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INSTALLATION RESTORATION PROGRAM RECORDS SEARCH

For
Dobbins Air Force Base, Georgia

CH2M HILL

Prepared for

AIR FORCE ENGINEERING AND SERVICES CENTER
DIRECTORATE OF ENVIRONMENTAL PLANNING
TYNDALL AIR FORCE BASE, FLORIDA 32403

APRIL 1982

NOTICE

This report has been prepared for the United States Air Force by CH2M HILL SOUTHEAST, INC., for the purpose of aiding in the implementation of the Air Force Installation Restoration Program. It is not an endorsement of any product. The views expressed herein are those of the contractor and do not necessarily reflect the official views of the publishing agency, the United States Air Force, or the Department of Defense.

INSTALLATION RESTORATION
PROGRAM RECORDS SEARCH

For
DOBBINS AIR FORCE BASE, GEORGIA

Prepared for

AIR FORCE ENGINEERING AND SERVICES CENTER
DIRECTORATE OF ENVIRONMENTAL PLANNING
DOBBINS AIR FORCE BASE, GEORGIA

By

CH2M HILL
Gainesville, Florida

April 1982

Contract No. F08637 80 G0010 0008

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CONTENTS

CONTENTS--Continued

TABLES

FIGURES

FOREWORD

FOREWORD

The organization of the report is summarized below for the benefit of the reader:

Executive Summary

Section I--Introduction (background information, purpose and scope, decision-making methodology)

Section II--Installation Description (base conditions, history, and organization)

Section III--Environmental Setting (meteorology, geology, hydrology, and ecology)

Section IV--Findings (activities, site descriptions and assessments)

Section V--Conclusions

Section VI--Recommendations

References--Includes a consolidated list of references

Appendixes--Includes attached Appendixes A through J

LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS USED IN THE TEXT

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AFB	Air Force Base
AFESC	Air Force Engineering and Services Center
AFFF	Aqueous Film-Forming Foam
AFP #6	Air Force Plant #6
AFRCE	Air Force Regional Civil Engineer
AFRES	Air Force Reserve
AFPRO	Air Force Plant Representative Office
AGE	Aerospace Ground Equipment
ANG	Air National Guard
AVGAS	Aviation Gasoline
BCE	Base Civil Engineer (AFRES)
CE	Civil Engineering
cm	centimeter
COD	Chemical Oxygen Demand
CSG	Combat Support Group (AFRES)
DNR	Department of Natural Resources
DoD	Department of Defense
DPDO	Defense Property Disposal Office
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
°F	degrees Fahrenheit
gal/yr	gallons per year
gpm	gallons per minute
IRP	Installation Restoration Program
IWS	Industrial waste sewer
IWTP	Industrial Waste Treatment Plant
JP	Jet Petroleum
MEK	methyl ethyl ketone
mgd	million gallons per day
mg/l	milligrams per liter
mm	millimeters
MOGAS	Motor Gasoline

LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS USED IN THE TEXT--Continued

msl	mean sea level
NAS	Naval Air Station
NDI	Non-Destructive Inspection
NPDES	National Pollutant Discharge Elimination System
OEHL	(Air Force) Occupational and Environmental Health Laboratory
PCBs	polychlorinated biphenyls
POL	Petroleum, oil, and lubricants
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
T&E	Threatened and Endangered
TAS	Tactical Airlift Squadron
TAW	Tactical Airlift Wing
TCE	trichloroethylene
TOC	Total Organic Carbon
USAF	United States Air Force

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

A. Introduction

1. CH2M HILL was retained by the Air Force Engineering and Services Center (AFESC) on August 27, 1981 to conduct the Dobbins AFB Records Search under Contract No. F08637 80 G0010 0008.

2. The Department of Defense (DoD) policy was directed by Defense Environmental Quality Program Policy Memorandum (DEQPPM) 81-5 dated 11 December 1981 and implemented by Air Force message dated 21 January 1982 as a positive action to ensure compliance of military installations with existing environmental regulations. DEQPPM 81-5 reissued and amplified all previous directives and memoranda on the Installation Restoration Program. The purpose of the DoD policy is to identify and fully evaluate suspected problems associated with past hazardous material disposal sites on DoD facilities, to control the migration of hazardous contamination from such facilities, and to control hazards to health and welfare that may have resulted from these past operations.

3. To implement the DoD policy, a four-phase Installation Restoration Program has been directed. Phase I, the records search phase, is the identification of potential problems. Phase II (not part of this contract) consists of follow-on field work as determined from Phase I. Phase IIa consists of a preliminary survey to confirm or rule out the presence and/or migration of contaminants. If the Phase IIa work confirms the presence and/or migration

of contaminants, then Phase IIb field work would be conducted to determine the extent and magnitude of the contaminant migration. Phase III (not part of this contract) consists of a technology base development study to support the development of project plans for controlling migration or restoring the installation. Phase IV (not part of this contract) includes those efforts which are required to control identified hazardous conditions.

4. The Dobbins AFB Records Search included a detailed review of pertinent installation records, contacts with 12 other agencies for documents relevant to the records search effort, and an onsite base visit conducted by CH2M HILL during the week of December 7 through December 11, 1981. Activities conducted during the onsite base visit included interviews with 45 past and present base employees, ground tours of base facilities, and a helicopter overflight to identify past disposal areas.

5. The installations addressed in this records search include Dobbins AFB and Naval Air Station Atlanta. Past or present disposal practices at Air Force Plant #6 (AFP #6), operated by the Lockheed-Georgia Company, have not been addressed by this report.

B. Major Findings

1. The primary activities at Dobbins AFB/NAS Atlanta, excluding AFP #6, which generate industrial wastes include routine aircraft and vehicle maintenance, weapons repair and maintenance, and minor laboratory operations. There have never been any large-scale "depot"-type activities, nor any significant aircraft corrosion control, stripping, or painting operations.

2. Interviews with 45 past and present base employees and a review of base records indicate that the major wastes generated at Dobbins AFB/NAS Altanta have included a total of about 7,500 gallons per year of waste oils and hyraulic fluids, 1,000 gallons per year of paint strippers and thinners, 1,500 gallons per year of contaminated fuels, and 8,000 gallons per year of PD 680 dry cleaning solvent.

3. Originally, these wastes were collected in drums and transported to the past fire training burn pit where most of the wastes were consumed during fire training exercises. Since about 1975, most of the waste POL and paint strippers and thinners have been either picked up by a private contractor and removed off-base, or sent to the DPDO at Ft. Gillem, Georgia, for further disposition. Waste fuels are collected by AFRES Fuels Management Branch to be recycled, whenever possible, or sold to a private contractor off-base.

   Waste solvents were originally combined with waste POL for disposal. Since 1971, PD 680 solvent has been recycled at the ANG washrack, which is used by most ANG and AFRES shops. Likewise, in 1975, an industrial waste sewer system was installed to collect waste solvents from several areas at the Naval Air Station; this system ties into a treatment plant operated by Lockheed-Georgia Company at Air Force Plant #6.

4. The records search resulted in the identification of six sites at Dobbins AFB which indicated a potential for environmental impact.

In general, these six sites are not adjacent to populated areas, critical environments, or major water supply wells, and the residual soils and rock formations underlying the base are relatively low in permeability. However, many of the sites are within 1 mile of the installation boundary and adjacent to surface streams.

C. Conclusions

1. No direct evidence indicates migration of hazardous contamination beyond Dobbins AFB/NAS Atlanta, although interviews with past and present base personnel suggest that hazardous wastes have been disposed of or deposited on-base in the past.

2. The potential for ground-water migration is low due to the presence of low-permeability soils. The potential for surface-water migration is high due to the closeness of the sites to streams and to the relatively high net precipitation, rainfall intensity, runoff, and erosion potential.

3. Three sites (shown on Figure 9) were identified as having greater potential for contaminant migration relative to other sites:

   o Site No. 1, the Past Base Landfill, due primarily to its proximity to Poorhouse Creek and to off-base properties, a high erosion potential, and the presence of large quantities of hazardous wastes, including carbon remover, paints and paint thinners, waste solvents, AVGAS sludge, and fuel-saturated dirt and foam.

- Site No. 2, the Past Fire Training Area, due primarily to the burning of large quantities of hazardous wastes for more than 20 years and to the suspected presence of buried wastes in drums.

- Site No. 4, Big Lake, due primarily to the closeness of the Navy Dispensary to the lake, the direct seepage of water from the lake to the ground water, the past discharge of unknown types and quantities of chemicals from AFP #6 into the lake, and the accumulation of sediments of unknown thickness and chemical composition.

3. No other identified site on Dobbins AFB or NAS Atlanta is considered to pose a hazard for environmental impact.

D. Recommendations

1. Since this records search did not include Air Force Plant #6, the potential environmental impact of disposal activities at Dobbins AFB cannot be adequately evaluated. A Phase I records search should be conducted for AFP #6 before implementing the following recommendations.

2. To verify that hazardous contaminant migration is not a problem at the Past Base Landfill, the Past Fire Training Area, or Big Lake, it is recommended that a program be developed that includes the following:

- Ground-water monitoring at the Past Base Landfill, including installation of at least three wells to a depth of about 15 feet below the ground-water level, collection of ground-water samples, and analysis of the samples for pH, COD, TOC, oil and grease, lead, chromium (total and hexavalent), nickel, cadmium, mercury, iron, phenol, and volatile organic compounds.

- Monitoring of the Past Fire Training Area, including a field survey (such as a magnetometer or ground-penetrating radar survey) to determine whether any buried drums are present, and installation of at least one well to a depth of about 15 feet below the ground-water table. At least one sample should be collected and analyzed for pH, COD, TOC, oil and grease, phenol, and volatile organic compounds.

- Analysis of the sediment at Big Lake prior to any dredging or development, including determination of the depth of sediment, collection of sediment samples from various locations and depths, and analysis of the samples for pH, arsenic, barium, cadimum, chromium, copper, cyanide, lead, mercury, phenol, selenium, silver, and zinc.

3. Details of this program should be finalized by the Phase II contractor at the time the work is performed. Since no imminent hazard is apparent, the above program can be implemented as financial resources become available. In the event that contaminants are detected in either the sediment or ground-water samples, a more extensive field survey program should be implemented.

I. INTRODUCTION

I. INTRODUCTION

A. Background

The primary legislation governing the management and disposal of solid waste is the Resource Conservation and Recovery Act (RCRA) of 1976. Regulations and implementing instructions for the Act are continuing to be developed by EPA. Under RCRA Section 3012 (Public Law 96-482, October 21, 1981) each state is required to inventory all past and present hazardous waste disposal sites. Section 6003 of RCRA requires Federal agencies to assist EPA and make available all requested information on past disposal practices. It is the intent of the Department of Defense (DoD) to comply fully in these as well as other requirements of RCRA. Simultaneous to the passage of RCRA, the DoD devised a comprehensive Installation Restoration Program (IRP). The purpose of the IRP is to identify, report, and correct environmental deficiencies from past disposal practices that could result in ground-water contamination and probable migration of contaminants beyond DoD installation boundaries. In response to RCRA and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, (Superfund), the DoD issued Defense Environmental Quality Program Policy Memorandum 81-5 (DEQPPM 81-5) on 11 December 1981, which was implemented by Air Force message dated 21 January 1982. DEQPPM 81-5 reissued and amplified all previous directives and memoranda on the Installation Restoration Program.

To conduct the Installation Restoration Program Records Search for Dobbins AFB, the AFESC retained CH2M HILL on August 27, 1981 under Contract No. F08637 80 G0010 0008.

The records search comprises Phase I of the IRP and is intended to review installation records to identify possible hazardous waste contaminated sites and potential problems that may result in contaminant migration from the installation. Phase II (not part of this contract) consists of follow-on field work as determined from Phase I. Phase IIa consists of a preliminary survey to confirm or rule out the presence and/or migration of contaminants. If the Phase IIa work confirms the presence and/or migration of contaminants, then Phase IIb field work would be conducted to determine the extent and magnitude of the contaminant migration. Phase III (not part of this contract) consists of a technology base development study to support the development of project plans for controlling migration or restoring the installation. Phase IV (not part of this contract) includes those efforts which are required to control identified hazardous conditions.

B. Authority

The identification of hazardous waste disposal sites at military installations was directed by Defense Environmental Quality Program Policy Memorandum 81-5 (DEQPPM 81-5) dated 11 December 1981, and implemented by Air Force message dated 21 January 1982 as a positive action to ensure compliance of military installations with existing environmental regulations.

C. Purpose

DoD policy is to identify and fully evaluate suspected problems associated with past hazardous material disposal sites on DoD facilities, to control the migration of hazardous contamination from such facilities, and to control hazards to health or welfare that may have resulted from those past operations. The potential for adverse impact was evaluated at Dobbins AFB by reviewing the existing information and conducting a detailed analysis of installation records. Pertinent information involves the history of operations, the geological and hydrogeological conditions which may contribute to the migration of contaminants off the installation, and the ecological settings which indicate sensitive habitats or evidence of environmental stress resulting from contaminants.

D. Scope

The records search consisted of a pre-performance meeting, a preliminary coordination meeting, an onsite base visit, a review and analysis of the information obtained, and preparation of this report.

The pre-performance meeting was held at Dobbins AFB on August 13, 1981. Attendees at this meeting included representatives of AFESC, AFRES, AFPRO, AFRCE, the U.S. NAVY, Lockheed-Georgia Co., Dobbins AFB, and CH2M HILL. The purpose of the pre-performance meeting was to provide detailed project instructions for the records search, to provide clarification and technical guidance by AFESC, and to define the responsibilities of all parties participating in the Dobbins AFB Records Search.

The Dobbins AFB Environmental Coordinator and the CH2M HILL Project Manager met at Dobbins AFB on November 16, 1981 for the preliminary coordination meeting. The purpose of this meeting was to familiarize CH2M HILL with the installation and effect coordination for the onsite base visit.

The onsite base visit was conducted by CH2M HILL from December 7 through December 11, 1981. Activities performed during the onsite visit included a detailed search of installation records, ground and aerial tours of the installation, and interviews with 45 former and present base personnel. At the conclusion of the onsite base visit, an outbriefing was held with Colonel Smith, Base Commander, 94th CSG, and members of his staff on December 11, 1981 to discuss preliminary findings. The following individuals comprised the CH2M HILL records search team:

1. Mr. David Moccia, Project Manager (B.S. Chemical Engineering, 1971)

2. Mr. Bruce Haas, Assistant Project Manager (M.S. Civil Engineering, 1976)

3. Mr. Gary Eichler, Hydrogeologist (M.S. Engineering Geology, 1974)

4. Dr. Robert L. Knight (Ph.D. Ecology, 1980)

Resumes of these team members are included in Appendix A.

Twelve government agencies were contacted for documents and information relevant to the records search effort. Appendix B lists the agencies contacted during the records search.

Individuals from the Air Force who assisted in the Dobbins AFB Records Search included the following:

1. Mr. Bernard Lindenberg, AFESC, Program Manager, Phase I

2. Mr. Myron Anderson, AFESC, Environmental Engineer

3. Mr. William Nealon, 94th CSG/DEEV, Dobbins AFB, Environmental Coordinator

4. Mr. Larry S. Garrett, AFRES/DEEV, Robins AFB

5. Major Gary Fishburn, USAF OEHL, Program Manager, Phase II

The installations addressed in this records search include Dobbins Air Force Base and Naval Air Station Atlanta, which are adjoining properties separately owned by the U.S. Air Force and U.S. Navy, respectively. Dobbins AFB and NAS Atlanta have historically shared many common interests including joint use of the runways, fire protection, and industrial and sanitary disposal areas. Air Force Plant #6 (AFP #6) is a government-owned, contractor-operated facility located on Dobbins AFB property. The area of Dobbins AFB which is occupied by AFP #6 and operated by the Lockheed-Georgia Company has not been addressed in this records search, although the impact of AFP #6 operations on Dobbins AFB has been considered.

E. Methodology

The methodology utilized in the Dobbins AFB records search is shown graphically on Figure 1. First, a review of past and present industrial operations is conducted at the base. Information is obtained from available records such as shop files and real property files, as well as interviews with past and present base employees from the various operating areas of the base. A list of interviewees from Dobbins AFB (total of 45), as identified by areas of knowledge and years at the installation, is given in Appendix C.

The next step in the review process is to determine the past management practices regarding the use, storage, treatment, and disposal of hazardous materials from the various industrial operations on the base. Included in this part of the review process is the identification of all past landfill sites and burial sites; as well as any other possible sources of contamination such as major PCB or solvent spills, or fuel-saturated areas resulting from large fuel spills or leaks.

