, AUDITING & PLANNING

1. Navy will develop a comprehensive environmental monitoring program and perform environmental monitoring as required. Navy will provide sampling and analysis support on a reimbursable basis. Navy will provide sample results to Air Force in a timely manner.

2. Navy will include Air Force in its Environmental Compliance Evaluation (ECE) program forward the findings to the Commander of the Air Force activity for action concerning Air Force deficiencies. Air Force will assist Navy as necessary during internal and external ECEs and will respond to any noted deficiencies in a timely manner.
3. Navy will coordinate applicable environmental plans with Air Force prior to publication. Site approval and master planning authority resides with the Navy.

#### D. TRAINING

1. Navy will invite Air Force personnel to attend environmental training required by law or regulation and that is offered locally. When the cost of the training is on a per student basis, Air Force will reimburse Navy for its proportionate share of the expense. Navy will provide and coordinate a training schedule to the mutual satisfaction of Navy and Air Force.
2. Air Force will ensure that its personnel and contractors are properly trained in accordance with applicable statutes and regulations. Air Force will identify to Navy environmental training requirements applicable to Air Force activities and personnel.

#### E. WASTE AND HAZARDOUS MATERIAL MANAGEMENT

1. At NAS Fort Worth JRB, Navy will develop and manage a solid waste disposal and recycling program, a hazardous material management program, a hazardous waste management program, and an infectious waste management program.
2. Navy will regulate introduction of new hazardous material onto and onboard the installation. Navy will provide waste minimization guidance and assistance.
3. Unless agreed otherwise, Air Force will reimburse Navy for solid, hazardous, and infectious waste disposal and waste stream characterization costs.
4. Air Force will participate in Navy's Consolidated Hazardous Material Reutilization and Inventory Management Program (CHRIMP)/pharmacy and pollution prevention programs. Air Force will comply with all Navy policies and procedures for waste minimization and recycling. Specifically, Air Force will provide any data required to allow Navy to operate a hazardous material Central Distribution Center (CDC), and thereby allow Navy to implement a CHRIMP at NAS Fort Worth JRB.

5. Air Force will provide information to assist Navy in determining waste disposal requirements and provide a scheduled forecast for disposal requirements.
6. Navy and Air Force will cooperate in developing and implementing a base wide, pollution prevention program, in furtherance of E.O. 12856 and E.O. 12873 . Air Force will provide any data required and Navy will submit all reports for NAS Fort Worth JRB. Air Force will participate in Navy's recycling program to the mutual benefit of both parties.

#### F. MEDIA AND STATUTORY SPECIFIC PROVISIONS

1. Asbestos: All asbestos work (non-BRAC) associated with renovations of facilities owned by Air Force shall be funded by Air Force. Air Force will provide copies of all documentation of such renovations to Navy. Based upon Air Force's documentation, Navy will make the necessary notification to the appropriate environmental regulators and verify such notification to Air Force.
2. Lead-based Paint: All lead-based paint work (non-BRAC) associated with renovations of facilities owned by Air Force shall be funded by Air Force. Air Force will provide copies of all documentation of such renovations to Navy. Based upon Air Force's documentation, Navy will make the necessary notification to the appropriate environmental regulators and verify such notification to Air Force.
3. EPCRA: Air Force will provide any data required by the Emergency Planning and Community Right-To-Know Act (EPCRA) and Navy will submit all reports for NAS Fort Worth JRB.
4. Underground and Aboveground Storage Tanks: Attachment 6 consists of a list provided by Air Force, which identifies the location, size, contents, and physical and regulatory condition of, as well as the party responsible for, all the underground storage tanks at NAS Fort Worth JRB. Attachment 7 consists of a list provided by Air Force, which identifies the location, size, contents, and physical and regulatory condition of all the aboveground storage tanks at NAS Fort Worth JRB. Within 30 days of the execution of this MOU, Navy and Air Force will determine in writing which party will be responsible for each aboveground storage tank. When completed, this written determination will be appended to or otherwise reflected on Attachment 7. Air Force will be responsible for closing the tank sites, at which the tanks have been removed prior to the execution of this MOU, in accordance with Texas Natural Resource Conservation Commission (TNRCC) standards, to include the investigation and necessary restoration of soil, groundwater, and surface water contamination. Navy will be responsible for maintaining the compliance status of the remaining tanks identified in Attachment 6, as well as for those specified in the updated version of Attachment 7. In

accordance with the 19 June 1996 Cleanup MOU, Air Force will be responsible for the investigation, cleanup, and closure of tanks not already identified in Attachments 6 and 7. Air Force and Navy will work together to transfer tank registration from Air Force to Navy.

5. Noise: Air Force will comply with Navy requirements related to noise. Navy will prepare all Air Installation Compatible Use Zone (AICUZ) studies. Air Force will coordinate all significant changes in flight activities with Navy prior to implementation.
6. Radon: Navy will fund future radon studies. All abatement work (non-BRAC) associated with facilities owned by Air Force shall be funded by Air Force.
7. NEPA and CAA Conformity: Both Navy and Air Force will prepare their own documentation in accordance with their own respective regulations in order to comply with the National Environmental Policy Act (NEPA) and the conformity provisions of the Clean Air Act (CAA). Each party will act as cooperating agency for the other party's actions to the extent required by law and regulation. Air Force will provide copies of the appropriate environmental planning documents, for example the AF Forms 813, 814, and 815, as well as any associated documents, to Navy upon completion of such forms or documents.

#### G. PERMITTING

1. Navy will submit required permit applications and be the formal point of contact regarding all environmental compliance actions, maintain any necessary environmental permits, and ensure that Air Force is aware of all permit requirements, unless specified otherwise in this MOU.
2. Air Force shall, in a timely manner, provide Navy all necessary information required by Navy to obtain, maintain, and substantiate compliance with environmental permits or permit exemptions covering Air Force operations. Environmental permits required by law or regulation will be obtained prior to start of Air Force activities, including construction. Air Force will immediately notify Navy of actual or potential permit violations.
3. Specific Permits:
  - 3.1 Air: In light of the U.S. EPA Major Source Determination for Military Installations Memorandum of 2 August 1996 (Attachment 8), Navy and Air Force will cooperate in developing an overall strategy for compliance with permit requirements under the Clean Air Act. For example, it may be in the best interests of the parties for Air Force to maintain the air permit for the existing jet engine test cell it controls.

- 3.2 Water: Air Force Base Conversion Agency (AFBCA) will transfer the National Pollutant Discharge Elimination System (NPDES) permit to Navy upon divestiture of the three AFBCA controlled outfalls. Until the date of permit transfer or until Navy has established its own sampling capability, whichever occurs last, Navy will reimburse Air Force for sampling expenses incurred to satisfy the NPDES permit requirements within NAS Fort Worth JRB and for the White Settlement infall.
- 3.3 Waste: AFBCA will close the Treatment, Storage, and Disposal (TSD) facility in accordance with TNRCC standards and provide Navy with the closure documents. Within the boundaries of NAS Fort Worth JRB, Navy will be identified to TNRCC as the owner and Air Force as the tenant of Navy for all waste generation and waste management activities after the execution of this MOU. Air Force shall be responsible for executing the TNRCC Compliance Plan in a manner consistent with the 19 June 1996 Cleanup MOU.
- 3.4 Potable Water: Within 30 days of the execution of this MOU, AFBCA will submit a modification of its Potable Water permit to exclude NAS Fort Worth JRB, and Navy will apply for a Potable Water permit for NAS Fort Worth JRB. Until Navy receives its Potable Water permit, AFBCA will continue to provide water sampling and analytical services to Navy on a reimbursable basis.
- 3.5 Sanitary Sewer: Within 30 days of the execution of this MOU, AFBCA, in coordination with Navy, will request modification of the existing Sanitary Sewer permit to exclude NAS Fort Worth JRB, and Navy will verify it has applied for a Sanitary Sewer permit for NAS Fort Worth JRB.
- 3.6 Tank Registration: Within 30 days of the execution of this MOU, Air Force and Navy will submit a request to change the tank registration for the tanks indicated to be transferred to Navy in Attachments 6 and 7. Until Navy obtains the appropriate contract services, AFBCA will continue to provide tank sampling and monitoring services to Navy on a reimbursable basis.

#### H. EMERGENCY RESPONSE

1. Air Force is responsible for initial response and clean-up of all releases attributable to its activities that are within its capabilities of response. Air Force will immediately report to Navy all hazardous substance releases in accordance with Navy plans and directives.
2. Navy will provide emergency response support and necessary follow-up for releases attributable to Air Force and, in particular, will be the lead agency for emergency response programs. Except as otherwise required by law or regulation or specified in this agreement,

Navy will notify the appropriate regulatory agencies and submit reports of reportable releases as required by law or regulation. Navy will provide Air Force with verification that Navy has made the appropriate notifications.

3. Navy will complete spill response plans for NAS Fort Worth JRB. Navy will include Air Force in exercise scenarios as appropriate.
4. Notwithstanding the above, Air Force will maintain the Hydrazine Spill Response capability for its operations at NAS Fort Worth JRB. In addition, Air Force will complete the Hydrazine Spill Plan for its operations at NAS Fort Worth JRB.
5. Upon execution of this MOU, Navy will assume responsibility for performing emergency responses at NAS Fort Worth JRB, as described in this section.

#### I. NOTIFICATION

1. Navy will immediately notify Air Force, in writing, of enforcement actions taken by environmental regulators which may impact Air Force operations or which are attributable to the action or inaction of Air Force or its contractors. For purposes of this MOU, "enforcement actions" includes but is not limited to: notices of violation, notices to comply, and letters of warning. Navy will immediately notify Air Force, in writing if time permits, of any regulator visits and pertinent requests for information. Navy will immediately notify Air Force, in writing, of any new or changed environmental requirements that may impact Air Force operations.
2. Air Force will immediately notify Navy, in writing, of enforcement actions taken by environmental regulators which may impact Navy operations or which are attributable to the action or inaction of Air Force or its contractors. Air Force will notify Navy, in writing, of any action or event which either results in, or may result in, environmental, natural resource, or cultural resource degradation, or that has a potential for controversy.
3. Air Force will immediately notify Navy, in writing, of any regulator visits and requests for information. Air Force will coordinate with Navy on all new, modified, or decommissioned pollution sources or regulated activities on the installation used or performed by Air Force or its contractors. Examples include well closures, tank removals, and the use of temporary sources, such as generators.
4. Air Force and its contractors will not disturb any historical, archeological, or cultural artifacts. In the event such items are discovered on the installation, Air Force will

immediately notify Navy and protect the site and material from further disturbance until clearance is provided to proceed.

#### J. ENFORCEMENT ACTION

1. Navy will notify the Air Force commander, or the equivalent, immediately of any enforcement actions taken by environmental regulators in which the violation may be attributed to the action or inaction of Air Force or its contractors either attached to, assigned to, or providing services on NAS Fort Worth JRB. Navy will provide Air Force with a copy of the enforcement action, with all supporting documentation, and a brief synopsis of reasons for concluding that Air Force or its contractor is responsible for the statutory or regulatory violation.
2. If a civil fine or penalty is sought in connection with an alleged violation, Navy shall request that the regulatory agency provide a breakdown of the civil fine or penalty for each violation. Based upon the breakdown received, or the enforcement policies of the relevant agencies, Navy will identify to Air Force that portion of the civil fine or penalty that it believes is attributable to violations of law or regulation by Air Force or its contractors, along with a brief statement of reasons in support of that conclusion.
3. Navy will provide Air Force a reasonable opportunity to review and coordinate the proposed fine or penalty, and to participate in preparing any response to the enforcement action which involves Air Force operations, facilities, or contractors.
4. When there is an alleged Air Force violation, Navy will coordinate with Air Force all strategies to resolve enforcement actions, fines, or penalties, including negotiation and litigation.
5. Upon conclusion of an enforcement action, which results in the imposition of a fine or penalty for violations attributable to Air Force operations, facilities, or contractors, Navy will coordinate with Air Force to ensure the proper transfer to Navy of an amount equal to Air Force's attributable portion of the fine or penalty.
6. Air Force will transfer funds for all civil fines or penalties that are attributable to Air Force operations or facilities, or the operations or facilities of its contractors, as provided above. Air Force will provide Navy with timely comments or positions on the propriety of any enforcement action, including civil fines and penalties. Air Force will assist Navy as needed, in all efforts to resolve enforcement actions, including civil fines or penalties. Air Force will take appropriate action to correct the violation that led to, or contributed to, the enforcement action. Where resolution of civil fines or penalties involve implementation of supplemental

environmental projects (SEPs), Air Force will provide Navy with a list of all projects which may qualify as a SEP.

**K. MISCELLANEOUS**

1. Duration: This MOU will remain in effect unless terminated, in writing, by the mutual consent of the parties.
2. Changes: The parties will make changes to this MOU in writing and by mutual consent.
3. Dispute Resolution: Any disagreement which may arise regarding the terms of this MOU shall be elevated through respective command channels until resolved. All disagreements shall be resolved at the lowest level possible.

JAD McCou 2/25/97  
Deputy Assistant Secretary of the Air Force  
(Environment, Safety, and Occupational Health)

Eric L. Munsell 2/7/97  
Deputy Assistant Secretary of the Navy  
(Environment and Safety)

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**MEMORANDUM OF UNDERSTANDING (MOU)  
BETWEEN THE UNITED STATES AIR FORCE (USAF)  
AND THE UNITED STATES NAVY (USN)  
ON TRANSFER OF RESPONSIBILITY FOR  
CARSWELL AIR FORCE BASE (AFB), TEXAS**

The Department of Defense (DoD) recommended to the 1993 Defense Base Closure & Realignment Commission (DBCRC) that a DoD reserve area be established at Carswell AFB. In an 18 May 93 letter to DBCRC, signed by the acting Secretary of the Air Force and the acting Secretary of the Navy, it was agreed that the Navy Reserve would assume the responsibilities as host and operator of the airfield at Carswell AFB should the DoD recommendations to the DBCRC concerning Carswell AFB be adopted.

The purpose of this MOU is to establish an overarching agreement to be used to set the ground rules for the transition of responsibilities from the Air Force to the Navy. The agreement will establish general guidelines and a time table for the transfer of responsibilities. This MOU will ensure this transfer is implemented without interruption in services or mission degradations. We envision other MOUs being established between the Air Force and Navy covering the transfer of specific areas of responsibilities, such as Air Traffic Control Services.

Assuming the DoD recommendations to the DBCRC are adopted, and after the official closure of Carswell AFB on September 30, 1993, the Air Force Reserve will assume the responsibilities as host and operator of Carswell AFB until the Navy Reserve can assume the responsibilities. By mutual agreement, the Air Force Reserve will incrementally transfer host responsibilities to the Navy Reserve, with the final transfer of responsibilities targeted for 30 September 1994.

*Frank B. Kelso, Jr.*  
FRANK B. KELSO, Admiral, USN  
Acting Secretary of the Navy

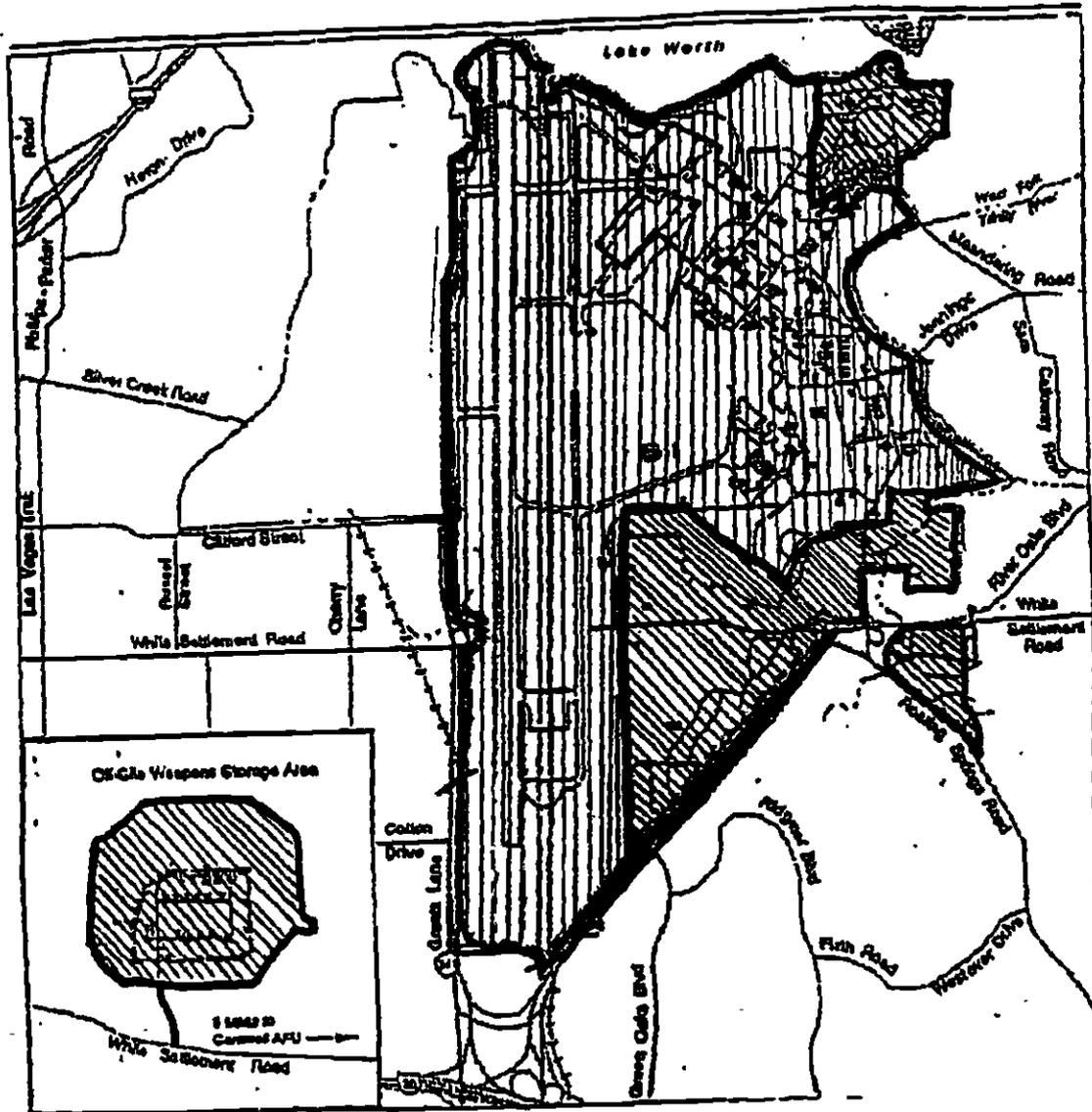
09 JUN 1993

*Michael B. Donley*  
MICHAEL B. DONLEY  
Acting Secretary of the Air Force

06 JUN 1993

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## NAVAL AIR STATION FORT WORTH JOINT RESERVE BASE (FORMER CARSWELL AIR FORCE BASE, TEXAS)



-  Proposed NAS Ft Worth Joint Reserve Base Cantonment Area
-  BRAC Area

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**MEMORANDUM OF UNDERSTANDING (MOU)  
BETWEEN THE UNITED STATES AIR FORCE (USAF)  
AND THE UNITED STATES NAVY (USN)  
ON THE TRANSFER OF RESPONSIBILITY FOR CARSWELL AIR FORCE BASE**

A Memorandum of Understanding (MOU) was signed by the acting Secretaries of the Air Force and Navy on 8 and 9 Jun 93 outlining the general terms under which the Air Force would transfer responsibility for Carswell Air Force Base (AFB) and the final target date of 30 September 1994 for the transfer of most responsibilities from the Air Force to the Navy.

The purpose of this document is to amend the above referenced 9 Jun 93 MOU transferring Carswell AFB from the Air Force to the Navy, to allow for the continuation of certain contract and caretaker cooperative agreement responsibilities for essential base support by the Air Force until the Navy can assume these responsibilities. Continued Air Force funding and administration of these essential base support contracts during the transition period will ensure the smooth transfer of Carswell AFB from the Air Force to the Navy without loss of operational capability or needed base services. The Air Force agrees to continue funding of the essential base contracts/caretaker support listed at attachment 1 until the Navy assumes these responsibilities, or October 1, 1995, whichever occurs first.

The Navy will assume most responsibilities at Carswell AFB on 1 October 1994, at which time the base will be recognized as Naval Air Station Fort Worth, Joint Reserve Base, Carswell Field (NAS Fort Worth). The Air Force will transfer all property within the DoD boundary area known as NAS Fort Worth to the Navy. The map at attachment 2 depicts the area to be transferred from the Air Force to the Navy. Also depicted on the map is an area to be permitted back to the Air Force for use by the Air Force Reserve (AFRES) and the Texas Air National Guard (TANG). The exact delineation of joint airfield activities within the permitted area and the use of other facilities by the AFRES and the TANG in the joint use area of NAS Fort Worth will be as agreed to locally and documented through local support agreements.

The Air Force accepts the responsibility for final remediation of all environmental conditions requiring action which are attributable to past Carswell AFB operations prior to 1 Oct 94. Prior to 1 Oct 95, the Air Force and Navy shall agree to final environmental program management responsibilities for these past conditions with the following goals:

(1) The Air Force and the Navy mutually agree to a set amount of funds required for final remediation of environmental compliance conditions. The Air Force will transfer the agreed funding amount to the Navy along with all environmental program management responsibilities.

(2) The Air Force and the Navy will continue to explore options for final remediation of environmental installation

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restoration conditions with an objective of a final decision on Air Force and Navy long term program management and funding responsibilities. Should an agreement not be reached by 1 Oct 95, the Air Force will retain environmental restoration program responsibilities, to include funding, until final remediation.

During the Navy's NAS Dallas to NAS Fort Worth transition period, the Commanding Officer, NAS Dallas will provide host oversight of NAS Fort Worth through the employment of a Navy Captain (06) as a site commander.

The AFRES civilian personnel billets excess to the 301st Fighter Wing (FW) and required by the Navy to support host functions at NAS Fort Worth, may be employed by the Navy beginning 1 October 1994. Reduction in force actions will be determined in accordance with appropriate civilian personnel regulations.

Identification of the specific support functions which will become the responsibility of the Navy as host of NAS Fort Worth will be based on applicable interservice support directives and policy decided at the local level.

The Navy and Air Force will continue to work cooperatively in the development of local support agreements which ensure continuity and full satisfaction of support requirements for all affected activities in Fiscal Year 1995 and beyond.