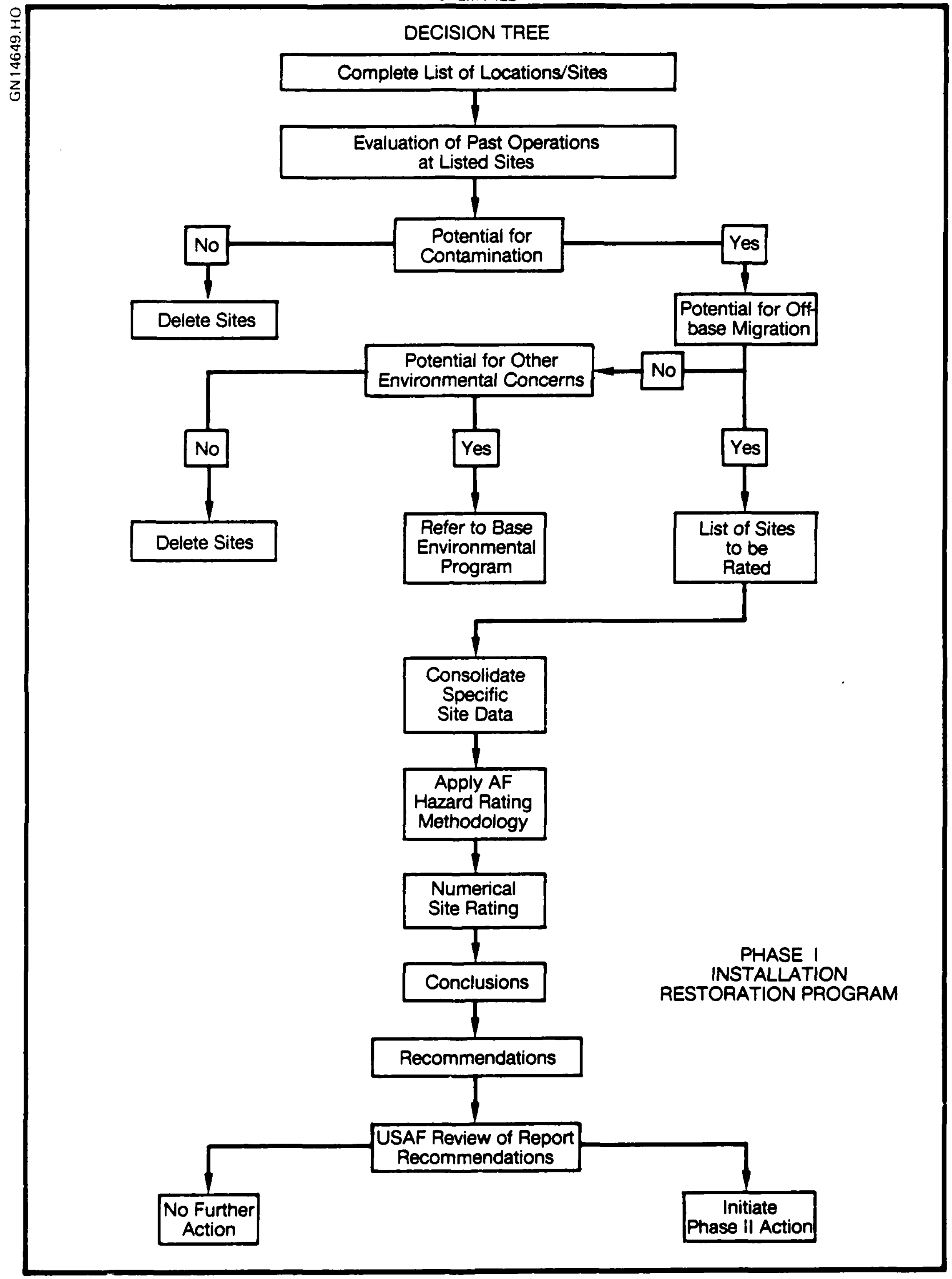

FIGURE 1. Records search methodology.

A helicopter overflight and a general ground tour of identified sites are then made by the records search team to gather site-specific information including evidence of environmental stress, and the location of on-base and nearby drainage ditches or surface-water bodies, and to visually inspect these water bodies for any obvious signs of contamination or leachate migration.

A decision is then made, based on all of the above information, as to whether a potential exists for hazardous material contamination in any of the identified sites. If not, the site is deleted from further consideration. If minor operations and maintenance deficiencies are noted during the investigations, the condition is reported to the Base Environmental Coordinator for remedial action.

For those sites where a potential for contamination is identified, a determination of the potential for migration of the contamination off the installation boundaries is made by considering site-specific soil and ground-water conditions. If there is no potential for contaminant migration, then the site is deleted from further consideration or referred to the Base Environmental Coordinator. If the potential for contaminant migration is considered significant, then the site is evaluated and prioritized using the site rating methodology described in Appendix H.

The site rating indicates the relative potential for environmental impact at each site. For those sites showing a significant potential, recommendations are made to quantify the potential contaminant migration problem under Phase II of the Installation Restoration Program. For those sites showing a low potential, no Phase II work would be recommended.

II. INSTALLLATION DESCRIPTION

II. INSTALLATION DESCRIPTION

A. Location

Dobbins AFB is located in Cobb County, Georgia, adjacent to the cities of Marietta and Smyrna, as shown on Figure 2. The base is about 5 miles northwest of the city limits of Atlanta and 50 miles south of the Great Smokey Mountains. The base proper is comprised of 1,964 acres of land under AFRES Command with an adjoining 709 acres under U.S. Air Force Systems Command, which houses the Air Force Plant #6, operated by the Lockheed-Georgia Company. In addition, an adjoining 157 acres are owned by the U.S. Navy and comprise the Naval Air Station Atlanta.

B. Organization and History

In 1943, the U.S. Government acquired 2,843 acres of land to be used by the Bell Aircraft Corporation as an assembly site for the B-29 aircraft. The resultant airfield, known as Rickenbacker Field, was maintained by an Army Air Force caretaker detachment after the Bell operations were ended in 1947.

The Georgia National Guard was represented at the base in 1946 by the 54th Fighter Squadron. In 1948 the base was renamed the Marietta AFB and an additional mission of training Air Force Reserve units was acquired. The Air Force Reserve 94th Bomb Wing was activated in 1949, and reserve training became the dominant mission of the base. Marietta AFB was designated Dobbins AFB in 1950 in honor of Captain Charles Dobbins of Marietta, Georgia, who was killed in action in 1943. The 94th Combat Support Group, Air Force Reserve, is currently the host unit at Dobbins AFB.

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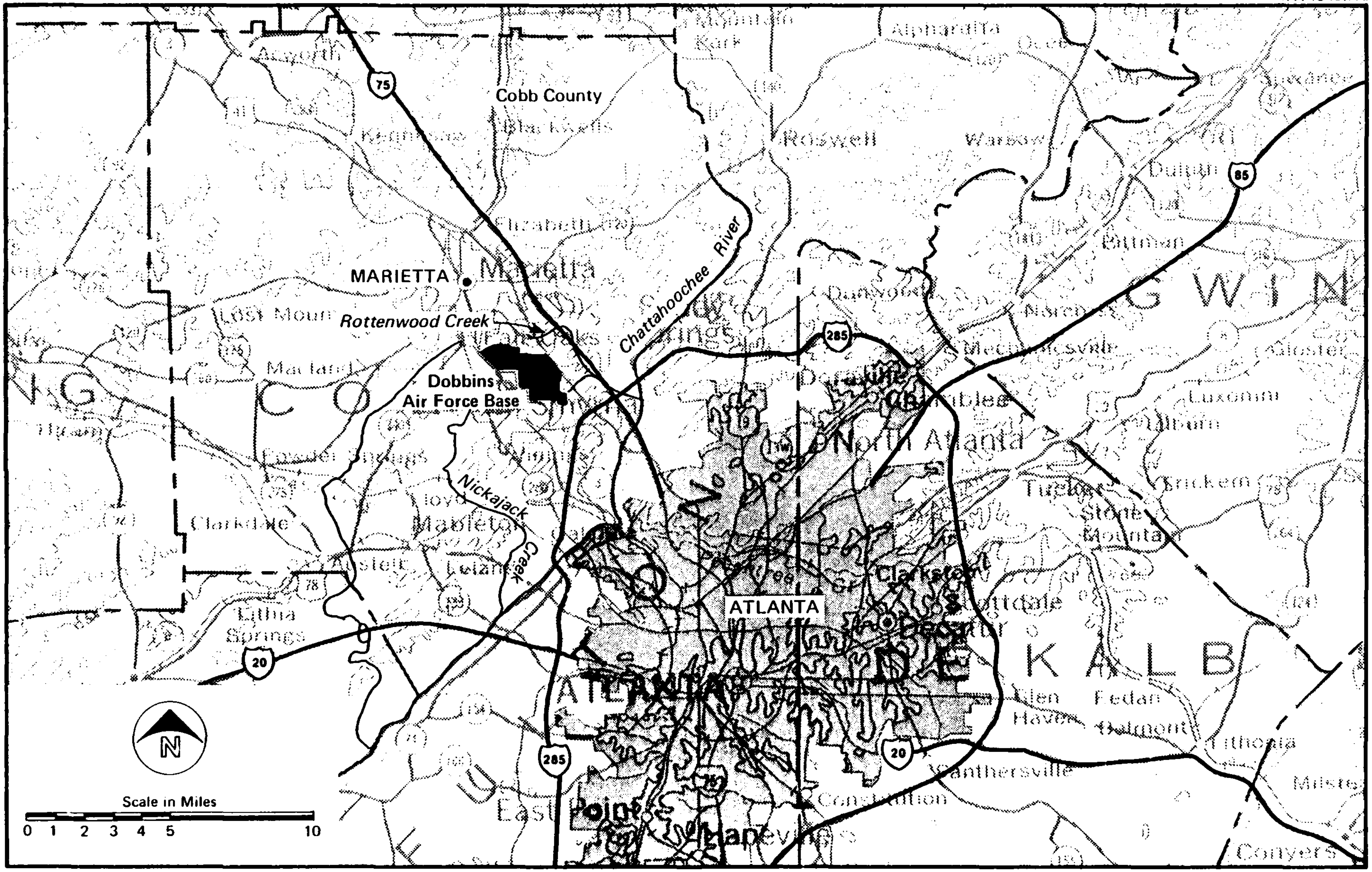


FIGURE 2. Location map of Dobbins AFB.

Lockheed Aircraft Corporation began operating the old Bell Plant, now Air Force Plant #6, in 1951. The major operation of this plant is the assembly of C-141, C-5, and C-130 aircraft. The plant is a government-owned, contractor-operated facility under Air Force Systems Command.

The Naval Air Reserve came to the base in 1959 after construction of new facilities for the Naval Air Station Atlanta across the runway from the Dobbins AFB flight line.

Although many organizational changes have occurred since 1948, Dobbins AFB and NAS Atlanta still retain their original charters to recruit, equip, and train personnel for support of national defense forces in times of emergency. Today, the installations support flying components of the Air Force Reserve, Air National Guard, Army Reserve, Army National Guard, Naval Air Reserve, and Marine Air Reserve, and provide aerial access to the Lockheed-Georgia Company. The areas of the base occupied by these various units are shown on Figure 3.

A more detailed description of the base history is included in Appendix D.

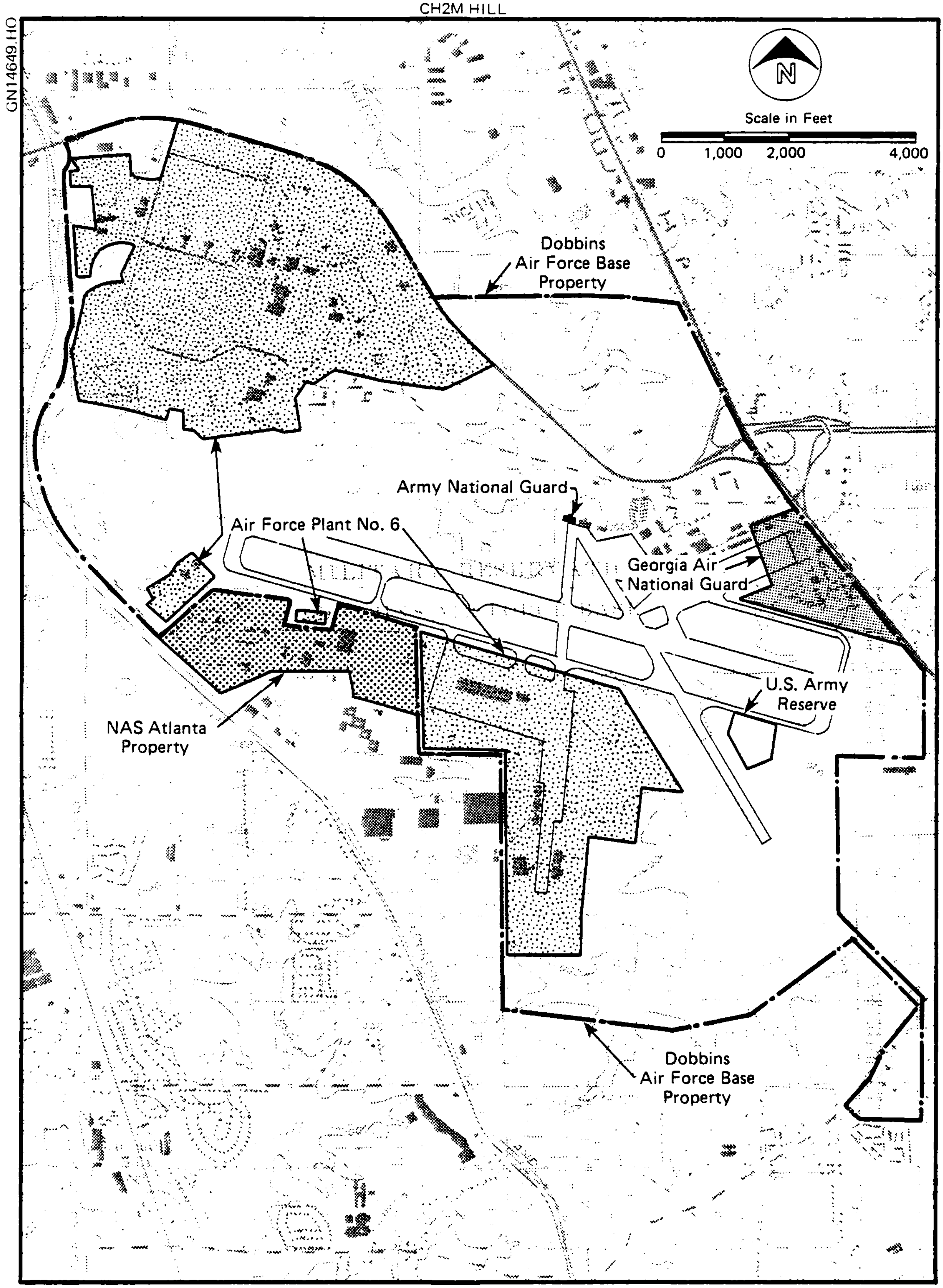


FIGURE 3. Site map of Dobbins AFB.

III. ENVIRONMENTAL SETTING

III. ENVIRONMENTAL SETTING

A. Meteorology

The climate in the vicinity of Dobbins AFB/NAS Atlanta is characteristic of the northern temperate zone, with four clearly separated seasons and predominant weather movement from west to east. Spring is usually short, with frequent periods of storminess of varying intensity, summer is generally warm and humid, and autumn is characterized by long periods of mild, sunny weather. During the winter and early spring cyclonic storms move with regularity across Georgia. These storms, characterized by sudden cold snaps, are generally followed by periods of milder weather which last until the next cold front passes through the area.

The annual average temperature at Dobbins AFB is 61°F with an average daily maximum and minimum of 70°F and 50°F, respectively (Table 1). Although the weather is generally mild, an extreme maximum temperature of 102° F has been reported during the month of July and an extreme minimum temperature of -4°F has been reported for the month of January. Dobbins AFB experiences an average of 58 days with freezing temperatures each year.

The average annual rainfall at Dobbins AFB is 49.7 inches. Precipitation is fairly evenly distributed throughout the year, although minor peaks in the rainfall curve are generally recorded in early spring and in mid-summer. Autumn is generally the driest season. An average of about 2 inches of snowfall is recorded each year between the months of December and March. Lake evaporation is approximately 40 inches per year and evapotranspiration over land areas may be greater or less than this value depending on vegetative cover type.

Table 1
METEOROLOGICAL DATA SUMMARY FOR DOBBINS AFB, GEORGIA[a]

PARAMETER	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL
Temperature (°F)													
Average Maximum	51	54	61	72	79	85	88	87	82	72	61	53	70
Average Minimum	33	34	40	50	58	65	69	68	62	51	40	34	50
Mean	42	45	50	61	69	75	78	78	72	62	50	44	61
Precipitation (inches)													
Mean	4.7	4.6	5.4	4.6	4.0	3.8	5.2	3.3	3.4	2.9	3.2	4.6	49.7
Snowfall (inches)													
Mean	<1	<1	1	0	0	0	0	0	0	0	<1	1	2
Relative Humidity (%)													
Mean	73	70	68	67	70	72	75	73	74	72	70	72	72
Surface Winds (knots)													
Mean	7	7	7	7	5	5	4	4	5	5	6	6	6
Maximum Peak	52	64	65	52	63	78	69	69	48	46	68	49	

[a]Period of Record: 1946-1972.

Source: National Oceanographic and Atmospheric Administration, 1975.

The prevailing wind direction during most of the year is from the west and northwest, with an annual average speed of 6 knots. Peak winds above 45 knots have been recorded in every month of the year; a maximum peak wind of 78 knots has been recorded during the month of June.

B. Geology

Dobbins AFB/NAS Atlanta is located in the Central Uplands district of the Piedmont physiographic province. This district is characterized by a series of low, linear ridges separated by broad, open valleys. Streams flowing through this section are generally transverse to the underlying geologic structure and occupy valleys 150 to 200 feet below the ridge crests. Figure 4 illustrates the major physiographic features in the vicinity of Dobbins AFB.

The base is situated on a gently rolling plateau which slopes gradually downward to the southeast. The plateau is dissected by several small stream channels including Rottenwood and Poorhouse Creeks. Elevations range from approximately 1,075 feet above msl at the northwest corner of the base to approximately 950 feet above msl at the southwest corner.

Surficial deposits at Dobbins AFB consist of residual soils derived from the in-place weathering of the underlying igneous and metamorphic rocks. These soils are primarily micaceous, clayey silts and micaceous, sandy silts. Soils are generally firm in the upper 15 to 20 feet, becoming stiffer at greater depth. There is a gradual transition between the soil horizon and the underlying rock. The weathered erosional surface of the rock is irregular and therefore depth to competent rock is variable across the base. The permeability of the soil horizon is variable

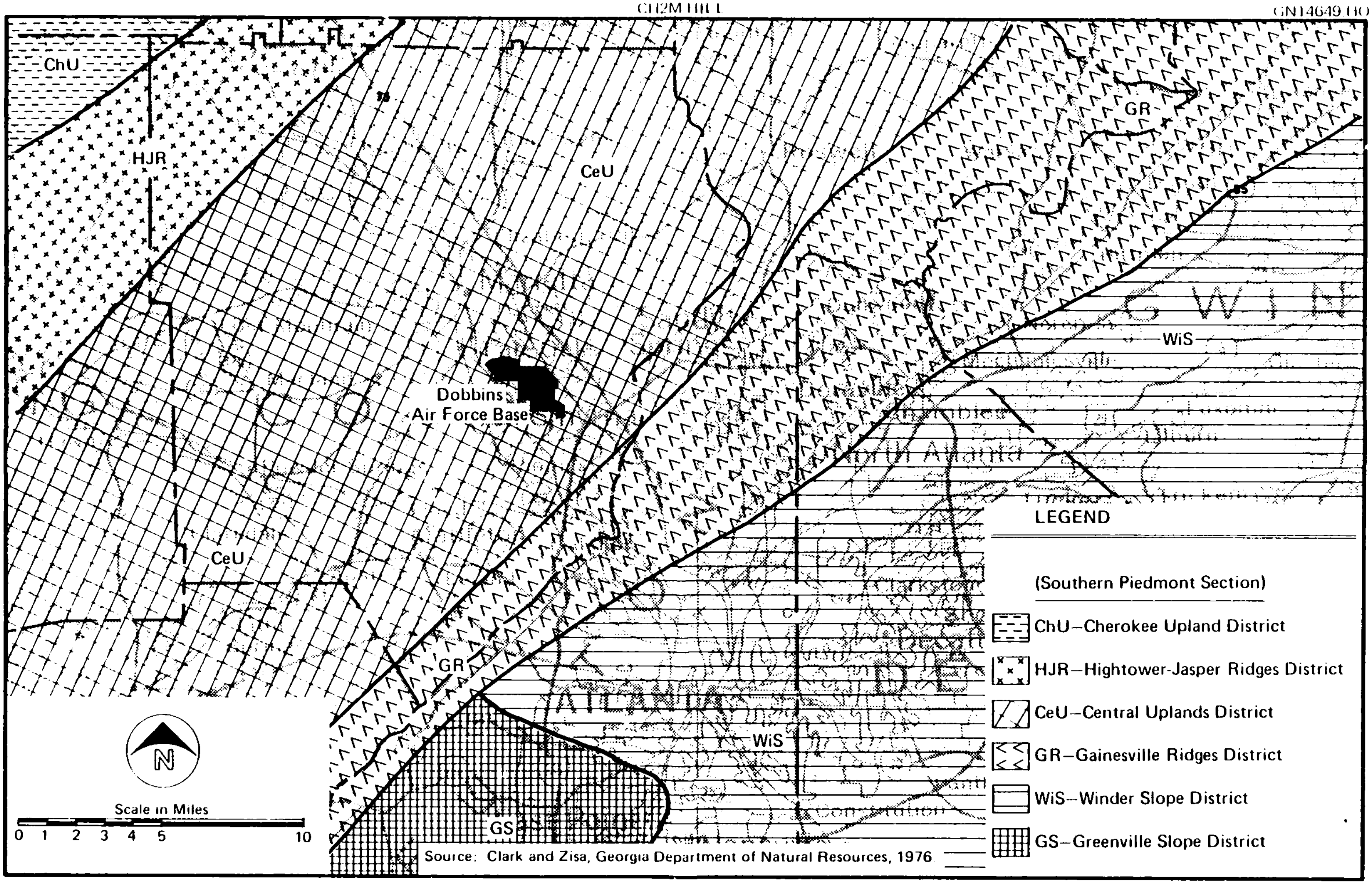


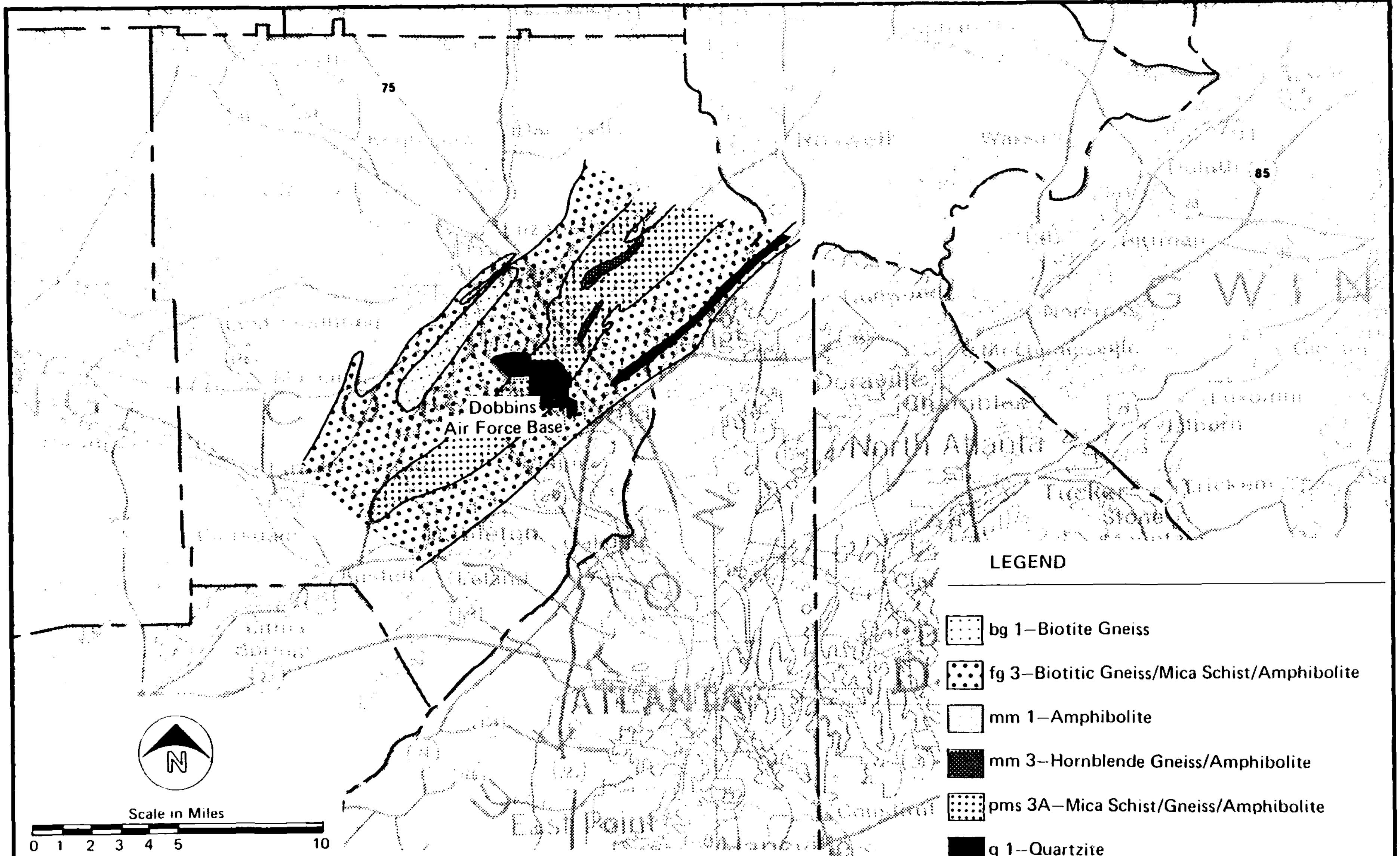
FIGURE 4. Physiographic map of Dobbins AFB area.

depending on the degree of compaction and relative percentages of sand and clay. Permeabilities probably range from low ($1x10^{-3}$ - $1x10^{-5}$ cm/sec) to very low ($1x10^{-5}$ - $1x10^{-7}$ cm/sec).

The rock strata occurring below the weathered soil horizon consist of metamorphic rock (primarily biotite gneiss and schist) and possibly some igneous rock (primarily granite). Metamorphic rock within southeastern Cobb County occurs in wide belts trending in a northeast direction. These belts are the result of repeated structural deformations which have produced extremely complex structures including closed folds, overthrust faults, and igneous intrusions. Figure 5 is a geologic map of the Dobbins AFB vicinity illustrating the complexity of the geology.

Primary permeability of the metamorphic rock is extremely low; however, deformations have produced structural planes along which ground-water movement does occur. Fault planes, shear zones, planes of schistosity resulting from folding, intrusive contacts around the margins of large intrusive bodies, and joints are the prominent structural features.

Igneous rock occurs as granitic intrusions into the older metamorphic rock. Horizontal joints or parting planes occur occasionally within granite intrusive bodies producing horizontally concentric sheets--similar to the layers of an onion--that are convex-upward beneath hills and uplands and concave-upward beneath valleys and lowlands. This type of joint pattern is conducive to the accumulation and storage of ground water in the valleys and to drainage of water beneath hills.



Source: Georgia Department of Natural Resources, 1976.

FIGURE 5. Geologic map of Dobbins AFB area.

C. Hydrology

Dobbins AFB/NAS Atlanta is located within the drainage basin of the Chattahoochee River. The Chattahoochee is the longest river in Georgia, extending approximately 436 miles from its source in northeastern Georgia to the Florida line. Tributaries of the Chattahoochee include Rottenwood and Poorhouse Creeks, both of which drain Dobbins AFB. Flow in these creeks is in a south or southeast direction discharging to the Chattahoochee just north of where Interstate-75 crosses the river. The Chattahoochee River is used as a source of water supply for the area and is generally of good quality.

Surface-water drainage on-base is generally toward the southeast, being directed towards Rottenwood and Poorhouse Creeks by the storm drainage system. Figure 6 illustrates topography and relief on-base as well as direction of surface-water flow. Also illustrated on Figure 6 are two on-base surface retention areas referred to as Big Lake and Little Lake. Big Lake is a dammed reservoir, which was once used as a water supply source for the City of Marietta. Little Lake is also man-made, formed by a small dike across a tributary of Rottenwood Creek. Both lakes receive surface drainage from the base as well as AFP #6. Water quality measured in Big Lake and in tributary streams leaving Dobbins AFB is characterized by neutral to slightly acidic pH and low hardness and alkalinity. Hourly composite samples at five discharge points from the base for pH, total organic carbon, and chromium have revealed no significant contamination of surface waters during the period of record (1977-1982).

Ground water occurs under unconfined or water table conditions within the residual soils and underlying rock. In some areas, the residual soils at a particular depth

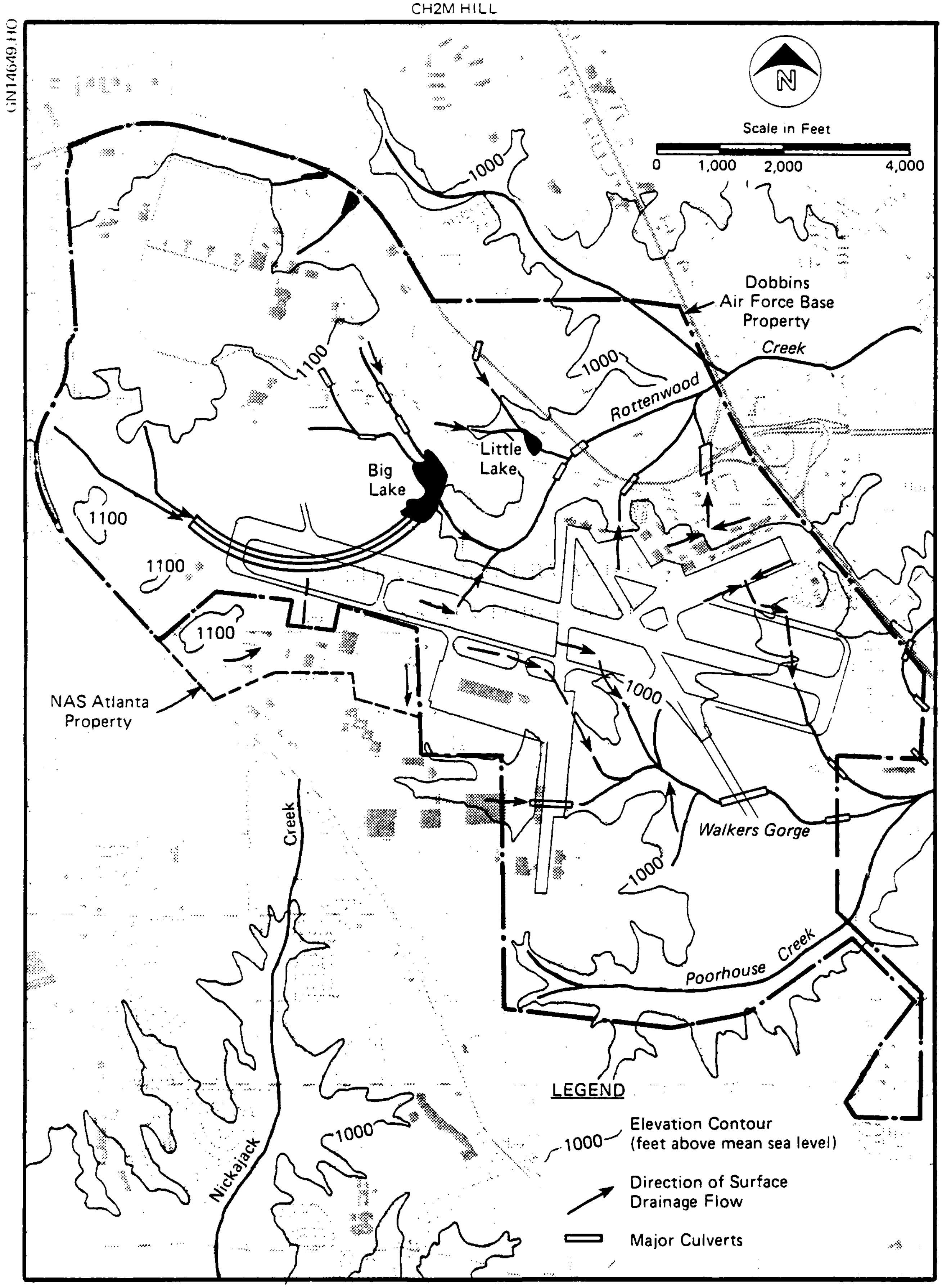


FIGURE 6. Surface drainage map of Dobbins AFB.

below the surface contain a high percentage of clay, which tends to prevent or impede the downward infiltration of ground water. In these areas, a perched water table of limited extent may exist above the clayey soils.

The depth to the water table is highly variable and irregular, being dependent on surface topography, soil permeability, rainfall/evapotranspiration, and underlying structure. The water table generally follows the contour of the surface topography, being somewhat higher beneath hills than beneath valleys. However, the occurrence of horizontal joints or parting planes within the crystalline rock tends to result in the drainage of ground water from beneath hills and the accumulation of ground water beneath valleys.

Recharge to the water table aquifer is direct through the surface deposits either by infiltration of rainfall or by seepage from creek bottoms and surface impoundments. Infiltration rates are low, and therefore runoff rates high, due to the low to very low permeability of the residual soils.

At Dobbins AFB, the probable direction of ground-water flow would be locally away from the creeks, such as Poorhouse and Rottenwood Creeks, with a regional trend southeast toward the Chattahoochee River. In some areas, ground water occurs under a perched condition; that is, water which infiltrates at the surface is prevented from reaching the water table by discontinuous layers of clay and silt which have a very low permeability. In those areas, ground water moves downward vertically to a stratum of low permeability and then horizontally either to discharge into the creeks and streams or to recharge the lower aquifer.

Ground water is seldom used for water supply within the Piedmont province, primarily because of the limited availability.

Well yields are usually quite low, ranging from 1 to 25 gallons per minute (gpm). Well yields are also quite unpredictable since the yield is dependent on the occurrence of underlying permeable structural features such as joints, faults, and shear zones, which are highly irregular in occurrence. Most water supply in the vicinity of Dobbins AFB is developed from surface-water sources. Dobbins AFB receives its water from the Lockheed-Georgia Company, which in turn receives it from Cobb County and the Marietta Water Authority. There are 10 wells on-base, maintained by Lockheed, which have been out of service since the early 1950's (see Figure 7 for well locations). These wells are all less than 300 feet deep and of varying yield. Total capacity of all 10 wells is only 330 gpm, with each well averaging approximately 30 gpm.

Ground-water quality is fairly good in the vicinity of Dobbins AFB. Table 2 presents expected ranges of various ground-water constituents.

Table 2

EXPECTED RANGES OF CONCENTRATIONS OF SELECTED GROUND-WATER CONSTITUENTS

Parameter	Range of Concentration
Silica	21 - 40 mg/l
Alkalinity, as $CaCO_3$	25 - 100 mg/l
Sulfate	0 - 10 mg/l
Dissolved Solids	101 - 250 mg/l
Hardness, as $CaCO_3$	0 - 100 mg/l
Specific Conductance	101 - 300 microμhos/cm
pH	6.5 - 7.5

Source: Sonderegger and Cressler. Information Circular 48, Georgia Department of Natural Resources.

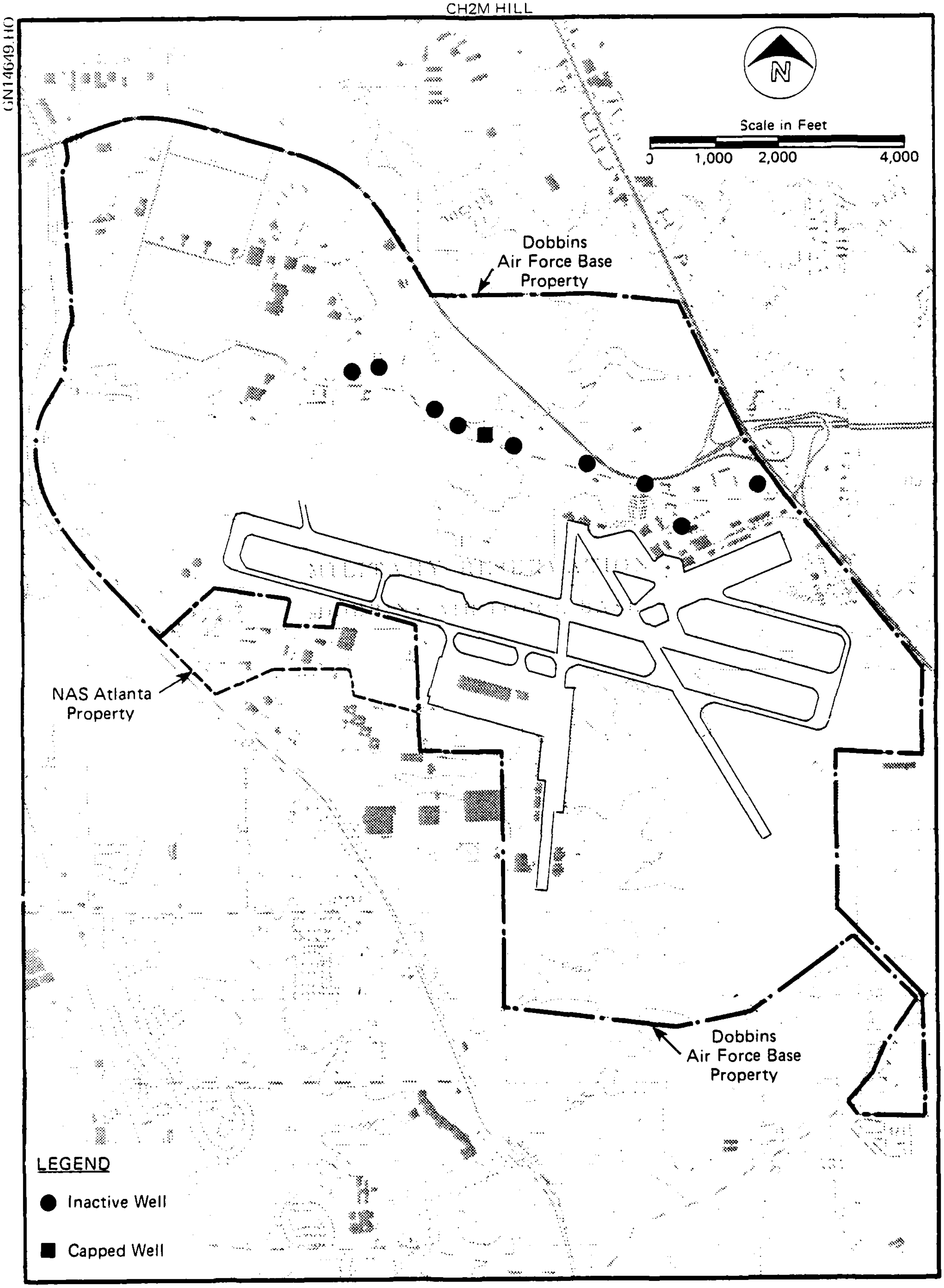


FIGURE 7. Location map of water wells on Dobbins AFB.