  
**PATRICK W. DAMERON, RADM, CEC, USN**  
Director, Facilities and Engineering  
Division (NCE)  
Office of the Chief of Naval  
Operations

9/23/94

  
**JAMES F. SCHRIEGER**  
Deputy Assistant Secretary  
of the Air Force  
(Installations)

9/23/94

Attachments:  
Contract listings  
Map

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CONTINUING AIR FORCE CONTRACTS

Category I: Contracts managed and paid by AFBCA from 1 Oct 94 to 1 Oct 95.

<u>Function</u>	<u>Cost (\$K)</u>
Building Maintenance	255
Electrical System Maintenance	86
Water/Waste Water System Maintenance	99
Heating and A/C System Maintenance	66
Natural Gas System Maintenance	84
Cathodic Protection System Maintenance	21
Fire Protection System Maintenance	40
Airfield Lighting Maintenance	81
Environmental Permit	2
Hazardous Waste Management	1
Spill Prevention and Response	1
UST Monitoring	1
Storm Water Runoff Monitoring	10
Oil/Water Separator Maintenance	16
Laboratory Sampling and Analysis	8
Potable Water Monitoring	20
Disaster Response	4
Road, Street, Parking Lot Maintenance	45
Airfield Pavement Maintenance	105
<b>Total AFBCA Expense</b>	<b>945</b>

Category II: Support contracts managed and paid by AFRES from 1 Oct 94 to 1 Oct 95

<u>Function</u>	<u>Cost (\$K)</u>
Transient Alert Contract	300
Telephone Switch Contract	324
Telephone Cable Plant Contract	158
<b>Total AFRES Expense</b>	<b>782</b>
<b>Total Category I and II Air Force Expense</b>	<b>\$1.727K</b>





Office of the Assistant Secretary

FEB 25 1996

MEMORANDUM FOR Deputy Assistant Secretary of the Navy  
(Environment and Safety)

FROM: SAF/MIQ

SUBJECT: Carswell/Fort Worth Environmental Cleanup (Your memo, same subject, 8 Feb 96)

The Air Force intends to meet its requirements as stated in the Memorandum of Understanding (MOU) between the Navy and the Air Force entitled "Transfer of Responsibility for Carswell Air Force Base" that was signed on 23 Sep 94.

As no agreement could be reached by the 1 Oct 95 deadline, we will assume both funding and management responsibilities for the cleanup of contamination at the former Carswell Air Force Base attributable to Air Force operations prior to 1 Oct 94. My intention is that this program be strictly developed and executed within the Air Force allocation under the Defense Environmental Restoration Program using the Defense Environmental Restoration Account or any subsequent cleanup program.

THOMAS W. L. MCCALL  
Deputy Assistant Secretary of the Air Force  
(Environment, Safety and Occupational Health)

cc:  
SAF/GCN  
AFBCA/DR  
AF/CEV

**MEMORANDUM OF UNDERSTANDING FOR ENVIRONMENTAL CLEANUP  
OF NAVAL AIR STATION FORT WORTH JOINT RESERVE BASE,  
CARSWELL FIELD**

19 June 1996

**1. PARTIES TO THIS AGREEMENT**

Headquarters United States Air Force - HQ USAF/CEV  
Air Force Base Conversion Agency - AFBCA  
Headquarters Air Force Center for Environmental Excellence - HQ AFCEE/ER  
Headquarters Air Force Materiel Command - HQ AFMC/CEV  
Headquarters Air Force Reserve - HQ AFRES/CEV  
Naval Air Station Fort Worth Joint Reserve Base - Environmental Office  
Naval Facilities Engineering Command - NAVFACENGCOM

**2. BACKGROUND**

On 8 and 9 June 1993, the Air Force and Navy signed a Memorandum of Understanding (MOU) (Attachment 1) outlining the general terms for the transfer of the former Carswell Air Force Base from the Air Force to the Navy. The parties amended the MOU on 23 September 1994 (Attachment 2). One objective of the amended MOU was that the Air Force and the Navy work toward agreement on long-term program management and funding responsibilities for the Carswell AFB restoration program. The amended MOU specified that unless the Air Force and Navy could reach agreement on joint cleanup of the installation, the Air Force would 'retain environmental restoration program responsibilities, to include funding, until final remediation.'" The Air Force and Navy were unable to reach such agreement. In a letter to the Deputy Assistant Secretary of the Navy dated 26 Feb 1996 (Attachment 3), Mr. Thomas McCall (SAF/MIQ) confirmed that the Air Force "will assume both funding and management responsibilities for the cleanup of contamination at the former Carswell AFB attributable to Air Force operations prior to 1 Oct 94." As such, SAF/GC specified that BRAC funds could not legitimately be used for environmental cleanup for these areas at the former Carswell AFB that may remain active. HQ USAF/CEV has assumed responsibility for management of the cleanup program at Carswell AFB within the Air Force allocation under the Defense Environmental Restoration Program (DERP) using the Defense Environmental Restoration Account (DERA). HQ USAF/CEV has chosen HQ AFCEE/ER to act as Major Command (MAJCOM) and sole service center for execution of the program.

The parties to this agreement have specific responsibility for cleanup of areas in and around the Naval Air Station (NAS) Fort Worth Joint Reserve Base (JRB), Carswell Field (formerly Carswell AFB). HQ USAF/CEV has responsibility for cleanup of sites within the boundaries of NAS Fort Worth JRB. AFBCA has responsibility for cleanup of sites outside the boundaries of NAS Fort Worth JRB. HQ AFMC/CEV has responsibility for

cleanup of Air Force Plant 4. It is the intent of this MOU to meld the various Air Force cleanup strategies into a single, coordinated Air Force program.

### **3. PURPOSE**

The purpose of this MOU is to specify the working relationship among all DoD parties involved in conducting the Installation Restoration Program (IRP) at NAS Fort Worth JRB. This MOU establishes the roles and responsibilities of each organization for managing all IRP projects at NAS Fort Worth JRB.

This agreement is limited to roles and responsibilities related to environmental cleanup. As such, it does not delineate the Air Force, Navy, or tenant obligations to maintain ongoing environmental compliance for NAS Fort Worth JRB.

**4. ROLES AND RESPONSIBILITIES** The following responsibilities are agreed to by the parties as they apply to IRP efforts at NAS Fort Worth JRB.

**a. HQ USAF/CEV** HQ USAF/CEV will provide funding to HQ AFCEE/ER for sites which require investigation or cleanup contaminated prior to 1 October 1994 which are listed in Appendix A, Listing of Sites and Areas of Concern. HQ USAF/CEV will provide funding for those sites listed in the appendix as "DERA" (which meet the DERA eligibility requirement of being contaminated prior to January 1984). For contamination within NAS Fort Worth JRB whose source is located outside NAS Fort Worth JRB, HQ USAF/CEV will seek an arrangement with the responsible or potentially responsible party, be it a party to this agreement or not, for an equitable division of funding and program responsibility for the contamination. Non-DERA-eligible sites (those sites contaminated after January 1984 and prior to 1 October 1994) will require other sources of Air Force funding. Currently all sites are believed to be DERA-eligible.

HQ USAF/CEV will also provide funding for manpower, Restoration Advisory Board (RAB) support, Management Action/Community Relation plan revisions and training as necessary to effect an efficient program. Funding will be distributed in accordance with the regulations and DERA program guidance (or subsequent program guidance) in effect at the time funding is provided. HQ USAF/CEV will also provide sufficient guidance to HQ AFCEE/ER for the proper execution of the program.

**b. AFBCA** AFBCA holds the corporate knowledge for the NAS Fort Worth JRB Base Realignment and Closure (BRAC) program. AFBCA will continue to manage the cleanup of sites outside NAS Fort Worth JRB. The sites are listed in Appendix A as "BRAC." For those sites within the area of NAS Fort Worth JRB, AFBCA will act in a support capacity to HQ AFCEE/ER and HQ USAF/CEV since the responsibility for cleanup of the majority of sites now rests with HQ USAF/CEV. AFBCA, through the BEC and Site Manager, will do the following:

1) Provide HQ AFCEE/ER with historical, programming and related documents and electronic files to facilitate a smooth transition of the IRP program. All records, reports and other IRP documentation relating to the NAS Fort Worth JRB shall be transferred to HQ AFCEE/ER as of 1 Oct 96. The local AFBCA office will provide other parties to this MOU with electronic data and reports relating to the investigation and/or cleanup of BRAC sites as they are produced if AFBCA is requested to do so.

2) Coordinate BRAC regulatory and public meetings with other parties to this MOU.

3) Coordinate BRAC investigative and/or cleanup activities having an impact on Navy activities, 301 Fighter Wing (FW) activities, the NAS Fort Worth JRB IRP or Air Force Plant 4 IRP.

4) Allow the Air Force and its IRP contractors to operate under permits which remain under the control of the local AFBCA office provided permit requirements are met. The local AFBCA office maintains a RCRA storage permit, a National Pollution Discharge Elimination System (NPDES) permit and a sanitary sewer discharge permit, among others.

5) Allow the Air Force and its IRP contractors the use of government equipment, property and office space under the control of AFBCA so that government cost-savings can be realized.

6) Coordinate BRAC projects with other parties to this MOU so that government resources are conserved. A goal of frequent communication shall be established to ensure a good working relationship with other parties to this MOU.

c. HQ AFCEE/ER HQ AFCEE/ER will act as MAJCOM and Service Center for the NAS Fort Worth JRB IRP and as such will assume the following responsibilities:

#### **1) MAJCOM RESPONSIBILITIES**

a) Appoint a Remedial Program Manager (RPM) in writing to execute all phases of the IRP for HQ USAF/CEV's sites.

b) Coordinate the NAS Fort Worth JRB IRP with regulatory agencies, the restoration advisory board (RAB) and other parties to this MOU.

c) Schedule, budget and set program resource priorities as well as establish project goals and completion schedules.

## **2) RPM RESPONSIBILITIES**

a) Execute the IRP strategy contained in the Management Action Plan and other execution plans. Load historical IRP data into HQ AFCEE's Installation Restoration Management Program Management System (IRPIMS) database as appropriate.

b) Ensure that the IRP complies with all applicable laws and regulations. Identifies cleanup criteria and accomplishes tasks in accordance with regulatory agreements.

c) Assume final approval authority as NAS Fort Worth JRB RPM on all technical matters for the NAS Fort Worth JRB IRP.

d) Coordinate IRP regulatory and public meetings with other parties to this MOU.

e) Maintain, as of 1 Oct 96, both the Administrative Record (AR) and the Information Repository (IR) for the NAS Fort Worth JRB IRP and former Carswell AFB (BRAC) programs. This is because the DERA program will be producing the bulk of AR/IR documentation in the future. The AFBCA local office will provide HQ AFCEE/ER with documents and electronic files for inclusion in the AR/IR as they are produced. HQ AFCEE/ER will provide other parties to this MOU with electronic data and reports relating to the investigation and/or cleanup of NAS Fort Worth JRB IRP sites as they are produced if HQ AFCEE/ER is requested to do so.

f) Coordinate IRP investigative and/or cleanup activities having an impact on Navy operations, 301 FW operations, former Carswell AFB (BRAC) sites or Air Force Plant 4 sites.

g) Coordinate IRP projects beneficial to other parties to this MOU so that government resources are conserved. A goal of frequent communication shall be established to ensure a good working relationship with other parties to this MOU.