D. Ecology

1. Habitat

Approximately 40 percent of the land area of Dobbins AFB is considered to be "unimproved," indicating the presence of semi-natural vegetation. Major vegetation habitats include successional pine forests, mixed pine-hardwood colluvial forests, and oak-hickory climax forests. Aquatic habitats include small spring-fed streams and man-made ponds.

Forest ecosystems on Dobbins AFB are comprised of all gradations from pure stands of loblolly pine to pure oak-hickory hardwood stands depending on time since disturbance, moisture content of the soil, and amount and orientation of slope. In several areas mesic hardwood stands of white oak, shagbark hickory, and tulip poplar present the appearance of mature forests and provide some isolation from the noise and activity of the rest of the base. Wildlife abounds in these natural areas, and includes squirrels, rabbits, skunks, raccoons, oppossums, foxes, muskrats, and deer. Many birds have been observed in these protected woods including migratory passerines, woodpeckers, hawks, bluejays, and in more open areas, large flocks of mourning dove and quail. Herbaceous plant life could not be evaluated during the onsite base visit due to the timing of the visit (December); however, observations of dried plants and leaves indicated that a typical lush herbaceous growth is present during spring.

The hardwood-pine forests slope downward to several small, natural, spring-fed streams on Dobbins AFB which feed into Rottenwood Creek. Normal flow in these channels is low; however, small areas of flood-plain vegetation (red maples, alders, etc.) are found in low-slope areas adjacent to the streams.

Several man-made ponds occur on Dobbins AFB. The water in these ponds is generally greenish in color, with low clarity indicating the presence of fine suspended silt and phytoplankton algae. In shallow areas where light does penetrate to the bottom, filamentous algae were observed growing on the sediment surface. Big Lake is the largest of these ponds, comprising about 7 acres, and is surrounded mostly by woods as part of a base recreation area for picnicing and camping. No swimming is allowed in the lake; however, the fish population is managed for recreational angling. Around the northwest side of the lake there is abundant evidence of past and present beaver activity.

2. Threatened and Endangered Species

No evidence was found to indicate the presence of any threatened or endangered (T&E) plant or animal species on Dobbins AFB; however, no exhaustive surveys have been made. Several T&E species are known to occur within a 50-mile radius of the base (Table 3). The habitats found at Dobbins AFB (discussed in Section D.1.) may be suitable for some of these T&E species.

3. Environmental Stress

No areas of recent environmental stress resulting from toxic or hazardous wastes were revealed during the ground tours of the helicopter overflight of Dobbins AFB. Verbal reports of some historical environmental stresses were obtained from interviews of base personnel. For the most part, these conditions existed several years ago; no evidence of lingering toxicity was observed during the site visit. A major fishkill was reported to have occurred in Little Lake in 1962 due to aerial spraying for Japanese beetles. Eyewitness accounts indicated that all fish in the

Table 3
THREATENED AND ENDANGERED SPECIES OCCURRING WITHIN 50 MILES OF DOBBINS AFB, COBB COUNTY, GEORGIA

Common Name	Scientific Name	Status[a] State	Status[a] Federal	Habitat
Eastern Cougar	Felis concolor cougar	E	E	Large wooded tracts
Gray Bat	Myotis grisescens	E	E	Caves
Indiana Bat	Myotis sodalis	E	E	Caves
Red-Cockaded Woodpecker	Picoides borealis	E	E	Mature pine stands
Peregrine Falcon	Falco peregrinus	E	E	Occasional migrant
Southern Bald Eagle	Haliaeetus leucocephalus	E	E	Occasional migrant
Amphianthus	Amphianthus pusillus	E		Pools in granite outcrops
Rock Cress	Arabis georgiana	T		Shaded riverbanks
Pink Lady's Slipper	Cypripedium acaule	T		Pinelands
Golden Slipper	Cypripedium calceolus	T		Rich, moist hardwood coves
Draba	Draba aprica	E		On or near granite outcrops
Quillwort	Isoetes melanospora	T		Pools in granite outcrops
Twin Leaf	Jeffersonia diphylla	E		Rich, moist woods
Nestronia	Nestronia umbellula	T		Mixed pine-deciduous woods
Bay Star-vine	Schisandra glabra	T		On small trees and shrubs in rich, alluvial woods
Stonecrop	Sedum pusillum	T		Granite outcrops under cedar trees
False Helebore	Veratrum woodii	E		Moist, rich, wooded slopes
Barren Strawberry	Waldsteinia lobata	T		Moist woods along streams

[a]
E--"Endangered"
T--"Threatened"

lake were killed but that there was no residual toxicity, as indicated by the success of restocking attempts. Reports from several interviewees indicated that a B-47 crashed in Big Lake in the late 1950's resulting in the spillage of fuel and the spread of fire across the lake, which killed many fish. Some individuals indicated that large numbers of dead fish have been observed in Big Lake on a number of occasions, possibly resulting from wastes entering the lake from incoming streams. Other fishkills have occurred in the creeks that drain Dobbins AFB as a result of fuel and waste-water spills. For example, the spillage of 25,000 gallons of jet fuel in 1974 temporarily destroyed the fauna in Poorhouse Creek and subsequently downstream in Rottenwood Creek. However, once the waste materials are flushed down the creeks by rain and stormwater runoff, natural recolonization is probably rapid.

E. Summary of Environmental Setting

Dobbins AFB/NAS Altanta is located in the central piedmont region of Georgia, approximately 5 miles northwest of the Atlanta city limits. The climate is generally mild, with an annual average temperature of 61°F and an average annual rainfall of nearly 50 inches. The topography is gently rolling with broad ridges dissected by small stream channels that drain to the Chattachoochee River. Soils consist primarily of low-permeability clayey silts, derived from the in-place weathering of underlying gneisses, schists, and granite. Ground water is generally present at a depth of 10 to 50 feet, but is of limited availability for use as a water supply source. Surface-water sources provide most water supplies in the vicinity of Dobbins AFB. The ecology of natural areas on Dobbins AFB is characterized by mixed pine/hardwood forest communities with all forms of urban wildlife including small mammals and many birds. No threatened or endangered animal or plant species are known to occur on Dobbins AFB.

IV. FINDINGS

IV. FINDINGS

A. Activity Review

1. Industrial Operations

The primary activities at Dobbins AFB (excluding AFP #6) and NAS Atlanta which generate industrial wastes include routine aircraft and vehicle maintenance, weapons repair and maintenance, and minor laboratory operations. No significant aircraft corrosion control, stripping, or painting operations have been conducted at Dobbins AFB or NAS Atlanta.

A master list of industrial activities is included in Appendix F. A review of base records and interviews with present and former base employees resulted in the identification of those industrial operations which generate the majority of industrial wastes. Table 4 gives a summary of those industrial activities including the estimated waste quantities produced and the present and past disposition of these wastes, i.e., treatment, storage, or disposal.

The major industrial activities and the treatment, storage, or disposal of the wastes generated are discussed separately for each of the tenant units at Dobbins AFB and NAS Atlanta in the following paragraphs. A summary of the waste disposal practices is presented in Section IV. A.2.

a. Air Force Reserve

Aircraft Maintenance: Since the late 1940's, flight line and hangar maintenance has consisted of general aircraft servicing, such as oil changes, refueling, and minor cleaning. These operations are performed in the three hangars (Buildings 730, 733, and 742) and the AFRES

Table 4
SUMMARY OF MAJOR INDUSTRIAL OPERATIONS—AT DOBBINS AFB/NAS ATLANTA

Shop Name	Location (Bldg. No.)	Waste Material	Waste Quantity	Treatment, Storage, or Disposal Methods (1940 – 1950 – 1960 – 1970 – 1980)
AFRES				
General Aircraft Maintenance	Flight line	Waste Oils	1,500 gal/yr	Fire training → UG tank[a]
Flight Line	730	Waste Fuels	120 gal/yr	Fire training → POL[d]
Transient Alert	733			
Phase Inspection	742			
	746	Carbon Remover	50-100 gal/yr	Fire training → Base landfill → Awaiting disposition
Corrosion Control	817	Paint Thinners, Paint Strippers, Corrosion-Removing Compound, Paints, Cleaning Agents—mixed	150-180 gal/yr	Fire training → DPDO[c]
Washrack	989	PD 680 Soap	3,000 gal/yr 1,000 gal/yr (Quantities about 3 times higher between 1966 and 1972)	Storm drain → Recycled at washrack[b]
Repair and Reclamation	808	Paint Stripper	50-150 gal/yr	Fire training → DPDO[c]
		PD 680	100-200 gal/yr	Fire training → Recycled at washrack[b]
Pneudraulics	808	Asbestos	24 lbs/yr	Base landfill → Cobb Co. Landfill
		Hydraulic Oil	36 gal/yr	Fire Training → UG tank[a]
		PD 680	220 gal/yr	Fire training → Recycled at washrack[b]
Electric/Battery	808	Sulfuric Acid	15-20 gal/yr	Neutralized/Drainfield
Propulsion	819	PD 680	100-400 gal/yr	Fire training → Recycled at washrack[b]
		Waste Oils	10 gal/yr	Fire training → UG tank[a]
AGE	823	PD 680	60 gal/yr	Fire training → Recycled at washrack[b]
		Waste Oil	300 gal/yr	Fire training → UG tank[a]
Vehicle Maintenance	512/516	Waste Oils	150 gal/yr	Fire training → Contract disposal off-base
		Waste Fuels	100 gal/yr	Fire training → POL[d]

[a]Underground waste oil tank near Building 817; taken to fire training 1965-1974; contract disposal off-base since 1974.
[b]Oil/water separator at ANG washrack (Facility 989) PD 680 is recycled; soap and solution discharged to sanitary sewer.
[c]Transferred to DPDO at Ft. Gillem for further disposition.
[d]Reuse or contract disposal off-base through AFRES Fuels Management Branch.

Table 4. Continued

Shop Name	Location (Bldg. No.)	Waste Material	Waste Quantity	Treatment, Storage, or Disposal Methods (1940–1980)
Georgia ANG				
Aerospace Systems	838[a]	Waste Fuels	500-600 gal/yr	Fire training → POL[c]
Fuel/Environmental/Egress		Waste Oils		Fire training → Portable tank[d]
Repair and Reclamation		Hydraulic Fluid	25 gal/yr	Fire training → Recycled at washrack[b]
		PD 680	100 gal/yr	
		Trichloroethane	Evaporated	
		MEK		
Fabrication	838	Waste Oils	1,000-2,000 gal/yr	Fire training → Portable tank[d]
Engine Test Shop		TCE		
Machine Shop		Trichloroethane		
Battery Shop		Trichlorotrifluoroethane	5 gal/yr	Fire training → Washrack[b]
Corrosion Control		Corrosion Preventive		
		Sulfuric Acid	Unknown	Neutralized/Drainfield
Washrack	989	PD 680	3,000-4,000 gal/yr	Storm drain → Recycled at washrack[b]
		Alkaline Soap	1,000 gal/yr	
Paint Shop	838	MEK		Fire training → AFP # 6 → DPDO[e]; Base landfill
		Thinners	Combined	
		Toluene	300 gal/yr	
		Paints		
AGE Shop	829	Thinners	5 gal/yr	Disposed of along with Building 838 wastes
		Waste Oils	100 gal/yr	
		Waste Fuels	50 gal/yr	
		PD 680	40 gal/yr	
		Sulfuric Acid	12 gal/yr	Neutralized/Drainfield → Neutralized/Sanitary sewer
Weapons				
Gun Shop	838	PD 680	20 gal/yr	Fire training → Recycled at washrack[b]
Missile Maintenance	952	Thinners	2 gal/yr	Base landfill → Cobb Co. Landfill
Munitions	944	Trichloroethane	Trace	
Weapons/Release	838	Corrosion Preventive	--	
		Oil and Lubricants	2 gal/yr	
Motor Pool	965	Waste Oils	200 gal/yr	Fire training → DPDO[e]
		Waste Fuels	150 gal/yr	Fire Training → POL[c]
		TCE	2 gal/yr	Base landfill → Cobb Co. Landfill
		Solvents	5 gal/yr	
		Paint Strippers		
		Paint Thinners	2 gal/yr	

[a]Aerospace systems temporarily located in Building 916 (1981-1982).
[b]Oil/water separator at ANG washrack (Facility 989), PD 680 is recycled; soap and solution discharged to sanitary sewer.
[c]Reuse or contract disposal off-base through AFRES Fuels Management Branch
[d]Portable waste oil tank at ANG washrack; transported to AFP No. 6 for disposal.
[e]Transferred to DPDO at Ft. Gillem for further disposition

Table 4 Continued

Shop Name	Location (Bldg. No.)	Waste Material	Waste Quantity	Treatment, Storage, or Disposal Methods (1940–1980)
NAS Atlanta				
Aircraft Maintenance Air Frames, Hydraulics, NDI, Welding, Machine, Electric/ Battery Shop	1	PD 680	550 gal/yr	Fire training (1960–c.1975); Drain to IWS (c.1975–1982)
		Paint Thinners, Toluene, MEK	50 gal/yr	
		Paint Stripper	50 gal/yr	5-gal buckets to DPDO[a] (1960–1982)
		Sulfuric Acid	15 gal/yr	Neutralized to sanitary sewer (1960–1982)
		Waste Oils	1,500 gal/yr	UG tank[b] (1960–1982)
Aircraft Equipment Maintenance	17	Paint Removers & Thinners	150 gal/yr	Fire training (1960–c.1975); Drain to IWS (c.1975–1982)
		MEK	Evaporated	
		Alkaline Soap	360 gal/yr	Storm drain (1960–c.1975); Drain to IWS (c.1975–1982)
		Naphtha	10 gal/yr	
		Waste Fuels	100 gal/yr	POL[c] (1960–1982)
		Hydraulic Fluid, Waste Oils	660 gal/yr	UG tank[b] (1960–1982)
Vehicle Maintenance	70	Waste Oils	250 gal/yr	UG tank[b] (1960–1982)
		Mineral Spirits	40 gal/yr	DPDO[a] (1960–1982)
		Thinners	10 gal/yr	
		Contaminated Fuels	Trace	
U.S. Army Reserve				
Aircraft Maintenance	1011	Waste Oils and Fuels	150 gal/yr	POL[c] (c.1971–1982)
		PD 680	20-25 gal/yr	
		Alkaline Solvent	100 gal/yr	Sanitary sewer (c.1978–1982)
Army National Guard				
Aircraft Maintenance	747	Waste Oil	300 gal/yr	Drums/off-base contract disposal (c.1973–1982)
		Waste Fuel	500 gal/yr	AFRES POL (c.1973–1982)
		PD 680	110 gal/yr	Drums/off-base contract disposal (c.1973–1982)

[a]Transferred to DPDO at Ft. McPherson for further disposition.
[b]Underground waste oil storage tank at Building 71, reuse or off-base contract disposal through Public Works.
[c]Reuse or contract disposal off-base through AFRES Fuels Management Branch.

nose dock (Building 746). Approximately 1,500 gallons of waste oils and 120 gallons of waste fuels are generated each year at these buildings. Prior to 1974, waste fuels were collected in 55-gallon drums and transported to the Past Fire Training Area for use in fire training exercises. Since 1974, waste fuels have been collected by the AFRES Fuels Management Branch for recycling or for off-base contract disposal. Waste oils were originally collected in drums and disposed of at the Past Fire Training Area burn pit. Since 1965, a 1,000-gallon underground tank located near Building 817 has been used for storage of waste oils prior to disposition. Since 1974, these waste oils have been pumped out by a private contractor and removed off-base.

Corrosion control activities are conducted at the ANG washrack near Building 989, and have generally been limited to washing of aircraft. Currently, these operations use about 3,000 gallons of PD 680, a petroleum distillate used as a cleaning solvent, and 1,000 gallons of alkaline soap solutions per year. Before 1972, when larger aircraft were being serviced, almost three times these amounts of soap and solvent were typically used. Prior to 1968, aircraft washing activities were conducted on the aircraft parking apron near Building 817. The apron had no oil/water separator, discharging directly to the storm sewer system.

Minor corrosion control activities, including stripping and touch-up painting of small parts, are conducted at the paint shop in Building 817. Typical wastes have included approximately 300 gallons per year of paints, paint thinners, toluene, and MEK which are combined in 55-gallon drums for disposal. Prior to 1974, these waste were taken to the Past Fire Training Area burn pit for disposal; since 1974, they have been delivered to DPDO at Ft. Gillem for further disposition.

About 50 to 100 gallons per year of carbon remover (a chlorinated hydrocarbon compound of cresylic acid and o-diclorobenzene) are used by AFRES Phase Inspection Maintenance, primarily to clean exhaust parts on reciprocating engines. Before 1974, waste carbon remover was typically disposed of at the Past Fire Training Area. Since 1974, the waste carbon remover has been stored in drums at the ANG washrack and is awaiting disposal. One interviewee reported that around 1972 or 1974, about two 55-gallon drums of the carbon remover were disposed of in a small pit at the Past Base Landfill.

Fabrication: Fabrication shops including Propulsion, Repair and Reclamation, Pneudraulics, and Electric/ Battery Shops are located in Buildings 819 and 808. Wastes include between 400 and 800 gallons per year of PD 680 solvent and small quantities of waste oils, hydraulic fluid, and paint stripper. Originally, all these wastes were collected in drums and disposed of at the burn pit at the Past Fire Training Area. Between 1965 and 1974, waste oils and hydraulic fluids were collected in the underground storage tank near Building 817 before being disposed of at the Past Fire Training Area. Since 1974, the collected POL wastes have been disposed of through off-base contract disposal. Waste PD 680 solvent has been carried to the ANG washrack for recycling since 1971, and since 1974, waste paints and paint strippers have been disposed of off-base through contract disposal. Waste sulfuric acid is neutralized with potassium hydroxide in the Electric/Battery Shop, then discharged to a gravel drainfield outside of Building 808.

About 24 pounds per year of waste asbestos brake pads are disposed of along with other sanitary refuse which prior to 1974 was taken to the Base Sanitary Landfill and since 1974 has been taken to the Cobb County Landfill.

Aerospace Ground Equipment: The AGE shop is presently located in Building 823, having been located prior to 1975 at the site of the present NDI Lab. The building that housed the old AGE shop has since been torn down. Prior to 1967, the AGE shop was located in Building 808. Less than 60 gallons of waste PD 680 solvent are generated each year, which were disposed of at the Past Fire Training Area prior to 1971 and, since 1971, have been carried to the ANG washrack for recycling. About 300 gallons of waste oils are also generated each year; prior to 1974 these were taken to the Past Fire Training Area for disposal and since 1974 they have been taken off-base through contract disposal.

Vehicle Maintenance: Maintenance of refueling and motor pool vehicles is performed at Buildings 512 and 516. Two portable tanks, each about 500 gallons in capacity, collect waste oils and hydraulic fluid which are disposed of off-base through contract disposal. Uncontaminated fuels (JP-4 and AVGAS) are stored in a 500-gallon proving tank and waste fuels are stored in 55-gallon drums before being collected by AFRES Fuels Management Branch for recycling or for disposition off-base through contract disposal. Small quantities of cleaning solvents are used, but no liquid wastes are generated.

b. Georgia Air National Guard

Aircraft Maintenance: All aircraft maintenance operations of the ANG have been conducted in Building 838 since the 1940's. Common wastes include approximately 300 gallons per year of paints and paint strippers, thinners, and miscellaneous solvents which are combined in 55-gallon drums for disposition. In general, these wastes were disposed of at the Past Fire Training Area burn pit prior to the early 1970's. Between 1970 and about 1978 these wastes were reportedly taken to AFP #6 for disposal by the Lockheed-Georgia

Company. One interviewee reported that about two or three drums of waste paints and solvents were disposed of in the base landfill twice per year between 1973 and 1975. Since 1978, these wastes have been sent to DPDO at Ft. Gillem, Georgia, for further disposition.

Between 1,000 and 2,000 gallons of waste oils and fuels are also generated each year. Prior to 1971, these waste oils and fuels were collected in two underground waste oil tanks of about 500-gallon capacity which were located near the present ANG washrack. Disposition of waste oils and fuels prior to 1971 was generally by transporting the wastes to the Past Fire Training Area burn pit for use in fire training exercises. Since 1971, a portable tank of about 200-gallon capacity has been located at the ANG washrack and has been used to collect waste oils and to transport them to AFP #6 for disposal. One interviewee reported that waste oils were occasionally dumped over the side of a hill alongside the ANG facilities prior to the 1970's.

Aircraft washing and corrosion control activities are conducted at the ANG washrack near Building 989. The washrack, which was built in the mid-1960's, orignially discharged directly to the storm sewer. In 1971, an oil/water separator was installed for recycyling of PD 680 solvent. The solvent now is collected in a 1,000-gallon underground tank and then mixed with uncontaminated solvent for reuse at the washrack. Effluent from the oil/water separator discharges to the sanitary sewer. Since 1971, waste PD 680 generated by individual shops within Building 838 has been carried to the washrack for recycling. The total quantity of PD 680 used by the ANG at the washrack is approximately 3,000 to 4,000 gallons per year.

In the Battery Shop waste sulfuric acid is neutralized with potassium hydroxide. The neutralized solution is then discharged to a gravel drainfield near Building 838.

Aerospace Ground Equipment: In 1981, the AGE shop moved from Building 903 to Building 829. Less than 200 gallons of waste fuels, waste oils, paint thinners, and PD 680 solvent are generated each year. These wastes are collected in drums and combined with similar wastes generated in Building 838 for disposition. Since 1971, waste PD 680 has been carried to the ANG washrack for recycling.

Vehicle Maintenance: Previously located in Building 829 (the current AGE Shop), the ANG motor pool moved in 1981 into a newly constructed shop in Building 965. Common wastes generated in the shop include a few gallons per year of trichloroethylene (TCE), paint strippers and thinners, and miscellaneous solvents. These wastes have generally been disposed of along with sanitary refuse which, prior to 1974, was taken to the Past Base Landfill and since 1974 has been taken to the Cobb County Landfill. Approximately 150 gallons per year of waste fuels are stored in drums prior to disposition through AFRES Fuels Management Branch. Waste oils, previously collected in drums, have been stored in a 500-gallon holding tank since the new motor pool facility was constructed. Less than 200 gallons of waste oils are generated each year. These waste oils were taken to the Past Fire Training Area burn pit for disposal prior to 1971, and were disposed of along with other waste oils generated at Building 838 between 1971 and 1981. Since 1981, waste oils have been removed from the base through contract disposal.

Weapons: Maintenance of weapons and weapons systems is performed in a number of neighboring buildings, including the Gun Shop and Weapons/Release Systems Shop in

Building 838, Munitions Office (944), Munitions Trailer Maintenance (946), Munitions Inspection (948), Munitions Storage (950 and 954), Missile Maintenance (952), Weapons Cleaning (957), and Weapons Control (903). Trace amounts of paint thinners, trichloroethane, corrosion preventive, and oil and lubricants are used at the various shops and disposed of in standard refuse containers. Prior to 1974, this refuse was disposed of in the Past Base Landfill; since 1974, refuse has been taken off-base to the Cobb County Landfill. A total of less than 20 gallons of waste PD 680 is generated each year, and is currently carried to the ANG washrack for recycling.

c. Naval Air Station Atlanta

Aircraft Maintenance: Since the Naval Air Station was constructed in 1958, all principal shops for routine aircraft maintenance have been located in Hangar 1, including Air Frames, Hydraulics, Welding, Machine, and Electric/Battery Shops. Solvents and cleaners, including PD 680, paint thinners, toluene, and methyl ethyl ketone (MEK), are collected in a self-contained spray booth. Approximately 600 gallons of waste solvents from the spray booth are disposed of each year. Prior to 1975, these wastes were taken to the Past Fire Training Area burn pit for disposal; since 1975 they have been disposed of through an industrial waste sewer (IWS) which is connected to an industrial waste treatment plant at AFP #6. In addition, about 50 gallons of waste paint stripper are disposed of off-base in 5-gallon buckets through contract disposal. In the Electric/Battery Shop, about 15 gallons per year of sulfuric acid is neutralized with potassium hydroxide prior to discharge to the sanitary sewer.

The Navy's aircraft washrack, located outside of Hangar 1, was constructed in 1963. Over 400 aircraft are cleaned at the washrack each year, using about 1,500 gallons of a soap-base cleaning compound; no PD 680 solvent is used. Originally the washrack was connected to the sanitary sewer, but has been connected to the industrial waste sewer since 1975.

Aircraft Equipment Maintenance: Maintenance of aircraft support equipment has been conducted at Building 17 since 1959. Wastes have included about 100 gallons of contaminated fuel and 660 gallons of hydraulic fluid and waste oils per year, which have been collected in drums and taken to Public Works (Buildings 70 and 71) to be combined with waste POL generated there. Small quantities of alkaline soap and naphtha are used at the aircraft support equipment washrack. Prior to 1975 the washrack drained to the storm drain; since 1975 it has been connected to the industrial waste sewer. About 150 gallons per year of paint removers and paint thinners are generated which, prior to 1975, were disposed of at the Past Fire Training Area burn pit and, since 1975, have been disposed of through the IWS.

Vehicle Maintenance: Motor pool vehicle maintenance is located in Public Works, Building 70. Less than 50 gallons per year of mineral spirits and thinners are generated and are stored in 55-gallon drums prior to being transported to DPDO at Ft. Gillem. Waste oils, about 1,800 gallons per year, are collected in portable tanks and taken to a 6,000-gallon underground storage tank located at the Boiler House, Building 71. Waste POL at Building 71 are either reused in Boiler House operations or are removed through off-base contract disposal.

d. Georgia Army National Guard

The Army National Guard has occupied the Building 747 nose dock since 1973. The unit performs routine maintenance on all assigned aircraft, primarily helicopters. Wastes, which are collected in 55-gallon drums for pick-up by private contractors or AFRES personnel, include approximately 300 gallons per year of waste oils, 240 gallons per year of contaminated fuels, and 110 gallons per year of PD 680 solvent. A few gallons per year of paint thinners and toluene are generated and are mixed with the waste oils for disposal off-base through contract disposal.

e. U.S. Army Reserve

The Army Reserve was originally located in Hangar 3 (Building 730) but moved into new facilities south of the runway in 1978. Routine maintenance of assigned aircraft and motor pool vehicles is performed in the Army Reserve hangar (Building 1011). About 150 gallons per year of waste oils and fuels are collected in a 55-gallon drum for disposition by AFRES Fuels Management Branch. Approximately 20 to 25 gallons of PD 680 is removed from a cleaning machine once each year and disposed of in the waste oil container. Aircraft and vehicles are washed at a washrack near the hangar using less than 100 gallons per year of an alkaline cleaning solvent. An oil/water separator, which discharges to the Cobb County sanitary sewer system, has been used at the washrack since it was constructed in 1978.

2. Summary of Storage and Disposal Practices

Since the tenant units at Dobbins AFB and NAS Atlanta are primarily Reserve and National Guard units, industrial operations have been generally intermittent and limited to routine checks and maintenance which generate small quantities of hazardous wastes. There have never been any large-scale "depot"-type activities, aircraft reconditioning operations, or major corrosion control or aircraft painting operations. Interviews with past and present base employees indicate that total combined quantities of wastes include approximately 7,500 gallons per year of waste POL, 8,000 gallons per year of waste solvents, 1,000 gallons per year of waste paint thinners, and 1,500 gallons per year of waste fuels.

The quantities of waste generated in past operations were probably similar to those currently being generated. Quantities of PD 680 solvent used between 1966 and 1972 by AFRES while servicing the large C-124 aircraft were perhaps three times higher than those presently being used.

Waste Oils: Prior to 1975, POL wastes from all areas on-base were typically transported to the Past Fire Training Area located south of the runway (Site No. 2, Figure 9), where they were stored in 55-gallon drums and consumed in fire training exercises. Since 1975, when POL wastes were no longer accepted at the Past Fire Training Area burn pit, the wastes have been typically removed from the base by a private contractor for off-base disposal. Final disposition of the waste oils prior to 1976 was handled by DPDO, which was responsible for resale, recycle, or disposal. The DPDO was transferred to Memphis in 1976; AFRES Supply currently maintains accountability for disposal.

Two 200-gallon portable tanks are used to collect waste oils generated at the AFRES vehicle maintenance shops, Buildings 512 and 516. AFRES installed a 1,000-gallon underground waste oil tank near Building 817 in 1965. This waste oil tank has since been used by all AFRES aircraft maintenance shops, hangars, and the AGE Shop. Final disposition of waste oils collected in this tank has generally been through off-base contract disposal since 1974.

The Georgia ANG originally stored waste oils and solvents in two 500-gallon underground storage tanks near

Building 838 for final disposal at the Past Fire Training Area burn pit. In 1971, with the construction of the oil/water separator at the ANG washrack, the tanks were replaced with a 200-gallon portable tank, which has reportedly been used to transport the waste oils to AFP #6 for disposal. The current AGE Shop in Building 829 (formerly motor pool) stores waste oils in 55-gallon drums which are taken to the holding tank at the washrack for final disposition by off-base contract disposal. The current motor pool, Building 965, was constructed in 1980, and has a 500-gallon holding tank for waste oils. Final disposition is by off-base contract disposal.

The Navy has used a 6,000-gallon underground storage tank located near the Boiler House, Building 71, since NAS Altanta was constructed in 1958. All units at the Naval Air Station have disposed of their waste oils in this tank. The waste oils have either been reused in Boiler House operations or have been pumped out and removed from the Naval Air Station by a private contractor through Navy Supply.

Solvents: Prior to the construction of the oil/water separator at the ANG washrack in 1971, solvents were disposed of by AFRES and ANG in various ways. Solvents used on the washracks and flight lines were washed down the storm drains. No significant residual quantities of solvents are suspected to have infiltrated into the ground water or to remain in the ground, but have probably been considerably diluted and washed downstream. Solvents used inside individual shops were either mixed in waste oil tanks or drums or collected in separate drums for disposal at the Past Fire Training Area burn pit.

Since the construction of the oil/water separator, PD 680 solvent has been recycled at the ANG washrack. The facility has three underground tanks: a 3,000-gallon alkaline soap tank, a 3,000-gallon "non-contaminated" PD 680 tank, and a 1,000-gallon "contaminated" PD 680 tank which collects the skimmings from the separator. The "contaminated" PD 680 is periodically pumped out and returned to the "non-contaminated" PD 680 tank for reuse. Effluent from the oil/water separator discharges to the sanitary sewer.

Currently, all AFRES and ANG shops either use PD 680 solvent only at the ANG washrack or carry waste PD 680 to the washrack for recycling. The records search did not reveal evidence of past or present use or disposal of any significant quantities of other types of solvents at Dobbins AFB.

In a similar fashion, solvents used at the NAS Atlanta were originally either washed down the storm drain during aircraft washing operations or collected in drums at individual shops for disposal at the Past Fire Training Area burn pit. In 1975, when solvents were no longer accepted at the burn pit by the fire department, an industrial waste sewer system was constructed which ties into an industrial waste treatment plant operated by the Lockheed-Georgia Company north of the runway. Since 1975, all Navy shops have disposed of waste solvents to the industrial waste sewer (IWS).

Waste Paint Products: Waste paint products, such as waste paints, paint strippers, and paint thinners, were generally disposed of at the Past Fire Training Area burn pit prior to 1974. In general, since 1974, they have been sent to DPDO at Ft. Gillem, Georgia, for further disposition. Between 1970 and about 1978, some of these wastes were also taken to the Lockheed-Georgia Company at AFP #6. In addition, Navy shops have disposed of waste paint products in the industrial waste sewer since 1975. Small quantities, which are commonly generated at most industrial shops, may have been disposed of along with other sanitary refuse in the Past Base Landfill prior to 1974. One interviewee reported that about two or three drums of waste paints and solvents were disposed of in the Past Base Landfill twice per year between 1973 and 1975.

Contaminated Fuels: Prior to 1975, contaminated fuels were generally disposed of in the Past Fire Training Area burn pit. Since that time, AFRES Fuels Management Branch has been responsible for collection of waste fuels from all tenant units. Collection tanks are located at the AFRES, ANG, and Navy flight lines and motor pools, while the Army National Guard and Army Reserve units store waste fuels in 55-gallon drums. The collected waste fuels are recycled whenever possible by combining with noncontaminated fuel or are sold to a private contractor to be removed from the base.

3. Laboratory Operations

Laboratory operations at Dobbins AFB and NAS Atlanta include photo labs, medical labs, non-destructive inspection (NDI) labs, and a precision measurement equipment lab (PMEL). An inventory of the laboratories is given below:

Facility No.	Description
820	AFRES Photo Lab
741	AFRES NDI Lab
838	ANG Medical Lab
838	ANG NDI Lab
838	ANG Photo Lab
H-1	Navy NDI Lab
H-1	Navy Photo Lab
550	Navy Medical/Dental Lab
2	Navy PMEL

These laboratories dispose of small quantities of common laboratory chemical solutions to the sanitary sewer. Silver from all of the laboratories is recovered at three locations: by AFRES in its Photo Lab, by the ANG in its NDI Lab, and by the Navy in its Medical Lab. Prior to 1980, it was common practice to send spent solutions off-base through DPDO to Ft. Gillem for silver recovery

The three NDI laboratories are relatively recent acquisitions; the AFRES NDI Lab was begun in 1975, the ANG NDI lab in 1972, and the Navy NDI Lab in 1979. These laboratories are closely associated with the operations of other shops; waste materials are generally disposed of in conjunction with wastes from other shops. Less than 20 gallons per year of PD 680 solvent are disposed of at each lab; AFRES and ANG dispose of PD 680 at the ANG washrack, while the Navy washes it down the IWS. Other typical materials handled at these labs include emulsifiers and fluorescent penetrants which are consumed in the laboratory, and less than 20 gallons per year of miscellaneous solvents (e.g., MEK, toluene, trichloroethane) which are generally delivered to DPDO at Ft. Gillem for disposal.

The records search did not indicate any hazardous waste contamination from past laboratory operations.

4. <u>Fuels Storage and Handling</u>

There are two main POL areas at Dobbins AFB and NAS Atlanta, one operated by AFRES personnel and the other by Navy personnel. An inventory of all major fuel storage tanks is given in Appendix G.

The AFRES POL area is located on the western end of the base on Atlantic Avenue. It includes two aboveground tanks with dikes: one 210,000-gallon tank for JP-4 and one

84,000-gallon tank for AVGAS. There are six 25,000-gallon underground tanks: three for AVGAS and three for No. 2 fuel oil. In addition there are four elevated and diked tanks: two 10,000-gallon tanks that store No. 2 fuel oil and two 5,000-gallon tanks that store MOGAS and diesel.

Aircraft fuels are shipped to the AFRES POL area from Lynn Haven, Florida, and are received by tank truck at a truck unloading facility. A railroad tank car unloading facility located at AFP #6 was also used prior to about 1972. Fuels are loaded from the storage tanks into 5,000-gallon mobile fueling units for transport directly to aircraft on the AFRES and ANG flight lines.