## **3) SERVICE CENTER RESPONSIBILITIES**

a) Provide technical, legal, contracting and contract management support for the NAS Fort Worth JRB IRP.

b) Act as Air Force Contracting Officer's Representative (COR) for all IRP delivery orders. The RPM will develop IRP requirements and award and execute delivery orders with the assistance of HQ HSC/PKVB. The RPM will ensure that day-to-day operations by contractors are performed within the scope of work (SOW).

c) Provide oversight and technical direction of IRP field activities.

**d. HQ AFMC/CEV** Air Force Plant 4 contains a TCE plume site. Remediation of this plume and any other plume attributable to Air Force Plant 4 operations may impact the NAS Fort Worth JRB IRP and BRAC programs. The Air Force should strive to avoid duplication of program requirements and lessons learned. Therefore HQ AFMC/CEV will assume the following responsibilities:

- 1) Coordinate Air Force Plant 4 regulatory and public meetings with other parties to this MOU.
- 2) Coordinate Air Force Plant 4 investigative and/or cleanup activities having an impact on Navy activities, 301 FW activities, the NAS Fort Worth JRB IRP or former Carswell AFB (BRAC) program.
- 3) Provide other parties to this MOU with electronic data and reports relating to the investigation and/or cleanup of Air Force Plant 4 sites as they are produced if HQ AFMC/CEV is requested to do so.
- 4) Coordinate Air Force Plant 4 projects beneficial to other parties to this MOU so that government resources are conserved. A goal of frequent communication shall be established to ensure a good working relationship with other parties to this MOU.

**e. NAS Fort Worth JRB** The Navy will assume the responsibility of the following aspects of the NAS Fort Worth JRB IRP:

- 1) Restore all sites contaminated after 1 Oct 94 attributable to Navy operations on NAS Fort Worth JRB property.
- 2) Provide all contractor logistical support as documented in Interservice Support Agreements (base support letters) that are applicable to specific HQ AFCEE/ER IRP and BRAC delivery orders. The Navy shall also allow the Air Force and its IRP contractors to operate under permits which will eventually be under the control of NAS Fort Worth JRB provided permit requirements are met. The NAS Fort Worth JRB Public Works Officer and Resident Officer in Charge of Construction (ROICC) will coordinate with the HQ AFCEE/ER RPM on activities such as Navy construction which may use or disturb any NAS Fort Worth JRB IRP site.
- 3) Communicate frequently information on Navy projects pertinent to the NAS Fort Worth JRB IRP, BRAC or Air Force Plant 4 programs.
- 4) The Navy currently does not administer a cleanup program. In the event they do become responsible for any sites, the Navy shall provide other parties to this MOU with electronic data and reports relating to the investigation and/or cleanup of sites as they are produced if the Navy is requested to do so.

5) NAVFACENCOM will participate and be involved to the extent required with installation restoration planning, programming and execution to support the NAS Fort Worth JRB IRP.

**f. 301 Fighter Wing** The 301 FW (Air Force Reserve) will assume the responsibility of the following aspects of the NAS Fort Worth JRB IRP:

1) Provide all contractor logistical support as documented in base support letters that are applicable to specific HQ AFCEE/ER IRP and BRAC delivery orders. Generally this includes, if available, providing access to potable water, access to electrical hook-ups, providing parking for contractor work trailers, providing vehicle and personal passes, and clearing drilling locations. The 301 FW civil engineering office will coordinate with the HQ AFCEE/ER RPM on activities such as Air Force construction which may use or disturb any NAS Fort Worth JRB IRP site.

2) Communicate when necessary on 301 FW projects pertinent to the goals of or which may impact the NAS Fort Worth JRB IRP or BRAC or Air Force Plant 4 programs. A goal of frequent communication shall be established to ensure a good working relationship with other parties to this MOU.

3) Provide other parties to this MOU with electronic data and reports relating to the investigation and/or cleanup of NAS Fort Worth JRB sites as they are produced if the 301 FW is requested to do so.

4) Provide facilities on base for HQ AFCEE/ER staff on an as-needed basis.

**5. COMMUNICATION** Communication is critical to the success of any program. The parties to this MOU pledge themselves to full and open communication. In addition to specific entries under section 4, the following initiatives will be undertaken as part of this MOU:

a) RPMs will combine the RABs for Air Force Plant 4, NAS Fort Worth JRB IRP and former Carswell AFB (BRAC). Specific program elements will be discussed separately, but the same community members should be invited. The responsibility for government co-chairperson will rotate each meeting between Air Force Plant 4, NAS Fort Worth JRB and the former Carswell AFB (BRAC).

b) RPM meetings for NAS Fort Worth JRB IRP, Air Force Plant 4 IRP and former Carswell AFB (BRAC) programs will be scheduled as closely together as possible (preferably on the same day) to facilitate communication with regulators common to both programs.

c) All parties to this MOU are invited to attend any regularly-scheduled regulatory or RAB meetings in order to keep abreast of program developments. Adequate

notification of scheduled meetings shall be provided and meeting minutes shall be distributed to all parties to this agreement.

d) All parties to this MOU should strive to hold frequent management meetings to keep each other abreast of developments in or impacts to the NAS Fort Worth JRB IRP, and to discuss program execution.

e) Semi-annual coordination meetings shall be held by HQ AFMC/CEV, AFBCA and HQ AFCEE/ER. The purpose of the meetings shall be to review current and planned projects for Air Force Plant 4, NAS Fort Worth JRB and former Carswell AFB (BRAC) programs. Attendance at the meetings shall be limited to the Air Force Plant 4 RPM, the NAS Fort Worth JRB RPM, and AFBCA's on-site manager.

**6. DURATION OF AGREEMENT** This agreement will remain in effect unless terminated sooner by mutual consent of the parties.

**7. CHANGES** The parties will make changes to this agreement only by mutual consent.

681 150

Robert Walleit, Colonel(s), USAF  
HQ USAF/CEV

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Albert F. Lowas, Jr.  
Acting Director  
Air Force Base Conversion Agency

681 152

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Steven Boyce, LT COL, USAF  
HQ AFCEE/ER

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Jeff Munday  
HQ AFMC/CEVR

681 154

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Bob Efferson, Colonel, USAFR  
Commander  
301st FW

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Dale Williams, Lt. Colonel, USAF  
HQ AFRES/CEV

681 156

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Captain J. D. Cannon, USN  
Commanding Officer  
NAS Ft. Worth JRB

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Captain L.P. Scullion, CEC, USN  
Commanding Officer  
Southern Division  
Naval Facilities Engineering Command

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## APPENDIX A LISTING OF SITES AND AREAS OF CONCERN

SMWU	Name	IRP Site	Previous/Current Phase	Phase Complete	BRAC/DERA	OPR
1	Pathological Waste Incinerator		RFI	NFA	BRAC/DERA	OPR
					BRAC	AFBCA
2	Pathological Waste Storage Shed		RFI	NFA	BRAC	AFBCA
3	Metal Cans		RFI	NFA	BRAC	AFBCA
4	Facility Dumpsters		RFI	NFA	BRAC	AFBCA
5	B1628 Waste Accumulation Area				DERA	AFCEE
6	B1628 Wash Rack and Drain				DERA	AFCEE
7	B1628 OW Separator				DERA	AFCEE
8	B1628 Sludge Collection Tank				DERA	AFCEE
	B1628 Work Station Waste Accumulation Area				DERA	AFCEE
				NFA	DERA	AFCEE
10	B1617 Work Station Waste Accumulation Area			NFA	DERA	AFCEE
11	B1617 Waste Accumulation Area				DERA	AFCEE
12	B1619 Waste Accumulation Area				DERA	AFCEE
13	B1710 Waste Accumulation Area				DERA	AFCEE
14	B1060 Bead Blaster Collection Tray				DERA	AFCEE
15	B1060 Paint Booth Vault			NFA	DERA	AFCEE
16	B1060 Excess Accumulation Area				DERA	AFCEE
17	Landfill 7	LF-07			DERA	AFCEE
18	Fire Training Area 1	FT-08	PA/SI, RJ 1989	NFA	BRAC	AFBCA
19	Fire Training Area 2	FT-09	PA/SI, RI/FS, RA, ROD	Closing under TNRCC RRS 2	DERA	AFCEE
20	Waste Fuel Storage Tank	FT-08	PA/SI, RI/FS, RA, ROD		DERA	AFCEE
21	Waste Oil Tank	FT-08	PA/SI, RI/FS, RA, ROD		DERA	AFCEE
			PA, SI, RI/FS 1989, Limited RFI, RD planned 3rd quarter FY96			
22	Landfill 4	LF-04			BRAC	AFBCA
23	Landfill 5	LF-05	PA, SI, RI/FS 1989		BRAC	AFBCA
24	Waste Burnal Area	WP-07	PA/SA, RI/FS, IRA Aug 1991		BRAC	AFBCA
25	Landfill 8 West	LF-08			BRAC	AFBCA
26	Landfill 3	LF-03	PA, SI 1988		DERA	AFCEE
27	Landfill 10				DERA	AFCEE
28	Landfill 1	LF-01	PA, SI		DERA	AFCEE
29	Landfill 2	LF-02	PA, SI 1988		DERA	AFCEE
30	Landfill 9	LF-09			DERA	AFCEE
31	B1050 Waste Accumulation Area				DERA	AFCEE
32	B1410 Waste Accumulation Area				DERA	AFCEE
33	B1420 Waste Accumulation Area				DERA	AFCEE
34	B1194 Waste Accumulation Area				DERA	AFCEE
	B1194 Vehicle Refueling Shop OW Separation System				DERA	AFCEE
36	B1191 Waste Accumulation Area				DERA	AFCEE
	B1191 Vehicle Maintenance Shop				DERA	AFCEE
37	OW Separator				DERA	AFCEE
38	B1289 PCB Transformer Building				DERA	AFCEE
39	B1643 Waste Accumulation Area			NFA	DERA	AFCEE
					DERA	AFCEE
40	B1643 OW Separation System		TNRCC Review for NFA, pending Background Study		DERA	AFCEE
	B1414 OW Separation System				DERA	AFCEE
41	Aerospace Ground Equipment		TNRCC Review for NFA, pending Background Study		DERA	AFCEE

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## APPENDIX A LISTING OF SITES AND AREAS OF CONCERN

SMWU	Name	IRP Site	Previous/Current Phase	Phase Complete	BRAC/DERA	OPR
42	B1414 Waste Accumulation Area				DERA	AFCEE
43	B1414 Non-Destructive Inspection (NDI) Waste Accumulation Area			NFA	DERA	AFCEE
44	B1027 O/W Separation System at the Aircraft Washing Hangar		TNRCC Review for NFA, pending Background Study		DERA	AFCEE
45	B1027 Waste Oil Tank Vault at the Aircraft Washing Hangar				DERA	AFCEE
46	B1027 Waste Accumulation Area			NFA	DERA	AFCEE
47	B1015 Jet Engine Test Cell O/W Separator				DERA	AFCEE
48	B1048 Fuel System Floor Drains			NFA	DERA	AFCEE
49	Aircraft Washing Area No. 1				DERA	AFCEE
50	Aircraft Washing Area No. 2				DERA	AFCEE
51	B1190 Central Waste Holding Area				DERA	AFCEE
52	B1190 O/W Separation System		TNRCC Review for NFA, pending Background Study		DERA	AFCEE
53	Storm Water Drainage System	SD-10	PA/SI, RI/FS, RA, ROD		DERA	AFCEE
54	Storm Water Interceptors				DERA	AFCEE
55	East Gate Oil Water Separator				DERA	AFCEE
56	B1405 Waste Accumulation Area			NFA	DERA	AFCEE
57	B1432/1434 Waste Accumulation Area			NFA	DERA	AFCEE
58	Postcode Runoff Area	WP-11	PA/SI, RI		BRAC	AFBCA
59	B8503 WSA Waste Accumulation Area	OT-15			BRAC	AFBCA
60	B8503 Radioactive Waste Burial Site	OT-15	PA/SI, RI/FS, IRA Ongoing 1996		BRAC	AFBCA
61	B1320 Power Production Maintenance Facility Waste Accumulation Area		Verify this site is DERA		DERA	AFCEE
62	Landfill 6	LF-06	PA/SI, RI/FS 1994		DERA	AFCEE
63	Entomology Dry Well	OT-12	PA/SI, RI/FS	NFA	DERA	AFCEE
64	French Underdrain System	SD-13	PA/SI, RI/FS 1994, RA 1996	Closing under TNRCC RRS	DERA	AFCEE
65	WSA Deposal Site	OT-16	PA/SI, RI/FS 1987	NFA	BRAC	AFBCA
66	Sanitary Sewer System				BRAC/DERA	AFBCA/AFCEE
67	B1340 O/W Separator	SD-13	TNRCC Review for NFA, pending Background Study		DERA	AFCEE
68	POL Tank Farm	ST-14	PA/SI, RI/RA Treatability Study Ongoing	Closing under TNRCC RRS	DERA	AFCEE
AOC 1	B1518 Service Station	ST-18	PA/SA, RI/FS, Limited RFI, RAP Ongoing 1996		DERA	AFCEE
AOC 2	Airfield Groundwater Plume	OT-18	PA/SI		DERA	AFCEE
AOC 3	Waste Oil Dump	OP-17	PA/SI	NFA	DERA	AFCEE
AOC 4	Fuel Hydrant System		RA Dec 1995		DERA	AFCEE
AOC 5	Grounds Maintenance Yard		RFI 1996		BRAC	AFBCA
AOC 6	RV Storage Area		RFI Ongoing		DERA	AFCEE
AOC 7	Base Refueling Area		Need to verify what this is		DERA	AFCEE
AOC 8	SW Aerospace Museum		RFI 1996		BRAC	AFBCA
AOC 9	Golf Course Maintenance Yard		RA 1996		BRAC	AFBCA

APPENDIX A  
LISTING OF SITES AND AREAS OF CONCERN

SMWU	Name	IRP Site	Previous/Current Phase	Phase Complete	BRAC/DERA	OPR
AOC 10	B1064 O/W Separator		TNRCC Review for NFA, pending Background Study		DERA	AFCEE
AOC 11	B1060 O/W Separator		TNRCC Review for NFA, pending Background Study		DERA	AFCEE
AOC 12	B4210 O/W Separator		TNRCC Review for NFA, pending Background Study		DERA	AFCEE
AOC 13	B1145 O/W Separator		TNRCC Review for NFA, pending Background Study		DERA	AFCEE
AOC 14	Unnamed Stream	SD-13	PA, SI, R/FS 1994, R/FI 1996, RA planned 3rd quarter FY96		BRAC	AFBCA
AOC 15	B1190 Storage Shed				DERA	AFCEE
AOC 16	East Area GW	East Area GW	PA/SI		DERA	AFCEE
AOC 17	Fam Camp		PA/SI		BRAC	AFBCA
AOC 18	Landfill 8 (Golf Course Area) East	LF-08	Investigate for connection with Landfill 8 West		BRAC	AFBCA

Carswell AFB Und and Storage Tanks  
Active Tanks

Tank ID	Facility	Install	Gallons	Substance	Registered	Site Status	Comments	Navy/Air Force
1015-1	Eng Test Cell	1967	3000	JP-4	Yes		Upgraded 4-96	Navy
1027-0	Oil/Water Separator		3000	O/W	No	SWMU 44,45	Oil/Water Separator, Not a Tank!	Navy
1050-1	A/C Maint Hangar	1982	15000	Heating Oil	No		Exempt	Navy
1064-1	Vehicle Fueling Station	1988	10000	Diesel	Yes			Navy
1064-2	Vehicle Fueling Station	1988	10000	Diesel	Yes			Navy
1064-3	Vehicle Fueling Station	1988	10000	Mogas	Yes			Navy
1064-4	Vehicle Fueling Station	1988	10000	Mogas	Yes			Navy
1145-1	Auto Hobby Shop	1990	1000	O/W	No			Navy
1170-1	POL Pump Station	1961	2000	O/W	Yes	ST-13, ST-14	Should be 1168-1	Navy
1170-2	POL Pump Station	1961	2000	O/W	Yes	ST-13, ST-14	Should 1169-1	Navy
1191-2	Vehicle Maint Shop	1983	500	O/W	Yes		Conditionally exempt	Navy (AFRES)
1194-1	Refueling Maint Shop	1983	2000	O/W	Yes		Conditionally exempt	Navy (AFRES)
1420-1	AGE Shop	1983	2000	Heating Oil	No		Exempt	Navy
1423-1	Air Freight Terminal	1985	500	O/W	No			Navy
1425-1	Fire Station	1955	1000	Diesel	Yes			Navy
1628-4	Oil/Water Separator	1981	1000	O/W	Yes		Conditionally exempt	Navy (AFRES)
1643-1	301 A/C Maint Hangar	1982	8500	Heating Oil	No		Exempt	AF (AFRES)
1655-1	301 A/C Maint Shop	1991	550	O/W	Yes		Conditionally exempt	Navy (AFRES)
1656-1	301 A/C Maint Dock	1991	1000	N-Hydrazine	No			AF (AFRES)
3000-1	Hospital DEG	1985	15000	Diesel	Yes			AF (AFBCA)
3000-2	Hospital DEG	1985	15000	Diesel	Yes			AF (AFBCA)
3001-1	Hospital Boiler Fac	1958	10000	Diesel	Yes			AF (AFBCA)
3001-2	Hospital Boiler Fac	1959	20000	Heating Oil	No		Upgraded 5/96	AF (AFBCA)
3190-1	Youth Center	1980	2000	Heating Oil	No		Exempt	AF (AFBCA)
3359-1	Reserve Fire Team Fac	1979	2000	Diesel	Yes			Navy
3360-1	Electric Pwr Gen Plant	1978	5000	Diesel	Yes		Upgraded 4/96	Navy
4111-1	Electric Pwr Gen Plant	1979	500	Diesel	Yes		Upgraded 4/96	Navy
4127-1	Electric Pwr Gen Plant	1959	500	Diesel	Yes		Upgraded 5/96	Navy
4136-2	TACAN Station DEG	1991	300	Diesel	Yes		Upgraded 4/96	Navy
4141-1	Electric Pwr Gen Plant	1958	250	Diesel	Yes		Upgraded 4/96	Navy
4143-1	Comm Transmitter DEG	1964	500	Diesel	Yes		Upgraded 4/96	Navy
4145-1	Electric Pwr Gen Plant	1981	500	Diesel	Yes		Upgraded 4/96	Navy
4155-1	Airfield Lighting DEG	1955	1000	Diesel	Yes		Upgraded 4/96	Navy
4171-1	Electric Pwr Gen Plant	1976	5000	Diesel	Yes		Upgraded 4/96	Navy
4205-1	Rocket Assy Storage	1985	550	Slop	No		Floor drain holding tank	Navy
4210-4	Missile Assy Shop	1985	6000	Heating Oil	No		Exempt	Navy

Carswell AFB Und and Storage Tanks

Active Tanks

ID	Description	Year	Capacity	Contents	Active	Notes	Agency
4210-6	Missile Assy Shop	1985	1000	OW	No		Navy
4215-1	Special Weps Shop	1985	2000	Heating Oil	No		Navy
4216-1	Electric Pwr Gen Plant	1983	5000	Diesel	Yes	Exempt Upgraded 4/96	Navy

# CARSWELL AFB AST HISTORY

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8/17/95

Facility	Installed	Gallons	Substance	Registered	Registered	Status	Contain	REMARKS
Boat House		500	Mogas 7	N	N	4		Removed 7/93
233	74	250	Butane	N	N	1	N	
234	93	500	Mogas	N	N	1	Y	Double Wall Tank
234	93	500	Diesel	N	N	1	Y	Double Wall Tank
262	89	250	Mogas	N	N	1	Y	Curb
262	89	250	Diesel	N	N	1	Y	Curb
262	74	250	Propane	N	N	3	N	Disconnected, not in service
262	74	250	Propane	N	N	3	N	Disconnected, not in service
262	79	250	Propane	N	N	3	N	Disconnected, not in service
1000	89	275	Diesel	N	N	2	N	
1002	84	250	Diesel	N	N	2	N	Inside Bldg
1002	84	250	Diesel	N	N	2	N	Inside Bldg
1002	84	250	Diesel	N	N	2	N	Inside Bldg
1002	84	250	Diesel	N	N	2	N	Inside Bldg
1015	68	5000	CO2	N	N	2	N	
1026	93	5000	LOX	N	N	1	Y	Double Wall Tank
1026	90	2000	LN2	N	N	1	Y	Double Wall Tank
1026	85	400	LN2	N	N	1	Y	Double Wall Tank
1026	85	400	LN2	N	N	1	Y	Double Wall Tank
1027	86	5000	Detergent	N	N	2	Y	MILL 87916
1027	86	8000	Heating oil	N	N	2	Y	
1040	94	500	Diesel	N	N	1	Y	Double Wall Tank
1050	83	55	Diesel	N	N	2	N	22 KW DEG
1058	86	750	JP-8	N	N	1	N	JP-8 reclaim trailer
1058	86	750	JP-8	N	N	1	N	JP-8 reclaim trailer
1062	86	25	Diesel	N	N	1	N	10 KW DEG
1082	89	75	Diesel	N	N	1	N	100 KW DEG
1156	53	840000	JP-8	N	N	1	Y	Dike
1157	54	840000	JP-8	N	N	1	Y	Dike
1159	85	4920000	JP-8	N	N	1	Y	Dike
1161	87	2000	AFF	N	N	1	N	inside Bldg
1161	87	2000	AFF	N	N	1	N	inside Bldg
1170	89	75	Diesel	N	N	1	N	100 KW DEG, loc near 1189
1194	87	275	Waste oil	N	N	1	Y	Sandbag containment
1202	80	250	Propane	N	N	1	N	
1202	93	55	Various	N	N	1	N	4 Drums on cradles
1212	93	55	Various	N	N	1	N	4 Drums on cradles
1215	83	25	Diesel	N	N	1	N	6 KW DEG
1256	55	5000	Mogas	Y	Y	4		Removed 2/94
1259	42	11580	Mogas	Y	Y	4		Removed 2/94
1261	42	11580	Mogas	Y	Y	4		Removed 2/94
1263	50	11580	Diesel	Y	Y	4		Removed 2/94
1264	75	11580	Mogas	Y	Y	4		Removed 2/94
1265	42	11580	Mogas	Y	Y	4		Removed 2/94
1320		55	Various oils	N	N	4		Removed (6 drums)
1320	95	55	Various	N	N	1		10 drums on cradles
1418	84	50	Diesel	N	N	1	N	5 KW DEG
1423	89	100	Diesel	N	N	1	N	30 KW DEG, Inside Bldg