Major fuel tanks at the AFRES POL area are cleaned approximately every 3 years to remove small quantities (5 to 10 gallons) of residue (sludge) containing mostly water, rust, and sediment. Prior to 1973, it was standard practice to dispose of this sludge in shallow pits adjacent to the tanks. Some of this sludge contained tetra ethyl lead from AVGAS storage tanks and has probably resulted in some localized contamination of the soil. A sign is present at the AFRES POL area which clearly marks the area where this sludge was buried. One interviewee reported that about 12 to 15 years ago approximately 15 gallons of AVGAS sludge was buried near Big Lake in an area which is now being regraded for construction of a new Army National Guard facility (Site No. 6, Figure 9).

The Navy POL Area is located at the western edge of the Naval Air Station adjacent to Patrol Road and contains four aboveground tanks surrounded by grass-covered earth dikes: one 210,000-gallon, two 90,000-gallon, and one 45,000-gallon. Currently, only JP-5 is stored at the facility, although prior to 1978, AVGAS had also been stored. The

Navy obtains aircraft fuels by both truck and rail and transports the fuel to the flight line in 5,000-gallon mobile fueling units.

The Navy POL tanks are cleaned every 3 to 5 years, removing 50 to 100 gallons of sludge per tank. Prior to 1969, this sludge was disposed of in the Past Base Landfill; since that time a private contractor has been responsible for cleaning the tanks and disposing of the sludge off the installation.

5. Fire Training

Fire training activities have been conducted at two facilities at Dobbins AFB. The original burn pit was located south of the runway in an area recently regraded and paved for use as a power check pad by the ANG (Site No. 2, Figure 9,). This pad was abandoned after only 1 month of use in 1980 when dust raised by the activity hindered painting operations at AFP #6.

Originally, maintenance shop personnel brought comingled waste oils, solvents, paints, and fuels to the burn pit in 55-gallon drums which were stored at the facility until used in fire training exercises. One interviewee reported that around 1972, up to 200 drums of waste POL were being stored at the facility. During training exercises the waste POL was dumped into an unlined earthen pit about 100 feet square and 3 to 4 feet deep and ignited. A 10- to 12-foot-deep holding pond was located adjacent to the burn pit to temporarily retain the water used to extinguish the fire; excess water then flowed into Poorhouse Creek.

In 1974, new regulations stipulated that only fuel with less than 10 percent contamination could be used in fire training exercises. One interviewee reported that at that time 15 to 20 drums of waste POL were being stored at the facility which were subsequently removed to the base landfill. Another interviewee reported that about 10 to 15 buried drums filled with unknown noxious liquids were unearthed during construction of the ANG power check pad in 1980. The drums were taken to the base landfill, crushed, and buried, spilling the contents onto the ground. Additional drums reportedly remain buried at the Past Fire Training Area burn pit.

A new facility (Site No. 3, Figure 9) was built in 1974 north of the runway, adjacent to Big Lake. The new facility is similar in size to the former and consists of a concrete-lined burn pit with a 2,500-gallon tank for fuel storage. Runoff from the burn pit is collected in a baffled sump pit and piped to the Industrial Waste Treatment Plant located at AFP #6 for treatment. In current fire training exercises, the fuel (generally JP-4 containing water) is delivered to the site by truck and pumped into the burn pit just before the exercises are to commence. Approximately 450 to 500 gallons of fuel are consumed per exercise.

The base fire department (AFRES) serves all tenant units, including the ANG and NAS Atlanta. Lockheed's fire department also uses the new training facility. A total of about 20 exercises are conducted at the facility each year. Prior to the late 1970's, one or more exercises were commonly performed each week.

Most of the waste POL or fuels were consumed in the fire training exercises. The quantities of waste POL or fuels which may have percolated into the ground at either of the two burn pits are judged to be small. Any waste POL or fuels which escaped into Poorhouse Creek or Big Lake from the holding ponds have probably been diluted and washed downstream off-base.

Prior to 1969, a protein foam was typically used to extinquish fires. Since then, an agent referred to as AFFF has been used. AFFFs are non-corrosive, biodegradable fluorocarbon surfactants with foam stabilizers.

6. Polychlorinated Biphenyls (PCBs)

The sources of PCBs include out-of-service electrical transformers and capacitors. These items are disposed of by both AFRES and Navy Supply, which are responsible for the safe and environmentally approved disposal of all items containing PCB. The records search indicated that about one PCB-containing transformer is disposed of per year by AFRES Supply (Building 812). The transformers are stored temporarily on a concrete slab near Building 506 before being delivered to DPDO at Ft. Gillem for final disposition. Only one PCB-containing transformer has reportedly been used at NAS Atlanta; it is scheduled to be taken out of service in 1983. The records search did not indicate any major PCB spills from leaking transformers or capacitors, or past disposal of these items on the base.

7. Pesticides

Pesticides and herbicides are commonly used for weed and pest control by both AFRES and Navy entomology departments. The major pesticides in use include Primatol, 2-4-D, Roundup, Hyvar X-L, Diaphon, Decamba, Dursban, Baygon, Pyrethium, Chlordane, Lindane, Diazinon, Malathion, Dibrom 14, and Carbaryl.

All pesticides and herbicides are EPA-registered chemicals, and proper preparation and application procedures are used. Currently, the only restricted-use pesticides or herbicides in use on-base are Dursban and Lindane for pest control. 2-4-5-TP has not been used by either AFRES or the

Navy since 1974. Empty pesticide containers are triple-rinsed and crushed or punched with holes prior to disposal. AFRES personnel dispose of these containers in the area of the Past Base Landfill, and Navy personnel deliver the empty containers to Navy Supply for disposal. The rinsewater is disposed of at the site of the pesticide application.

In 1962, aerial spraying of pesticides for Japanese beetles resulted in a major fishkill in Little Lake when the bluegills ate the beetles and died. The lake was later successfully restocked; no residual contamination is suspected.

The records search did not reveal any evidence of contamination problems from past pesticide usage.

8. Wastewater Treatment

Treatment of all industrial and sanitary wastewater from Dobbins AFB, NAS Atlanta, and AFP #6 is provided by the Lockheed-Georgia Company, except that the sanitary wastes from the U.S. Army Reserve Center are treated off-base through the Cobb County sanitary sewer system. A description of the wastewater treatment facilities at Air Force Plant #6 is included in Section IV. B.

Industrial wastes from Dobbins AFB are pretreated in oil/water separators, which were installed at several facilities in the early 1970's with connection to the sanitary sewer. Industrial wastes from NAS Atlanta have been pumped to an industrial waste treatment plant located at AFP #6 since 1975; previously no treatment of industrial wastes from the Navy was provided. A list of the oil/water separators and of the Navy's connections to the industrial waste sewer (IWS) is given in Table 5.

Table 5

OIL/WATER SEPARATORS AND
INDUSTRIAL WASTE SEWER CONNECTIONS

Facility Number	Facility	Date Facility Constructed	Date Separator Constructed or Connection Made	Discharge
Oil/Water Separators				
989	ANG Washrack	1960's	1971	Sanitary Sewer
819	AFRES Washrack(abandoned)	1948	(None)	Storm Sewer
531	AFRES POL	1943	1979	Storm Ditch
516	AFRES Motor Pool	1950	1969	Storm Ditch
955	ANG Motor Pool	1981	1981	Sanitary Sewer
16	Navy POL Area	1958	1978	Storm Ditch
49	Navy Railroad Siding	1958	1978	Storm Ditch
1011	U.S. Army Reserve	1978	1978	Cobb County Sanitary Sewer
Industrial Waste Sewer Connections				
Hangar 1	Navy Hangar (3 inlets)	1958	1975	AFP #6 IWTP*
Hangar 1	Navy Aircraft Washrack	1963	1975	AFP #6 IWTP
17	Navy Equipment Washrack	1959	1975	AFP #6 IWTP
70	Navy Vehicle Washrack	1958	1975	AFP #6 IWTP
71	Navy Boiler House	1958	1975	AFP #6 IWTP
27	Navy Auto Hobby Shop	1964	1975	AFP #6 IWTP
85	Navy Service Station	1961	1975	AFP #6 IWTP
82	Navy Swimming Pool	1965	1975	AFP #6 IWTP

*IWTP = Industrial Waste Treatment Plant at AFP #6

No evidence was found during the records search to suggest that hazardous material contamination exists from either past or present wastewater treatment plant operations.

9. Spills

Seven industrial waste retention basins were constructed in 1978 at the locations shown on Figure 8. These facilities have been strategically located on principal drainages to provide control, containment, and recovery capability for potential spills at virtually any location within the Dobbins AFB/NAS Atlanta/AFP #6 storm drainage system. In addition, absorbant material and sandbags are provided near all flight lines for construction of temporary dikes or recovery of spilled material.

Spills which have been reported at Dobbins AFB include the following:

- 500 gallons of JP-5 spilled at the Navy POL area in 1978; approximately 5 to 6 dump truck loads of fuel-saturated dirt were excavated by AFRES personnel and taken to the Past Base Landfill for disposal.

- 300 gallons of AVGAS spilled at Navy ramp in 1980, 75 percent of which was collected using "speedy-dry" absorbant and the remainder of which was picked up downstream at AFP #6.

- 200 gallons of JP-4 spilled at Navy ramp in 1981; the adjacent drainage was dammed and the spilled fuel collected in 55-gallons drums.

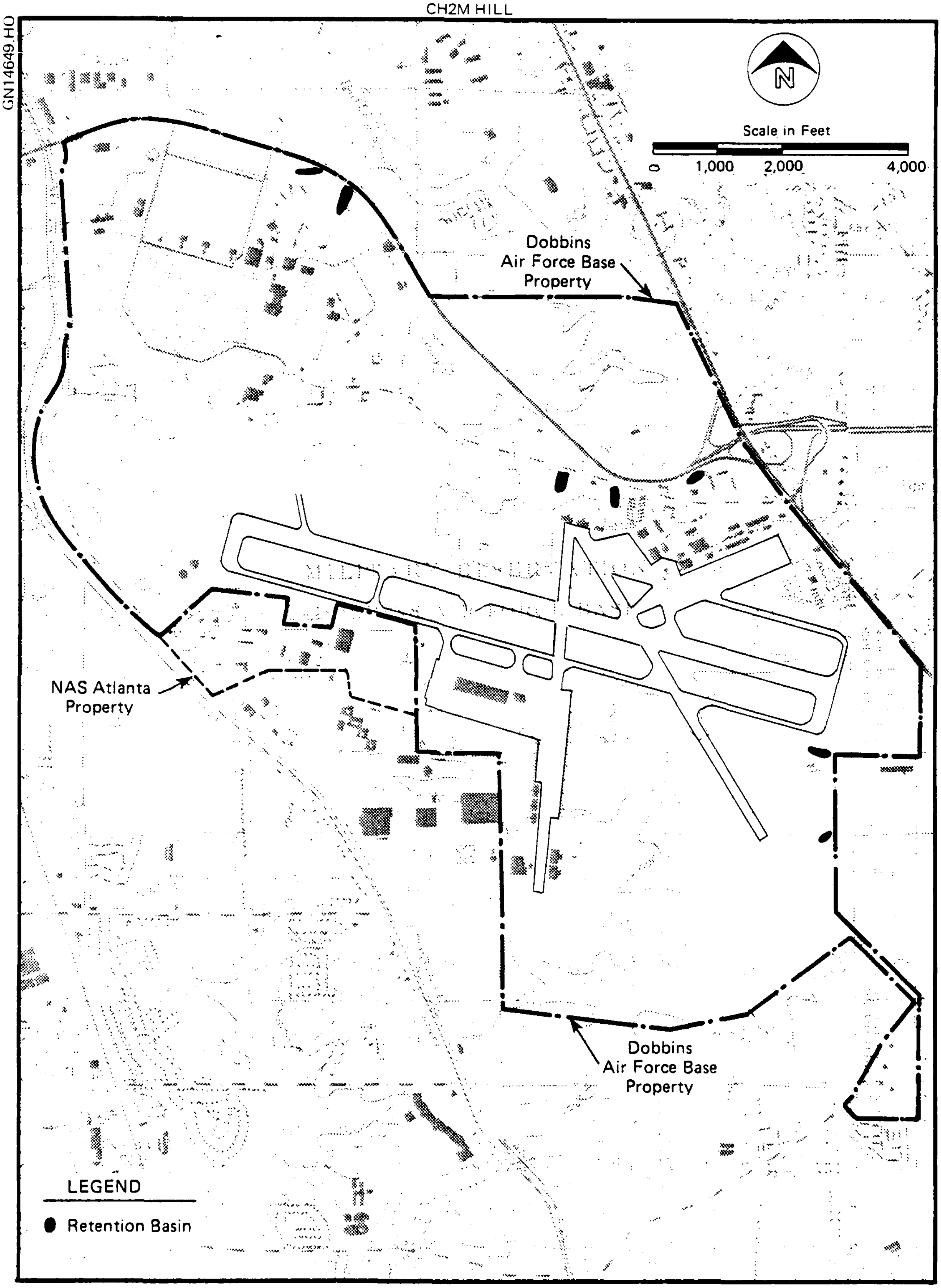


FIGURE 8. Location map of industrial waste retention basins.

- 100 gallons of PD 680 solvent spilled at the ANG washrack in 1976 and washed down Poorhouse Creek.

- Miscellaneous smaller spills occurred at all flight lines due to overtopping of fuel or waste oil tanks, or to rupturing of tanks.

No significant residual hazardous waste constituents are suspected to have infiltrated into the ground water as a result of past spills, since most spills are washed downstream or are diluted by subsequent stormwater runoff.

Past spills or discharges into Big Lake prior to the 1970's have been reported by several base personnel. The characteristics of these former discharges are not known, although they have been described as foamy or sudsy, milky, creamy, and orange-colored. Big Lake was dredged in 1955 prior to the time these discharges were reportedly entering the lake; the sediment that was removed was placed along the runways. The lake has not been dredged since that time, although the water is drained from the lake every few years. Samples of the bottom sediment were analyzed by the U.S. Army Corps of Engineers in 1979, and have been designated by the Georgia Department of Natural Resources as non-hazardous. Results of these analyses are presented in Appendix E. These samples were taken from the top of the lake mud; it is not known to what depth the sediment has been deposited, whether sediment samples at a greater depth have been analyzed, or if contaminant migration due to seepage from Big Lake into the ground water may have occurred in the past.

10. Landfills

Only one site at Dobbins AFB has been used as a desingated sanitary landfill since the base was constructed in the 1940's. The landfill, located near the southeastern corner of the base, was used for disposal of wastes from all tenant units, excluding AFP #6, until it was officially closed in 1974.

Operation of the landfill included excavation of trenches, controlled burning of refuse within the trenches, and subsequent burial of the burned wastes. Materials disposed of in the landfill consisted generally of domestic-type refuse, i.e., putrescible garbage, rubble, and dry trash. In the last few years of its operation, only burnable dry trash was reportedly accepted at the landfill.

Although it was never common or accepted practice to dispose of industrial wastes in the landfill, several of the interviewees reported incidents of such disposal. Wastes included 100 gallons of carbon remover that were emptied into a small pit at the site from 1972 to 1974, 15 to 20 drums of waste oil and solvents that were transferred from the Past Fire Training Area burn pit to the landfill in 1974, 50 to 100 gallons per year of AVGAS sludge that were removed from the Navy POL area between 1958 and 1969, 4 to 5 drums of mixed paints and thinners that were removed from the ANG paint shop between 1973 and 1975, and about 24 pounds per year of asbestos-lined brake pads that came from the AFRES Pneudraulics Shop between 1955 and 1974.

Since 1974, the landfill has been officially closed; all domestic-type refuse is currently taken off-base to the Cobb County Landfill for disposal. Reports of unauthorized dumping at the landfill site since 1974 include 5 to 6 dump truck loads of fuel-saturated dirt from the Navy POL area in 1978, 10 to 15 drums of unknown contents unearthed at the Past Fire Training Area in 1980, fuel foam from 10 aircraft between 1979 and 1981, and miscellaneous empty pesticide containers. At present, the surface of the landfill is covered with scattered refuse and debris. Piles of demolition debris are present in the center of the site. The lower southeast portion of the site, consisting of an open excavation 15 to 20 feet deep, has been recently used as a borrow pit. No visible trash was observed in the sides of this excavation.

Two other areas of Dobbins AFB have been used primarily for disposal of rubble and demolition debris. One of these sites, located alongside Patrol Road in the southeast corner of the base, has been used since 1955 for disposal of concrete rubble, pavements, and construction debris. Although a few empty 5-gallon oil cans and empty 55-gallon drums are visible at the site, no burnable or putrescible trash or industrial wastes have reportedly been disposed of.

The other rubble landfill is located alongside Walker's Gorge northwest of the Past Base Landfill. The site has been used infrequently since 1976, when unauthorized dumpings of dry building materials were first discovered. Piles of construction debris and concrete rubble were observed at the site.

11. Other Activities

No records or information were found to indicate past testing or use of chemical or biological warfare agents at Dobbins AFB. Explosive ordnance, including conventional small arms less than 22 mm, and any white phosphorus is sent to EOD sites off-base. AFRES and ANG send ordnance to Ft. Gillem, and the Navy sends ordnance to Ft. McPherson. No site at Dobbins AFB has been used for disposal of explosive ordnance.

Spent electron tubes from communication/navigation equipment are sent through AFRES and Navy Supply to Ft. Gillem for final disposition. Quantities are generally very small; Naval Air Station Atlanta reports no disposition of electron tubes over the past 4 years.

B. Air Force Plant #6

Air Force Plant #6 was operated by Bell Aircraft Company during World War II to build B-29 bombers. Following the war, Air Force Plant #6 was occupied by Tumpane Company, a machine rebuilding company, and by the Civil Service Administration. Since March, 1951, Lockheed has operated the plant under contract for the Air Force.

Although Air Force Plant #6 has not been included in the records search for Dobbins AFB, this section summarizes various activities, operations and events which have reportedly occurred at AFP #6 that may have an impact on the remainder of Dobbins AFB. The onsite base visit did not include a search of AFP #6 records, ground tours of the plant, or interviews with plant personnel, although one Lockheed-Georgia employee was interviewed with respect to general knowledge of Dobbins. An information packet was supplied by Lockheed-Georgia which proved useful in the records search conducted for the remainder of Dobbins AFB.

Lockheed-Georgia operates two fuels storage and handling facilities; one located north of the runway near South Cobb Drive and the other located south of the runway adjacent to NAS Atlanta. Lockheed also operates its own landfill located north of the main plant area adjacent to South Cobb Drive. No information was obtained during the records search concerning past operations or disposal practices at any of these facilities, the existence of any former facilities, or the potential for hazardous material contamination or migration from these facilities onto Dobbins AFB.