**CARSWELL AFB AST HISTORY**

8/17/95

Facility	Installed	Gallons	Substance	Regulated	Registered	Status	Contain	REMARKS
1425	88	37	Diesel	N	N	1	N	150 KW DEG, Inside Bldg
1425	91	100	Diesel	N	N	1	N	175 KW DEG
1504	90	25	Diesel	N	N	1	N	10 KW DEG
1510	86	275	Diesel	N	N	1	N	100 KW DEG
1658	83	55	Diesel	N	N	1	N	15 KW DEG
1631a	94	500	Mogas	N	N	1	Y	Double Wall Tank
1631b	94	2000	Diesel	Y	Y	1	Y	Double Wall Tank
1631c	94	4000	JP-8	N	N	1	Y	Double Wall Tank
1720	89	300	Diesel	N	N	1	N	80 KW DEG
1730	83	275	Diesel	N	N	1	N	100 KW DEG
1750	86	110	Diesel	N	N	2	N	650 KW DEG, removed 1994
1750	86	110	Diesel	N	N	2	N	650 KW DEG, removed 1994
1765	85	25	Diesel	N	N	2	N	40 KW DEG
1807	N/A		Chlorine	N	N	2	N	Swim Pool, cov pad Cl bottl
3000	87	275	Diesel	N	N	1	Y	950 KW DEG, Inside Bldg
3000	87	275	Diesel	N	N	1	Y	950 KW DEG, Inside Bldg
3001a	95	2000	Diesel	Y		0		Double wall tank
3001b	95	4000	Mogas	Y		0		Double wall tank
3106	N/A		Chlorine	N	N	3	N	Swim Pool, cov pad Cl bottl
4101	Unk	500	Diesel	N	N	4		Removed
4114	90	6	Diesel	N	N	1	N	Air field arresting gear engin
4114	90	6	Diesel	N	N	1	N	Air field arresting gear engin
4120	90	6	Diesel	N	N	1	N	Air field arresting gear engin
4120	90	6	Diesel	N	N	1	N	Air field arresting gear engin
4141	83	25	Diesel	N	N	1	N	15 KW DEG, Inside Bldg
4141	83	25	Diesel	N	N	1	N	15 KW DEG, Inside Bldg
4146	92	2500	JP-8	N	N	1	Y	Trailer
4150	88	275	Diesel	N	N	2	N	150 KW DEG
4152	88	275	Diesel	N	N	2	N	150 KW DEG
4153	88	275	Diesel	N	N	2	N	150 KW DEG
4154	88	275	Diesel	N	N	2	N	150 KW DEG
4156	86	30	Diesel	N	N	1	N	200 KW DEG, Inside Bldg
4155	86	275	Diesel	N	N	1	N	150 KW DEG
4175	84	275	Diesel	N	N	2	N	135 KW DEG
4205	84	5000	CO2	N	N	2	N	
8503	89	1000	Propane	N	N	2	N	
8503	89	1000	Propane	N	N	2	N	

NOTE:		
STATUS	1	Facility Active
	2	Facility Inactive
	3	Tank Disconnected, but still at facility
	4	Tank and/or facility removed

This list contains all above ground "Tanks" including LPG, CO2 and small aay tanks

August 2, 1996

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MEMORANDUM

**SUBJECT:** Major Source Determinations for Military Installations under the Air Toxics, New Source Review, and Title V Operating Permit Programs of the Clean Air Act (Act)

**FROM:** John S. Seitz, Director /s/  
Office of Air Quality Planning and Standards (MD-10)

**TO:** See Addressees

Purpose of Guidance

The purpose of this memorandum is to provide guidance on implementing the section 112 air toxics, title I (Part D) nonattainment new source review (nonattainment NSR), title I (Part C) prevention of significant deterioration (PSD), and title V operating permit programs with regard to "major source" determinations at Federal military installations. (The nonattainment NSR and PSD programs together are hereafter referred to as the new source review (NSR) program.) The attachment to this memorandum, entitled "Guidance for Major Source Determinations at Military Installations under the Air Toxics, New Source Review, and Title V Operating Permit Programs of the Clean Air Act (Act)," outlines today's guidance in greater detail.

For the purposes of this guidance, the term "military installation" refers to a stationary source, or group of stationary sources, located on one or more contiguous or adjacent properties that are owned, operated, supervised, or controlled by one or more Department of Defense (DOD) components which include the military services, the defense agencies, and the National Guard. (Defense agencies are components of the DOD that are established by the Secretary of Defense to perform a supply or service activity common to more than one military department. For example, the Defense Finance and Accounting Service handles the payroll for all the military services.) This definition of the term military installation has been developed solely for the purpose of providing a starting point in the analytical process for making major source determinations that is described in this guidance. It is not intended to be equivalent to the term "major source."

Background

In recent months, the requirement for sources to prepare and submit title V operating permit applications has led to greatly increased interest in understanding how to make "major source" determinations. At issue are questions about which pollutant-emitting activities at stationary sources must be aggregated for the purpose of determining the applicability of emission control and permitting requirements under the Act.

In particular, given the wide variety of functions performed at military bases and the array of "control" arrangements associated with them, the DOD has requested that the Environmental Protection Agency (EPA) issue guidance addressing how determinations of major sources may be made at military installations. Compared to most industrial sources, military installations include a wider variety of functions and activities including residential housing, schools, churches, recreational parks, shopping centers, industrial operations, training ranges, airports, gas stations, utility plants, police and fire departments, and hospitals. In addition, military installations include a variety of tenant activities, including other DOD service, non-DOD Federal agency, contractor, and leased commercial activities.

Section 118(a) of the Act states that each department, agency, and instrumentality of the Federal government is subject to and must comply with all Federal, State, and local requirements in the same manner and to the same extent as any nongovernmental entity. The EPA believes that the effect of today's guidance is to assure that military installations are treated consistently with how the Agency's regulations and policies are applied at nonmilitary stationary sources.

### Summary of Guidance

#### Common Control Determinations

When making major source determinations at a military installation, the Agency believes it is appropriate to consider pollutant-emitting activities that are under the control of different military services not to be under common control. In other words, all pollutant-emitting activities at an installation under the control of the Army could be considered under separate control from those activities "owned or operated" by the Navy, the Air Force, or the Marine Corps. In addition, activities under the control of the National Guard may be considered under separate control from activities under the control of military services, as can activities under the control of the defense agencies; however, the defense agencies are considered under common control with each other.

While separate military controlling entities may be treated as under separate control, determinations for military installations should be made on a case-specific basis after examining the operations and interactions at those sites. Consequently, there may be situations in which the air pollution control agency or the permitting authority determines that it is appropriate to consider a military installation a single source, notwithstanding the presence of multiple controlling entities at that military installation. Nothing in this guidance precludes such a finding by an agency or permitting authority.

In general, leased activities at military installations may be considered under separate control from activities under the control of the military controlling entities at that installation. These leased activities would be considered "tenants" on military bases. In contrast, contract-for-

service (or contractor-operated) activities at military installations usually would be considered under the control of the military controlling entity that controls the contract. Thus, leased activities may be considered under common control when they also have a contract-for-service relationship to provide goods or services to a military controlling entity at that military installation. Given the variety and complexity of leased and contract-for-service activities at military bases, the Agency expects that case-by-case determinations will often be necessary for such situations.

### Industrial Grouping and Support Facility Determinations

Historically, all activities at a military installation have been grouped under the Standard Industrial Classification (SIC) Manual Major Group 97, "National Security and International Affairs" (or, more specifically, within Major Group 97, Industry Number 9711, "National Security"). Upon evaluating the application of the SIC-code approach to classifying military installations, the EPA has determined that Major Group 97 is inappropriate for major source determinations at some military installations. In these instances, the 97 Major Group inappropriately aggregates activities at a military installation with the result that portions of the installation could be subject to requirements under the Act that would not otherwise apply if a comparable source determination were made as if for a nonmilitary facility.

The EPA believes it is appropriate to think of military installations as combinations of functionally distinct groupings of pollutant-emitting activities that may be identified and distinguished the same way that industrial and commercial sources are distinguished, that is, on the basis of a "common sense notion of a plant." Thus, the following approach may be used to determine how military facilities should be aggregated in making major source determinations: the "industrial groupings" at a military installation may be assigned appropriate 2-digit SIC codes (as if they were nonmilitary facilities) and classified into "primary" and "support" activities. As is now done for nonmilitary sources, support activities at military bases would be aggregated with their associated primary activity regardless of dissimilar 2-digit SIC codes.

The EPA also believes that certain personnel-related activities at military installations may appropriately be considered not to be support facilities to the primary military activities of a base and, therefore, they can be considered separate sources. Examples of these types of activities include residential housing, schools, day care centers, churches, recreational parks, theaters, shopping centers, grocery stores, gas stations, and dry cleaners. These activities may be treated as separate sources for all purposes for which an industrial grouping distinction is allowed, but they should be separately evaluated for common control, SIC code, and support facility linkages to determine if a major source is present.

### Title V Permitting

After determining that stationary sources at a military installation are subject to title V permitting, permitting authorities have discretion to issue more than one title V permit to each major source at that installation, so long as the collection of permits assures that all applicable requirements would be met that otherwise would be required under a single permit for each major source. In other words, all stationary sources that are subject to title V permitting within a major source must be covered by one of these permits, and a major source may not be divided in

a way that changes how it would be subject to or comply with applicable requirements compared with what would otherwise occur if a single title V permit were issued to that major source.

Permitting authorities may accept multiple permit applications from each major source, provided that each permit application is certified by a responsible official who is selected in accordance with the requirements of 40 CFR 70.2 or 71.2. The EPA recommends that military controlling entities that wish to obtain multiple title V permits for major sources under their control meet with their permitting authorities well in advance of permit application submission deadlines to discuss how their major sources may be divided to receive separate title V permits. Where military installations have already filed title V permit applications and these submittals are being processed for permit issuance, these applications should be reevaluated in light of the approaches described in this guidance, if appropriate.

### Effect of Guidance

This guidance explains the EPA's interpretations of what is minimally required under its regulations; it is not intended to supersede or replace more stringent approaches taken by any particular agency or permitting authority. State and local agencies may choose to implement the approaches described here, or they may exercise their discretion to implement more stringent approaches provided there is a rational basis for the treatment of military installations compared with other types of facilities. The EPA recommends that military installations consult with their permitting authorities to determine the application of this guidance to their installations.

For major stationary source determinations under the NSR program, this guidance applies prospectively only and it does not affect any preexisting major source determination made by a permitting authority (e.g., one that resulted in the issuance of a major NSR permit or one that resulted in a determination that major NSR was not applicable). Such determinations generally would continue to be valid, provided they were made in accordance with relevant State and Federal requirements that applied at the time they were made.

The interpretations and policies set forth in this document are intended solely as guidance, do not represent final Agency action, and cannot be relied upon to create rights enforceable by any party. The EPA will continue to evaluate the need for guidance on major source determinations for military installations and may issue additional guidance in the future.