Lockheed has it own fire department that has been using the fire training facilities near Big Lake jointly with the AFRES fire department since 1975. It is not known where the Lockheed fire department previously held its training exercises or how the former fire training area was operated.

Treatment of all industrial and sanitary wastewater from Dobbins AFB, NAS Atlanta, and AFP #6 is provided by Lockheed. The sanitary sewage treatment facility, built in 1942, consists of a standard trickling-filter plant. Industrial waste treatment facilities were constructed for concentrated cyanide and chromate dumps in 1942 and were rehabilitated in 1964. In 1972, a new industrial waste treatment plant (IWTP) was placed in operation. In 1973, a tertiary treatment plant was constructed to provide additional treatment of both industrial and sanitary waste streams. Effluent from the tertiary plant, which is designed for a maximum flow of 7.0 mgd, discharges into Nickajack Creek. Average daily flow rates of about 2.5 mgd were recorded in 1981, of which about half is sanitary and half industrial flow. The facilities are currently operating under an NPDES permit monitored by the Georgia Department of Natural Resources.

Since the operation of all treatment facilities is handled by Lockheed-Georgia, the records search was not able to investigate past practices with respect to composition or disposition of sludge from the treatment facilities. Interviews with base employees suggested that this sludge may previously have been used as fertilizer in an area at the western end of the runway. The quantity or nature of this sludge was not determined during the records search. In 1972, sludge was removed from an industrial treatment lagoon located near Building B-10 at AFP #6 and disposed of in a small holding pond near Building B-90, also at AFP #6, near South Cobb Drive (Georgia 280). The records search did not determine either the chemical composition of this sludge or the presence of any other areas where sludge may have been disposed of.

Seven industrial waste retention basins were constructed in 1978 on Dobbins AFB (including two on AFP #6) to provide control, containment, and recovery capability for potential spills. Water quality of the effluent from five of these basins is monitored daily by representatives of AFP #6 and reported to the Georgia Department of Natural Resources. A cursory look at a few representative water quality reports indicates that concentrations of the parameters tested are below maximum allowable discharge levels.

Past spills which have been reported on AFP #6 include the following:

- 25,000 gallons of jet fuel spilled at AFP #6 down Poorhouse Creek in 1974; all but 5,000 gallons were captured at the confluence of Rottenwood Creek and the Chattahoochee River.

- Several million gallons of chromate solution (20 ppm chromate) spilled at AFP #6 down Poorhouse Creek in 1975; the material was not captured, and was detected at a water treatment plant on the Chattahoochee River.

- About 10,000 gallons of jet fuel spilled at the Lockheed fuel dock in 1981; the spill was captured in Big Lake by raising the outlet wier and subsequently removed by an outside contractor using skimmer pumps. No fishkill was reported.

- Industrial waste discharges from AFP #6 into Big Lake prior to the 1970's. Characteristics of these former discharges are not known; recent analyses of water samples from Big Lake indicate contaminant concentrations within water quality standards.

C. Identification and Evaluation of Potentially Contaminated Sites

1. Identification of Sites

Interviews with 45 past and present base personnel (Appendix C) resulted in the development of a list of locations or sites at Dobbins AFB and NAS Atlanta where past disposal or spills of hazardous wastes may have occurred. In accordance with the records search methodology described in Section I.E., the past operations at these sites were then evaluated. Ten sites were identified as having a potential for contamination. The following is a brief description of each site indentified during the records search. The approximate locations of these sites are shown on Figure 9. A summary of the approximate dates that each site was in use is given on Figure 10.

- Site No. 1, referred to as the Past Base Landfill, is located near the southeastern corner of the base and was used for disposal of wastes from all tenant units on-base, excluding AFP #6, from the 1940's to 1974. Since 1974 the landfill has been officially closed, although unauthorized dumping has been reported between 1974 and 1981.

  Materials disposed of in the Past Base Landfill consisted generally of domestic-type refuse, although the disposal of industrial wastes was also reported. These industrial wastes included 5

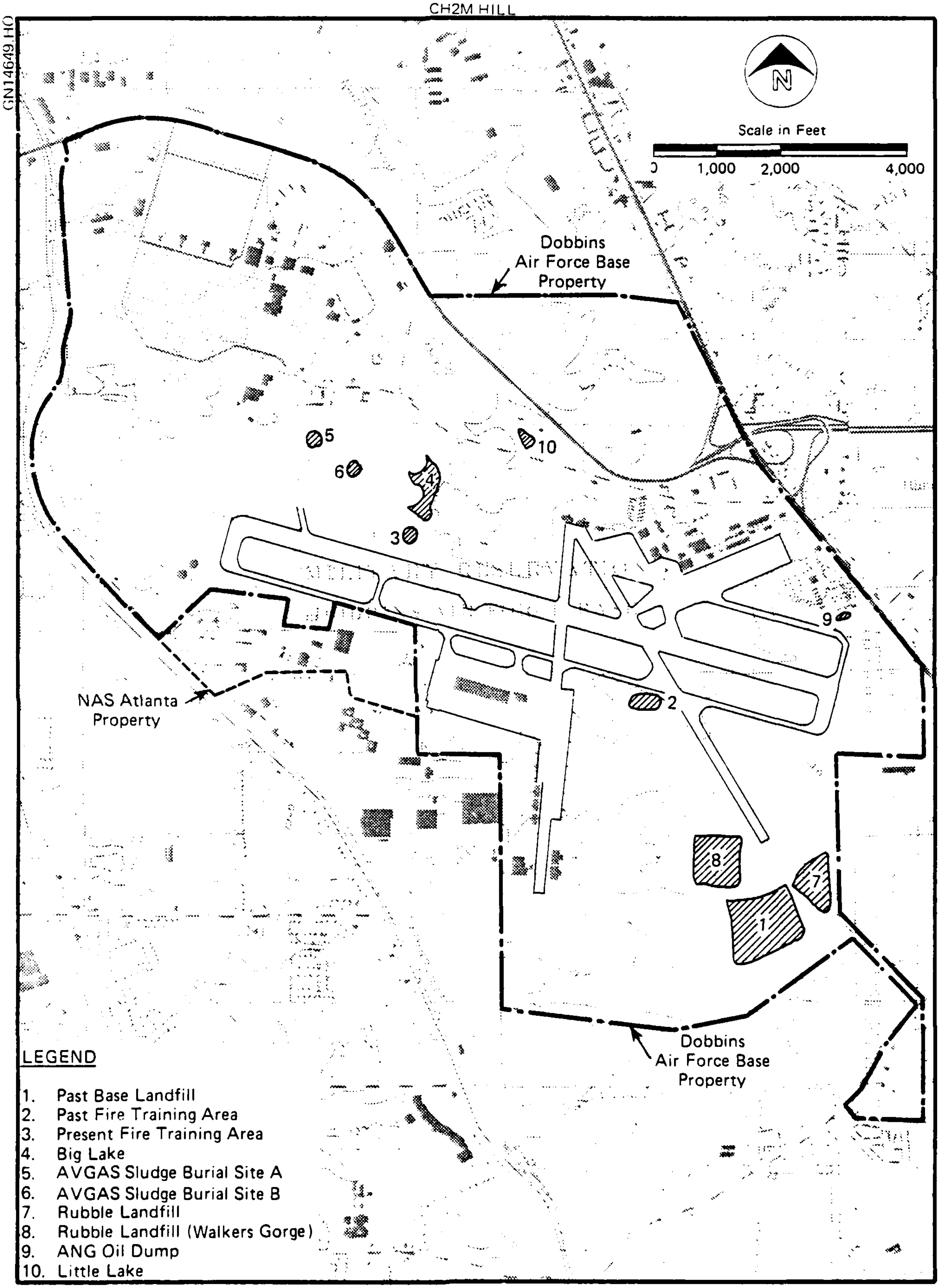


FIGURE 9. Location map of identified disposal sites.

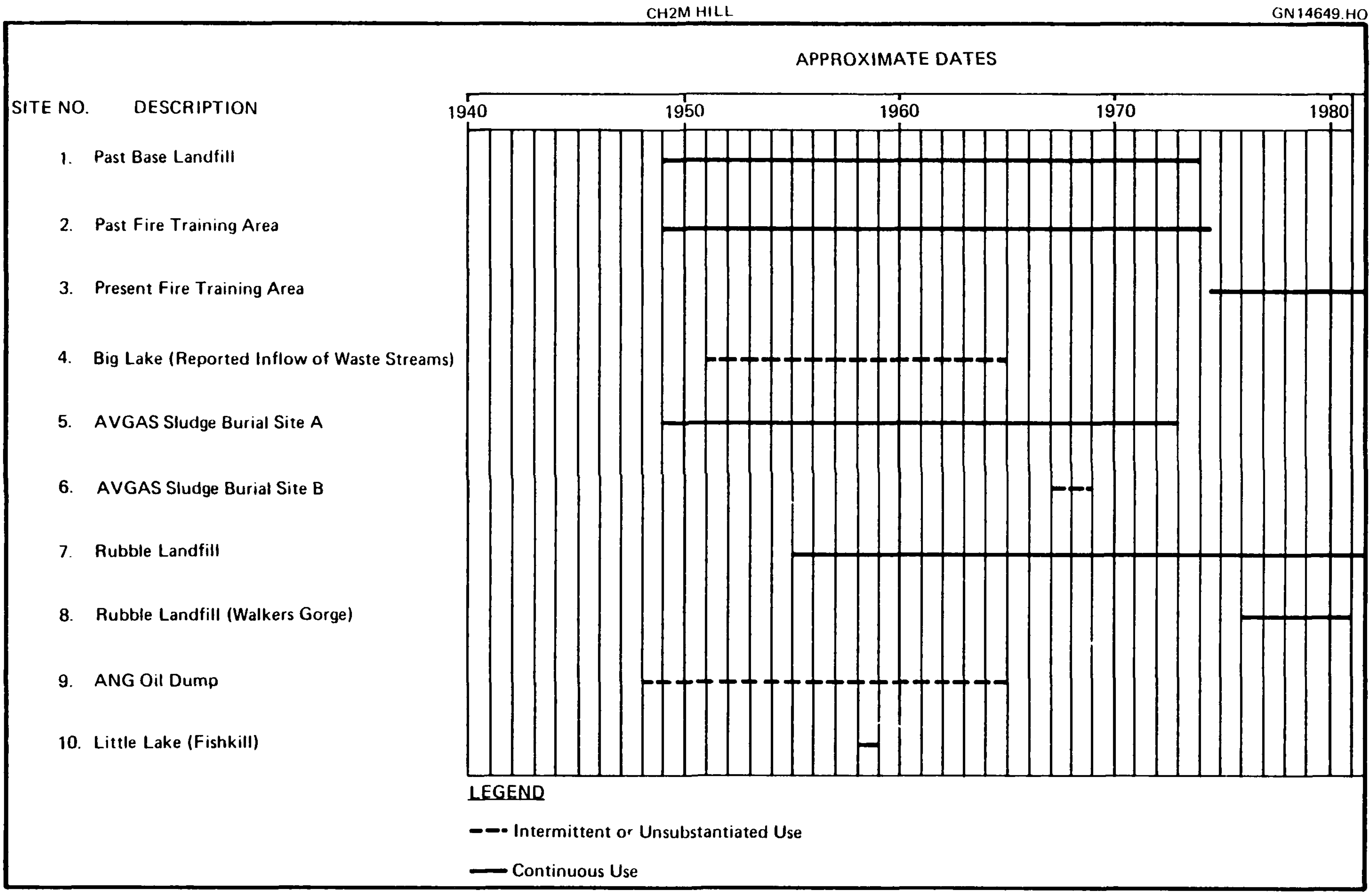


FIGURE 10. Historical summary of disposal activities.

to 6 dump truck loads of fuel-saturated dirt, 100 gallons of carbon remover, 15 to 20 drums of waste oil and solvents, 10 to 15 drums of unknown noxious liquids, 50 to 100 gallons per year of AVGAS sludge, empty paint cans and pesticide containers, fuel foam from 10 aircraft, 4 to 5 drums of mixed waste paints and thinners, and about 24 pounds per year of asbestos-lined brake pads. The total quantity of hazardous wastes or hazardous waste constituents reportedly disposed of at this landfill is judged to be large.

- Site No. 2, the Past Fire Training Area, is located south of the runway near its intersection with the abandoned NW/SE Runway. As described under Paragraph IV.A.5, Fire Training, POL wastes were stored at the site in drums and generally consumed in fire training exercises from the early 1950's to about 1974. The area has since been regraded and paved. One interviewee reported that 10 to 15 buried drums of unknown contents were unearthed in 1980 and that additional drums may still remain buried at the Past Fire Training Area site; therefore, small quantities of hazardous wastes are suspected.

- Site No. 3, the Present Fire Training Area, is located north of the runway adjacent to Big Lake and has been in use since 1974. Only fuels with less than 10 percent contamination (generally JP-4 with water) have been used in training exercises at this site. No hazardous wastes are known or suspected of having been buried or disposed of here. The area has a concrete-lined burn pit, and runoff is treated at the Industrial Waste Treatment Plant.

- Site No. 4, Big Lake, received discharges of unknown types and quantities of wastes from AFP #6 during the 1950's and 1960's. Analysis of the top mud and lake water has indicated that the sediment is non-hazardous and that the lake is unpolluted. However, it is unknown to what depth the sediment has been deposited, whether sediment at greater depths may contain hazardous waste constituents, or if contaminant migration due to seepage from Big Lake may have occurred in the past. Substantial quantities of residual hazardous wastes are suspected.

- Site No. 5, referred to as the AVGAS Sludge Burial Site A, is located at the AFRES POL area, which has been used since the 1940's for storage and handling of aviation fuels. A sign at the site clearly marks an area where AVGAS sludge containing tetra ethyl lead was buried. Small quantities of hazardous wastes are therefore known to be present at this site.

- Site No. 6, referred to as the AVGAS Sludge Burial Site B, is located in the area of the future Army National Guard facilities near Big Lake. A very small quantity of AVGAS sludge was reportedly buried in this area about 12 to 14 years ago. In addition, old bottles and buried trash were discovered at the site during earthmoving activities for the new construction. The area has been regraded; no hazardous wastes are known or suspected to remain in the area.

- Site No. 7, the rubble landfill located alongside Patrol Road, has been used since 1955. Although a few empty 5-gallon oil cans and empty 55-gallon drums are visible at the site, no hazardous wastes have been reportedly disposed of here.

- Site No. 8, the rubble landfill located alongside Walker's Gorge, has been used infrequently since 1976. Piles of construction debris and concrete rubble are present at the site; however, no hazardous wastes have reportedly been disposed of here.

- Site No. 9, referred to as the ANG Oil Dump, is located at the crest of a hill alongside the ANG facilities. One interviewee reported that waste oil was occasionally dumped over the side of the hill prior to the 1970's. This practice was not a common or accepted means of disposal of any sizeable amount of waste oil. The small quantities which may have been dumped have probably been diluted and washed downstream off the base.

- Site No. 10, Little Lake, was the site of a major fishkill in 1962 due to aerial pesticide spraying. No residual toxicity is suspected; the lake has since been successfully restocked.

2. Evaluation of Sites

For each of the 10 sites identified during the records search, a determination of the potential for hazardous material contamination and migration was made. Six of those sites indicated a significant potential for contaminant migration; the remainder were deleted from further consideration, in accordance with the methodology described in Section I.E.

The six identified disposal sites were evaluated using a system for rating the hazard potential of waste disposal facilities. This system was developed by the Air Force, CH2M HILL, and Engineering-Science for specific application to the Air Force Installation Restoration Program.

The Air Force site evaluation system consists of rating factors that are divided into four categories: receptors, waste characteristics, pathways, and waste management practices. Scores in these categories are used to evaluate the principal targets of contamination, the mechanisms for migration, the hazards posed by the contaminants, and the facility's design and operation, respectively. Relative scores from each of the first three categories are averaged to give a gross total score, which is then adjusted by applying a waste management practices factor to give an overall score. A more detailed description of this hazard evaluation methodology is included in Appendix H. Copies of the rating forms completed for each site are included in Appendix J.

The following is a brief discussion of the results of the site assessments, summarizing major site characteristics in each of the four rating categories. A summary of the results of the site assessments, using the Air Force rating system, is given in Table 6.

a. Receptors

This category assesses the human population and critical environments which may potentially be affected by hazardous materials released from a waste disposal site.

Most of the identified sites recevied low to moderate ratings in this category. Although natural areas are present within 1 mile of each site, no critical environments are present and the streams and lakes around the base are used for recreational purposes only. There is no population served by either surface-water or ground-water supplies located within 3 miles of the sites. Most of the sites are very close to the water wells on Dobbins AFB shown on Figure 7; however, these wells have not been used since the early 1950's.

Table 6

SUMMARY OF RESULTS OF SITE ASSESSMENTS

Step No.	Site Description	Subscores			Waste Management Practices Factor	Overall Score	Page Reference of Site Rating Form
		Receptors	Waste Characteristics	Pathways			
1	Past Base Landfill	29	80	81	1.0	63	J-1
2	Past Fire Training Area	37	60	67	1.0	55	J-3
3	Present Fire Training Area	37	48	31	0.1	4	J-5
4	Big Lake	42	35	83	1.0	53	J-7
5	AVGAS Burial Site A	42	30	59	1.0	44	J-9
6	AVGAS Burial Site B	42	20	74	1.0	45	J-11

All of the sites are located less than 1 mile from the installation boundary, and the land use within a 1-mile radius of the sites includes residential use. Although none of the sites are located within 1,000 feet of living quarters, three of the sites are within 1,000 feet of either the AFRES POL area, the vehicle maintenance shops, or the Navy Dispensary.

b. Waste Characteristics

This category assesses the potential hazards posed by the waste materials present in a disposal site. The waste characteristics that are evaluated include the probable type and relative quantities of waste materials present as well as the level of confidence in the information. The relative persistence and physical state of the waste materials are also factored into the assessment.

Relatively large quantities of liquid hazardous wastes were disposed of in the Past Base Landfill (Site No. 1) based on information obtained from several interviewees, which resulted in a high subscore in this category. A high subscore was also assigned to the Past Fire Training Area (Site No. 2) due to the disposal of comingled waste oils, solvents, paints and paint thinners, and fuels at the burn pit during 20 years of fire training exercises.