### Distribution/Further Information

The Regional Offices should send this memorandum, including the attachment, to State and local air pollution control agencies within their jurisdictions. Regional Offices should distribute these materials promptly because title V permit application deadlines are approaching for military installations in numerous locations. Questions concerning specific issues and cases should be directed to the appropriate Regional Office. In addition, copies of cited materials that are not otherwise readily available may be obtained from the air permitting contacts at the Regional Offices. Regional Office staff may contact Michele Dubow of the Integrated Implementation Group at (919) 541-3803. This document is also available on the technology transfer network (TTN) bulletin board, under "Clean Air Act" - "Title V" - "Policy Guidance

Memos." (Readers unfamiliar with this bulletin board may obtain access by calling the TTN help line at (919) 541-5384.)

Attachment

Addressees:

Director, Office of Ecosystem Protection, Region I  
Director, Division of Environmental Planning and Protection,  
Region II  
Director, Air, Radiation and Toxics Division, Region III  
Director, Air, Pesticides and Toxics Management Division, Region IV  
Director, Air and Radiation Division, Region V  
Director, Multimedia Planning and Permitting Division, Region VI  
Director, Air, RCRA, and TSCA Division, Region VII  
Assistant Regional Administrator, Office of Pollution Prevention,  
State and Tribal Assistance, Region VIII  
Director, Air and Toxics Division, Region IX  
Director, Office of Air, Region X

cc: Air Branch Chiefs, Regions I-X  
Regional Air Toxics, NSR, and  
Title V Contacts, Regions I-X  
Michele Dubow (MD-12)  
Bruce Jordan (MD-13)  
Bob Kellam (MD-12)

## ATTACHMENT

Guidance for Major Source Determinations at Military  
Installations under the Air Toxics, New Source Review,  
and Title V Operating Permit Programs of the  
Clean Air Act (Act)

I. Introduction

The relevant programs to which this guidance applies are the section 112 air toxics, title I (Part D) nonattainment new source review (nonattainment NSR), title I (Part C) prevention of significant deterioration (PSD), and title V operating permit programs. (The nonattainment NSR and PSD programs are hereafter referred to collectively as the new source review (NSR) program.) Regulations implementing these programs are found, respectively, in 40 CFR parts 63, 51 and 52, and 70 and 71.<sup>1</sup> This guidance explains the Environmental Protection Agency's (EPA) interpretation of what is minimally required under these regulations; it is not intended to supersede or replace more stringent approaches taken by any particular air pollution control agency or permitting authority provided there is a rational basis for the treatment of military installations compared with other types of facilities. The EPA recommends that military installations consult with their agencies or permitting authorities to determine the application of this guidance to their installations.

For the purposes of this document, the term "military installation" refers to a stationary source,<sup>2</sup> or group of stationary sources, that are located on one or more contiguous or adjacent properties that are owned, operated, supervised, or controlled by one or more Department of Defense (DOD) components which include the military services, the defense agencies, and the National Guard.<sup>3</sup>

The interpretations and policies set forth in this document are intended solely as guidance, do not represent final Agency action, and cannot be relied upon to create rights

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<sup>1</sup> The use of this guidance in determining what constitutes a major source does not affect the scope of what constitutes a "Federal action" for the purposes of the General Conformity Rule (40 CFR 93.150-160).

<sup>2</sup> The term "stationary source" is used here with its meaning under 40 CFR part 70: "any building, structure, facility, or installation that emits or may emit any regulated air pollutant or any pollutant listed under section 112(b) of the Act." § 70.2 "Stationary source."

<sup>3</sup> This definition has been developed solely for the purpose of providing a starting point in the analytical process for making major source determinations that is described in this guidance. It is not intended to be equivalent to the term "major source," nor is it used to define the "source" that is the basis for a major source determination at a military facility. (See footnote 4 for an explanation of how the term "source" is used in this document in relation to major source determinations.)

enforceable by any party. Furthermore, this guidance applies prospectively only for major stationary source determinations under the NSR program and it does not affect any preexisting major source determination made by a permitting authority (e.g., one that resulted in the issuance of a major NSR permit or one that resulted in a determination that major NSR was not applicable). Such determinations generally would continue to be valid, provided they were made in accordance with the relevant State and Federal requirements that applied at the time they were made.

## II. Background

Many stationary source requirements of the Act apply only to "major sources" (or "major stationary sources" as they are defined under the NSR program). Therefore, the determination of whether a stationary source, or group of stationary sources considered together, is a major source is critical to determining whether a particular requirement under the Act applies to that "source."<sup>4</sup>

Major sources (or major stationary sources) are those stationary sources that emit or have the potential to emit air pollutants in excess of threshold emission levels specified in the Act (or established by regulation by the EPA) and that meet other criteria defined by regulation.

The definitions that appear in parts 51, 52, 63, 70, and 71 consider a stationary source, or group of stationary sources considered together, to be a major source if the stationary source (or group of stationary sources) is located on one or more contiguous or adjacent properties and is under "common control" of the same person (or persons under common control).<sup>5,6</sup> In making major source determinations under the relevant programs, sources and permitting authorities generally would, first, determine which pollutant-emitting activities that are located on one or more contiguous or adjacent properties are under common control of the same persons (or

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<sup>4</sup> "Source" is not a defined term in the EPA's regulations for the programs addressed by this guidance. It is used in today's guidance to refer generically to the collection of pollutant-emitting activities (i.e., to the stationary source or group of stationary sources considered together) that, when aggregated appropriately under the regulations and policy of a particular program, forms the basis for the "major source" determination. Depending upon the context, "source" also is used here as it is colloquially to refer to entire facilities or plant sites that emit air pollutants.

<sup>5</sup> In addition, for making major source determinations under NSR and title V, these programs provide that sources can be aggregated on the basis of industrial groupings and support facility relationships, but this approach is not available under the section 112 air toxics regulations. This topic is addressed in the next section of this guidance.

<sup>6</sup> The EPA believes that Congress intended the term "located within a contiguous area," as it is used to define major source in section 112 and 40 CFR 63.2, to have the same meaning as the term "located on one or more contiguous or adjacent properties," as it is used to define major source in 40 CFR 70.2. The Agency's policy on the meaning of "contiguous or adjacent" property was addressed in the preamble to the proposed General Provisions for part 63 (58 FR 42767, August 11, 1993). The Agency interprets and applies this term the same way under the air toxics, NSR, and title V programs.

persons under common control)<sup>7</sup> and, second, determine whether the initial "source" may be disaggregated into two or more "sources" based on appropriate industrial groupings and support facility relationships.

### III. Guidance for Military Installations

#### A. Common Control Determinations

##### 1. Activities Under the Control of Different Military Services, Defense Agencies, or the National Guard

#### Applicability:

Section 112, NSR, and title V.

#### Summary:

Pollutant-emitting activities under the control of the following entities may be considered under separate control when making major source determinations at military installations: the Army, the Navy, the Air Force, the Marine Corps, the National Guard, and the defense agencies taken collectively (i.e., all the defense agencies at a military installation would be considered under common control).

#### Discussion:

Because "control" of all Executive Branch entities resides with the Office of the President, a literal approach to determining common control would result in a finding of common control among every Federal government entity not in the Judicial or Congressional branches. To the EPA's knowledge, this has never been the EPA's practice. Similarly, a literal approach to determining common control at military installations would result in a finding of common control among all the DOD components at an installation. While such an approach has been taken in the past, the EPA believes it is appropriate to settle on an approach to common control for the military that is reasonable as the minimum approach required to implement the relevant Clean Air Act requirements.

There are four separate military services within the DOD: the Army, the Navy, the Air Force, and the Marine Corps. The administrative functions of these services, including

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<sup>7</sup> This step is sometimes referred to as a "site determination." It may also be referred to as an initial "source" determination.

management control over facility operations, are the province of the separate military services. Effectively, there is no "control" relationship among these services regarding facility operation below the Secretary of Defense. In addition, there are a number of defense agencies and defense field activities established by the Secretary of Defense as necessary to perform a supply or service activity common to more than one military department. Overall supervision of each agency or field activity is assigned to the Office of the Secretary of Defense or to the Chairman of the Joint Chiefs of Staff.

National Guard units have a dual mission: while Army and Air National Guard units are reserve components of the U.S. Army and U.S. Air Force, the National Guard is also the official State militia of individual States and is under the control of the State governors unless called to active Federal duty. State Guard units support the Federal missions of the Army and Air Force and use Federal resources to meet these missions; however, Army and Air Guard commanders report to a State's Adjutant General, who is appointed by the governor of the State.

When different military services control separate groups of pollutant-emitting activities at a single military installation, the Agency believes it is appropriate to consider these activities not to be under common control when making major source determinations. In other words, all pollutant-emitting activities at a military installation under the control of the Army could be considered under separate control from those activities "owned or operated" by the Navy, the Air Force, or the Marine Corps. In addition, activities under the control of the National Guard may be considered under separate control from activities under the control of the military services, as can activities under the control of the defense agencies; however, as mentioned above, the defense agencies are considered under common control with each other.

Because the National Guard is controlled by States, the EPA believes it is appropriate to treat National Guard units located at military installations as being under separate control from the military services. Moreover, because the States may vary in the control relationships between Air and Army National Guard units, the EPA believes that control determinations for Air and Army National Guard units that are present together at a military installation should be made by permitting authorities.

Hereafter, for the purposes of this guidance, the term "military controlling entities" is used to refer to the controlling entities at a military installation that are considered under separate control. Figure 1 includes a complete list of the military controlling entities that may be considered under separate control under this guidance. Figure 2 includes a complete list of the defense agencies that are considered under common control with each other.

Under this approach, all portions of a military installation under the control of a military controlling entity are considered to be under common control regardless of their actual contiguity at that military installation, i.e., regardless of whether they share a reasonably continuous border. In other words, at this stage of the major source determination process, all portions of an installation that are part of a separate military service, the National Guard, or one or more

defense agencies taken together are considered the same "source" on the basis of being located on the same property or on contiguous or adjacent properties.

Nevertheless, while separate military controlling entities may be treated as under separate control, determinations for military installations should be made only after examining the specific operations and interactions at those sites. Consequently, there may be situations in which the air pollution control agency or the permitting authority determines that it is appropriate to consider a military installation a single "source," notwithstanding the presence of multiple controlling

# TAB

Appendix E

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**APPENDIX E**  
**DRAFT MAP/BCP**  
**FORMER CARSWELL AIR FORCE BASE**

**APPENDIX E**

**MANAGEMENT ACTION PLAN/BRAC CLOSURE PLAN OUTLINE**

**FORMER CARSWELL AFB**

This Draft MAP/BCP is designed to fulfill the requirements of both a MAP for the IRP and a BCP for the BRAC program. A MAP and a BCP are similar in that both are intended to summarize the status of an installation's environmental restoration and compliance programs and discuss the overall strategy for environmental restoration and related compliance activities. Both types of reports define efforts to resolve technical issues and strategies, action items, and schedules for environmental restoration activities leading to property disposal and reuse.

Although the recommended outlines for a MAP and a BCP are similar, there are some variations. The outline for this Draft MAP/BCP is a hybrid that seeks to provide the information required for both the IRP and BRAC programs as they apply to the former Carswell AFB. Presented below is an outline indicating the differences between the recommended outlines for a MAP and a BCP. Specifically, the outline follows the format suggested in the June 1995 "Management Action Plan (MAP) Guidebook Update," and has been expanded to incorporate necessary elements of a BCP. These BCP elements were drawn from the BCP outline recommended in the Fall 1995 "BRAC Cleanup Plan Guidebook."

Although the suggested outlines for the MAP and the BCP are similar, the highlighted items (sections, figures, tables) represent additional elements that would be required to satisfy the requirements of a BCP. All other items in the outline are required by either the MAP or both the MAP and the BCP. Strikethrough text has been used to indicate sections that were, based on discussions with AFCEE and the AFBCA, removed from the combined outline. For example, because the Navy is responsible for environmental compliance issues, those sections of the MAP and BCP outlines that pertain to compliance have been omitted. Please note that the Draft MAP/BCP prepared by HydroGeoLogic differs from this outline in several areas due to the specific requirements of this site.

**MANAGEMENT ACTION PLAN/BRAC CLOSURE PLAN OUTLINE**  
**FORMER CARSWELL AFB**

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<sup>†</sup> The information to be presented in Section 2.2 has been well established in previous reports and can be addressed in an abbreviated format.

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*Table: Projected Restoration Program Cost Requirements*

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*Table: Site Deliverables*

*Table: Service-Specific Table*

**Appendix C Decision Documents/ROD Summaries****Appendix D No Further Response Action Planned (NFRAP) Summaries****~~Appendix E Conceptual Model Data Summaries~~**

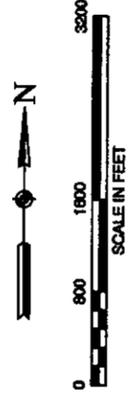
Figure 3.1

### Former Carswell Air Force Base SWMU/AOC Locations

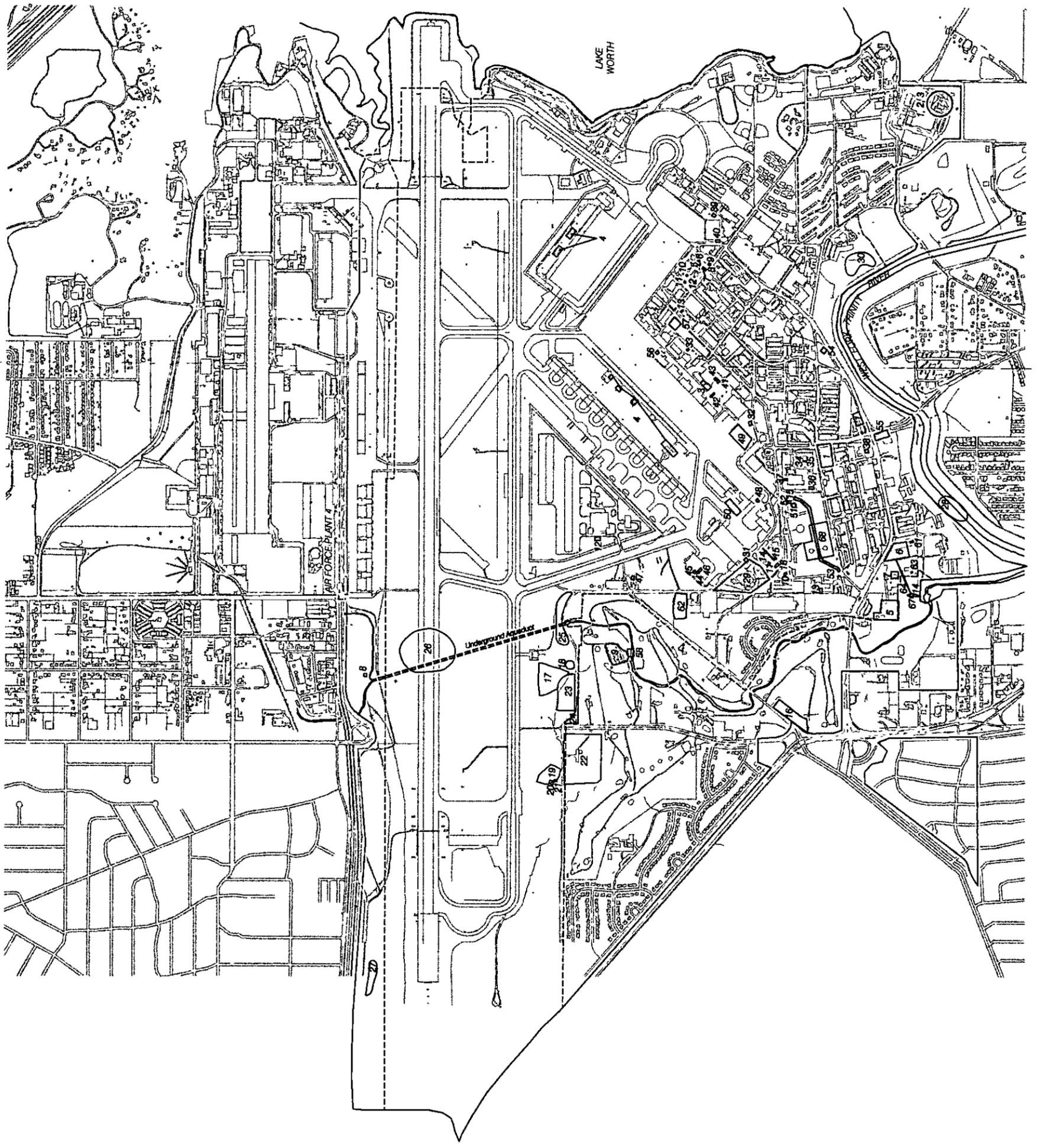
#### LEGEND

- NAS Fort Worth JRB
- Former Carswell Air Force Base
- ~ Surface Water
- 1 [ ] Area of Concern (AOC)
- 68 [ ] Solid Waste Management Unit (SWMU)
- 18 ○ SWMUs Designated as No Further Action (NFA)
- 30 [ ] AOCs Designated as No Further Action (NFA)

NOTES: SWMU 4 refers to dumpsters located throughout site  
 SWMUs 60, 60 and 65 are located at the Off-Site Weapons Storage Area  
 SWMU 66 refers to sanitary sewers located throughout site  
 AOC 2 refers to TCE groundwater plume portrayed in Figure 3.2



Filename: AFCEE\NAS Ft Worth\MgmtActionPlan\SWMU-AOC.dwg  
 Revised: 01/29/98  
 Project: AFC001-DOS  
 Map Source: Jacobs, 1996



**Table B.1**  
**Site Deliverables**

<b>SWMU/AOC</b>	<b>Site ID</b>	<b>PA/SI or RFA</b>	<b>RI/FS or RFI/CMS</b>	<b>RD/RA or CMI</b>	<b>LTM or O&amp;M</b>	<b>Closeout or Closure</b>
SWMU 1	NA	X	X	X		X
SWMU 2	NA	X	X	X		X
SWMU 3	NA	X	X	X		X
SWMU 4	NA	X	X	X		X
SWMU 5	SS002	X	X	@		
SWMU 6	SD016	X	@			
SWMU 7	SD000	X	X	@		
SWMU 8	SD014	X	X	@		
SWMU 9	NA	X	X	X		X
SWMU 10	NA	X	X	X		X
SWMU 11	SS003	X	X	@		
SWMU 12	SS004	X	X	@		
SWMU 13	SS005	X	X	@		
SWMU 14	NA	X	X	X		X
SWMU 15	NA	X	X	X		X
SWMU 16	SS006	X	X	@		
SWMU 17	LF005	X	@		@	
SWMU 18	NA	X	X	X		X
SWMU 19	FT001	X	X	X	@	@
SWMU 20	FT001	X	X	X	@	@
SWMU 21	FT001	X	X	X	@	@
SWMU 22	NA	X	@	@		
SWMU 23	NA	X	@	@		
SWMU 24	NA	X	@	@		
SWMU 25	LF006	X	@			
SWMU 26	LF003	X	X		@	
SWMU 27	LF008	X	@			
SWMU 28	LF001	X	X		@	
SWMU 29	LF002	X	@			
SWMU 30	LF007	X	@			
SWMU 31	SS007	X	X	@		
SWMU 32	SS008	X	X	@		
SWMU 33	SS009	X	X	@		
SWMU 34	SS010	X	X	@		
SWMU 35	SD002	X	X	@		
SWMU 36	SS011	X	X	X		
SWMU 37	SD003	X	X	X		
SWMU 38	NA	X	X	X		X
SWMU 39	SS012	X	X	@		
SWMU 40	SD004	X	X	@	@	
SWMU 41	SD005	X	X	@	@	
SWMU 42	SS012	X	X	@		
SWMU 43	NA	X	X	X		X
SWMU 44	SD006	X	X	@		
SWMU 45	SD015	X	X	@		
SWMU 46	NA	X	X	X		X

**Table B.1 (continued)**  
**Site Deliverables**

SWMU/AOC	Site ID	PA/SI or RFA	RI/FS or RFI/CMS	RD/RA or CMI	LTM or O&M	Closeout or Closure
SWMU 47	SD007	X	X	@		
SWMU 48	NA	X	X	X		X
SWMU 49	SD017	X	@			
SWMU 50	SD018	X	@			
SWMU 51	SS014	X	X	@		
SWMU 52	SD008	X	X	@	@	
SWMU 53	SD019	X	@			
SWMU 54	SD020	X	@			
SWMU 55	SD009	X	X	@		
SWMU 56	NA	X	X	X		X
SWMU 57	NA	X	X	X		X
SWMU 58	NA	X	X	X		@
SWMU 59	NA	X	X	@		
SWMU 60	NA	X	X	X		@
SWMU 61	SS015	X	X	@		
SWMU 62	LF004	X	@			
SWMU 63	NA	X	X	X		X
SWMU 64	ST003	X	X	X	@	
SWMU 65	NA	X	X	X		X
SWMU 66	WP001	X	@			@
SWMU 67	ST003	X	X	@		
SWMU 68	ST001	X	X	X	@	
AOC 1	ST004	X	X	X	@	@
AOC 2	WP002	X	@		@	
AOC 3	NA	X	X	X	@	X
AOC 4	ST005	X	X	X	@	
AOC 5	NA	X	@			@
AOC 6	SS001	X	@			
AOC 7	ST002	X	X	@		
AOC 8	NA	X	X	X		@
AOC 9	NA	X	X	X	@	@
AOC 10	SD010	X	X	@		@
AOC 11	SD011	X	X	@		@
AOC 12	SD012	X	X	@		@
AOC 13	SD013	X	X	@		@
AOC 14	NA	X	X	@		
AOC 15	SS016	X	X	@		
AOC 16	NA					

**Notes:**

X:	Phase has been completed	@:	Current phase
CMI:	Corrective Measures Implementation	PA/SI:	Preliminary Assessment/Site Inspection
LTM:	Long-Term Monitoring	RD/RA:	Remedial Design/Remedial Action
NA:	Not Applicable	RFA:	RCRA Facility Assessment
O&M:	Operation and Maintenance	RFI/CMS:	RCRA Facility Investigation/Corrective Measures Study
		RI/FS:	Remedial Investigation/Feasibility Study

Source: AFCEE Estimated Schedule to Complete NAS Fort Worth JRB; AFBCA Carswell AFB Compliance Schedule

**FINAL PAGE**

**ADMINISTRATIVE RECORD**

**FINAL PAGE**