Large quantities of hazardous materials may have accumulated in the sediment at Big Lake (Site No. 4); however, the presence of contaminated sediment was not confirmed, resulting in a relatively low score in this category. Lower scores were also assigned to the Present Fire Training Area and the two AVGAS sludge burial sites due to the relatively small quantities of hazardous material known or suspected at those sites.

c. Pathways

This category assesses the potential routes and mechanisms by which hazardous materials can escape from a waste disposal site including surface-water migration, ground-water migration, or flooding. The pathways category also rates the potential for contaminant migration based on the evidence of migration, whether direct or indirect.

No direct or indirect evidence of hazardous contaminant migration was identified during the records search for any of the six sites. Likewise, none of the sites is located in a known flood plain, except Big Lake (for which a flooding pathway is not applicable).

At Big Lake, the potential for ground-water migration is considered high since the lake is an exfiltration lake and is in direct connection with the ground water. In general, however, the ground-water migration pathway received lower ratings than the surface-water migration pathway, primarily because the soil and rock strata underlying the base are low in permeability, thereby reducing infiltration of rainfall into the ground water, but increasing runoff. Ground water is anticipated at moderate depths, between 20 to 50 feet, so that the bottom of the waste material is more than 5 feet above high ground-water level.

The potential for surface-water migration is high since most sites are less than 500 feet from the nearest stream, net precipitation (about +10 inches per year) is moderately high, and the rainfall intensity, as indicated by an average of 45 thunderstorms per year, is also moderately high. The potential for surface erosion varies considerably among the rated sites and is judged the most severe at the Past Base Landfill.

d. Waste Management Practices

This category adjusts the total risk as determined from the receptors, pathways, and waste characteristics categories for the waste management practices and engineering controls designed to reduce this risk through containment of the wastes. Most of the sites received no adjustment in this category since the sites have no liners, leachate collection systems, impermeable covers, or monitoring wells. The Present Fire Training Area (Site No. 3) received an adjustment for full containment since a concrete-lined burn pit is present and the runoff from the burn pit is treated at the Industrial Waste Treatment Plant located at AFP #6.

V. CONCLUSIONS

V. CONCLUSIONS

A. No direct evidence indicates migration of hazardous contamination beyond Dobbins AFB or NAS Atlanta.

B. Evidence obtained through interviews with past and present base personnel indicates that hazardous wastes have been disposed of or deposited on-base in the past.

C. The potential for ground-water migration of pollutants is relatively low throughout most of the base due to the presence of a thick layer of low-permeability residual soils. However, at Big Lake, an exfiltrating lake, there is direct connection with the ground-water which greatly increases the potential for ground-water migration.

The potential for surface-water migration of pollutants is generally high since most of the sites are less than 500 feet from natural streams, net precipitation and rainfall intensity are moderately high, and the low-permeability soils increase the runoff and erosion potential.

D. Six sites were identified as having a significant potential for off-base migration of contaminants. Table 7 provides a listing of these sites and their overall rating scores. Three of the sites show greater potential relative to other sites for contaminant migration:

1. Site No. 1 (Past Base Landfill, 1948-1974), due primarily to:

Table 7

PRIORITY LISTING OF DISPOSAL SITES

Site No.	Site Description	Overall Score
1	Past Base Landfill	63
2	Past Fire Training Area	55
4	Big Lake	53
6	AVGAS Sludge Burial Site B	45
5	AVGAS Sludge Burial Site A	44
3	Present Fire Training Area	4

- o Proximity to Poorhouse Creek and to off-base properties.

- o High erosion potential.

- o Known large quantities of hazardous wastes including carbon remover, paints and paint thinners, waste oils and solvents, AVGAS sludge, and fuel-saturated dirt and foam.

2. Site No. 2 (Past Fire Training Area, 1958-1975), due primarily to:

- o Disposal of large quantities of hazardous wastes during fire training exercises over a period of more than 20 years.

- o Suspected presence of small quantities of hazardous wastes in buried drums.

3. Site No. 4 (Big Lake, 1950's-1960's), due primarily to:

- o Location of the lake within 1,000 feet of the Navy Dispensary.

- o Direct access to ground water due to seepage from Big Lake into the underlying bedrock.

- o Unknown types and quantities of past chemical discharges from AFP #6 into the lake.

- o Unknown thickness and chemical composition of accumulated sediment.

E. No other identified site on Dobbins AFB or NAS Atlanta is considered to pose a hazard for environmental impact.

VI. RECOMMENDATIONS

VI. RECOMMENDATIONS

This records search did not include an assessment of past or present disposal activities at Air Force Plant #6. The total potential for off-base environmental impact down-stream and/or downgradient of Dobbins AFB cannot be accurately evaluated without including activities at AFP #6. It is therefore recommended that a Phase I records search of the area of AFP #6 be conducted before implementing the recommendations presented hereafter.

To verify that hazardous contaminant migration is not a problem at the Past Base Landfill, the Past Fire Training Area, or Big Lake, additional study is advisable. Although these sites are not considered to pose an immediate hazard for contaminant migration, it is recommended that a Phase II program be developed that includes the following:

A. Ground-water monitoring at the Past Base Landfill

1. Installation of at least three wells into the water table aquifer: one well east, two wells south of the site.

2. Construction of the wells to a total depth of approximately 15 feet below the ground-water level and screened over a length of about 15 feet.

3. Sampling of the wells at least once and analysis of the samples for pH, COD, TOC, oil and grease, lead, chromium (total and hexavalent), nickel, cadmium, mercury, iron, phenol, and volatile organic compounds.

B. Monitoring of the Past Fire Training Area

1. Field survey to determine whether any additional buried drums are present. Such a survey may include a magnetometer or ground-penetrating radar survey of the area.

2. Installation of at least one monitoring well south of the site to a depth of about 15 feet below the ground-water level and screened over a length of about 15 feet.

3. Sampling of the well at least once and analysis of the sample for pH, COD, TOC, oil and grease, phenol, and volatile organic compounds.

C. Analysis of Sediment at Big Lake

Prior to any dredging or development of the lake, or a change in its recreational use, the following should be performed:

1. Determination of depth of sediment across the lake.

2. Collection of three sediment samples at each of two locations; the samples should be taken at varying depths throughout the sediment layer.

3. Analysis of sediment samples using EPA-approved extraction procedures. The samples should be analyzed for pH, arsenic, barium, cadmium, chromium, copper, cyanide, lead, mercury, phenol, selenium, silver, and zinc.

4. Collection and analysis of additional samples based on the results of the initial limited sampling.

Details of the program outlined above, including the exact location of sampling points and the depths of wells and sediment samples, should be finalized by the Phase II Contractor at the time the work is to be performed. Since no imminent hazard has been determined, there is no urgency to conduct the above program, which can be implemented as financial resources become available.

It is not the intent of the above-recommended program to assess the depth or location of any contaminant plume, or the direction or rate of movement of any such plume. In the event that contaminants are detected in either the sediment samples or the water samples from any of the wells, a more extensive field survey program including monitoring of the ground water within the bedrock aquifer should be considered. The Phase II contractor should evaluate the results of the program outlined above to determine the need for additional monitoring, as appropriate.

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    - Tab No. C-4, Real Estate Map
    - Tab No. C-6, Soil Boring Plan
    - Tab No. G-1, Water Supply System
    - Tab No. G-3, Sanitary Sewer System & Treatment Plant
    - Tab No. G-7, Storm Drainage System
    - Tab No. A, Narrative

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Appendix A
RESUMES OF TEAM MEMBERS

DAVID M. MOCCIA

Education

B.S., Chemical Engineering, University of Florida, 1971

Experience

Mr. Moccia joined CH2M HILL in 1971 and is currently the Manager of the Chemical Processes Department. He is responsible for projects involving water treatment in the power industry, energy production, and industrial in-plant reuse/recycle processes. Since joining the firm, Mr. Moccia has participated in a wide variety of projects, including facility evaluations, pilot studies, and conceptual and engineering design for municipal and industrial wastewater treatment facilities.

Examples of Mr. Moccia's project-related experience include the following:

- Project management for design of three poultry process wastewater treatment facilities for Perdue, Inc.
- Project management for design of a biological-chemical wastewater treatment system for a tank car cleaning and maintenance facility for General American Transportation Corporation in Waycross, Georgia.
- Preliminary engineering for a 3.0-mgd reverse-osmosis water treatment plant for the Englewood Water District, Englewood, Florida.
- Process responsibilities for design of a 9.5-mgd activated sludge treatment plant, including sludge thickening and dewatering, for the City of Alexander City, Alabama.
- Preliminary design for a sludge drying and pelletizing facility for the City of Naples, Florida.

Professional Engineer Registration

Florida, Georgia, North Carolina

Membership in Organizations

Florida Engineering Society
Florida Pollution Control Association
National Society of Professional Engineers
Water Pollution Control Federation
Tau Beta Pi

BRUCE JAMES HAAS
Manager, Geotechnical Engineering

Education

M.S., Civil Engineering, University of Wisconsin, 1976
B.S., Civil Engineering, University of Wisconsin, 1975
Studies as exchange student, Technische Universitat, Munich, West Germany, 1974-1975

Experience

Mr. Haas is responsible for field explorations and geotechnical investigations and for general earthwork design projects. His special knowledge of soils, sitework, and construction procedures has been instrumental in developing numerous efficient and economical civil engineering designs. Project experience includes site development, grading and drainage, streets and roadways, marinas, and hazardous waste disposal. Examples of project-related assignments include:

- Lead civil engineer in charge of stormwater management, site development, and geotechnical review for the new 130-mgd West County Wastewater Treatment Plant for the Louisville and Jefferson County Metropolitan Sewage District, Louisville, Kentucky.

- Geotechnical engineer responsible for geohydrologic reviews of various hazardous waste disposal facilities for the Agrico Chemical Company. The project involved assessment of ground-water pollution potential, design of monitoring systems, and preparation of closure and post-closure plans for agricultural chemical plants in Oklahoma, Louisiana, and Florida.

- Design geotechnical engineer and resident inspector for a 6-mgd wastewater treatment plant for the Grand Strand Water and Sewer Authority, Conway, South Carolina. Plant facilities and the 3,000-foot-long effluent pipeline were supported by timber piles.

- Civil and geotechnical engineer for marina improvements at the Oyster Water-Based Recreation Facility located in the tidal marshes of Northampton County, Virginia.

- Resident inspector for stabilization and reconstruction of existing sludge lagoon dikes for the Madison, Wisconsin, Metropolitan Sewerage District. This project involved the use of fabric reinforcement and light-weight wood chip fill for dikes located on highly compressible, low-strength marsh deposits.

Mr. Haas has performed foundation investigations and geotechnical designs for numerous major water and wastewater treatment plants at the following locations:

- Walt Disney World, Florida

- St. Petersburg, Florida

BRUCE JAMES HAAS

- Suffolk, Virginia
- Howard County, Maryland
- Harriman, Tennessee

These investigations have resulted in safe, economical design of foundation systems involving spread footings, piles, and construction preloads.

Professional Engineer Registration

Florida, Wisconsin

Membership in Organizations

American Society of Civil Engineers

Publications

"Proposed Criteria for Interpreting Stability of Lakeshore Bluffs," Engineering Geology, 1980, with T. B. Edil.

GARY E. EICHLER
Hydrogeologist

Education

M.S., Engineering Geology, University of Florida, 1974
B.S., Construction and Geology, Utica College of Syracuse University, 1972

Experience

Mr. Eichler has been responsible for ground-water projects for both water supply and effluent disposal. Studies have included site selection, well design, construction services, monitoring and testing programs, determination of aquifer characteristics, and well field design. In addition, Mr. Eichler has conducted numerous studies to determine pollution potential of toxic and hazardous wastes. Types of projects for which Mr. Eicher has been directly responsble for include:

- Exploration drilling, testing, and design of well fields for potable water supply with an installed capacity of over 65 mgd.
- Determination of pollutant travel time and direction of movement at hazardous waste disposal sites.
- Geophysical logging and testing programs for deep disposal wells for both municipal and hazardous waste.
- Aquifer modeling studies completed to predict effects of future ground-water withdrawal.
- Determination of saltwater intrusion potential and design of associated monitoring programs.

Prior to joining CH2M HILL in 1976, Mr. Eichler was an engineering geologist with Environmental Science and Engineering, Inc., of Gainesville, Florida. Responsibilities there included project management, soils investigations, siting studies, ground-water and surface-water reports, and Federal and state environmental impact studies. He has professional capabilities in the following areas.

- Hydrogeology. Water supply well location, aquifer testing, well field layout, injection well testing and monitoring program design, and well construction inspection.
- Water resources inventory. Potentiometric mapping, water yield, and availability determinations.
- Site investigations. Determination of subsurface conditions, primarily in soil media. Determination of stratigraphic correlation and associated physical properties for engineering design.
- Environmental permitting. Federal, state, regional, and local permit studies associated with industrial and mining projects.

GN1281

GARY E. EICHLER

- Clay mineralogy. Clay mineral reactions primarily associated with lime stabilization for highways and other engineering projects. Participated in a Brazilian highway project and developed laboratory analysis for lime-soil reactions.

- Engineering geology. Geologic exploration, soil property determinations for engineering design, and water and earth materials interactions associated with construction.

- Geophysics. Well logging and interpretation.

Mr. Eichler directed the laboratory analysis of tropical soils to determine engineering properties and reaction potential with lime additives for a Brazilian highway project. He also assisted in the preparation and presentation of a seminar on lime stabilization sponsored by the National Lime Association.

Membership in Organizations

American Institute of Professional Geologists
American Water Resources Association
Association of Engineering Geologists
Geological Society of America
Southeastern Geological Society
National Water Well Association

Publications

Engineering Properties and Lime Stabilization of Tropically Weathered Soils. M.S. thesis, Department of Geology, University of Florida. August 1974.

Certifications

Certified Professional Geologist
Certificate No. 4544

ROBERT L. KNIGHT
Ecologist

Education

B.A., Zoology, University of North Carolina, 1970
M.S.P.H., Environmental Chemistry and Biology, University of North Carolina, 1973
Ph.D., Systems Ecology, University of Florida, 1980

Experience

Dr. Knight's responsibilities at CH2M HILL involve all aspects of environmental study, including design and implementation of field studies, data analysis and interpretation, project management, environmental systems overview analysis, impact analysis, prediction, and assessment. His experience has covered a wide range of applied research problems in aquatic and terrestrial environments, including computer simulation analyses. Representative experience includes the following:

- Crystal River Power Plant Study—Managed and participated in field study of Florida Power's nuclear power plant on the Crystal River estuary. Studied effects of plant operation on ecosystem metabolism.

- Heavy Metal Toxicity Studies—Aided with design and implementation of long-term studies of fate and effects of cadmium and mercury at low levels in stream microcosms. Prepared toxicity simulation model for cadmium and developed general quantification techniques of toxicity in biological systems.

- Environmental Systems Overview Analysis—Prepared and simulated quantitative overview models for Coosa River EIS and for Indian River Power Plant impacts.

- Silver Springs Study—Performed extensive field work at Silver Springs, Florida, to investigate the relationship between plant productivity and consumer organisms. Developed new microcosm design for study of flowing aquatic systems.

- Salt Marsh Study—Participated in team study of application of treated sewage effluent to *Spartina* marsh at Morehead City, North Carolina.

- Phytoplankton Research—Performed field verification studies of Algal Assay Procedure. Studied effects of power plant entrainment on phytoplankton numbers and diversity.

Publications

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ROBERT L. KNIGHT

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Appendix B
OUTSIDE AGENCY CONTACT LIST

Appendix B

OUTSIDE AGENCY CONTACT LIST

1. Georgia Department of Natural Resources, Atlanta Georgia

A. Game and Fish Division

Jerry McCollum 404/656-3523

Chief of Fisheries Management

Mike Gennings 404/656-3524

Non-Game Endangered Wildlife

Jim Armstrong 404/557-2532

Protected Plants

William Butler 404/656-4993

Mary Anne Young

B. Environmental Protection Division

Industrial and Hazardous Waste Section

John Taylor--Program Manager 404/656-2833

Renee Hudson--Federal Facilities 404/656-7802

Cheryl Stevens--Federal Facilities (Formerly)

Water Quality Control Section

Joseph Kane--Industrial Water Quality 404/656-4887

C. Commissioner's Office, Charlotte Thompson 404/656-5162

D. State Clearinghouse, Charles Badger 404/656-3855

E. Office of Information and Education, Atlanta 404/656-3530

2. U.S. Fish and Wildlife Service

A. Endangered Species Program
Don Palmer, Jacksonville, Fla 904/791-2580

B. Law Enforcement Division
Agent Fraser, Atlanta, Ga. 404/221-6222

C. State Wildlife Biologist
Ron C. Freeman, Brunswick, Ga. 912/265-7778

D. Habitat Preservation-Environmental Contaminants Evaluation
Don Schultz, Atlanta, Ga. 404/221-6343

3. University of Georgia, Athens, Georgia

A. Museum of Natural History
Dr. Joseph Laerm 404/542-1663

B. Herbarium
Nancy Coile 404/542-3732

4. National Oceanic and Atmospheric Administration, Environmental Data Services, Asheville, N.C. 704/258-2850

5. U.S. Environmental Protection Agency, Office of Federal Activities, Atlanta, Georgia

   Arthur Linton--Federal Facilities Coordinator 404/881-2211

   James Holdaway--NPDES Officer 404/881-2140

6. U.S. Geological Survey--Water Resources Division District Office, Altanta, Georgia 404/221-4858

7. U.S. Bureau of Mines, Altanta, Georgia 404/221-6204

8. U.S.D.A. Soil Conservation Service Area Office, Decatur, Georgia 404/373-6543

   Cobb County Office, Marietta, Georgia 404/422-2320

9. Cobb County Water and Sewer Department, Marietta, Ga. 404/427-8407

10. Smyrna Engineering Department, City of Smyrna, Smyrna, Georgia 404/434-6600

11. Smyrna Water and Sewer Department, Smyrna, Ga. 404/434-6600

12. Marietta Water and Sewer Department, Marietta, Ga. 404/424-6555

Appendix C
RECORDS SEARCH INTERVIEW LIST

Appendix C
RECORDS SEARCH INTERVIEW LIST

Interviewee	Organization	Area of Knowledge	Years at Installation
1	AFRES	Civil Engineering	22
2	AFRES	Fuels Management	27
3	AFRES	Fuels Management	12
4	AFRES	Pavement and Grounds	27
5	AFRES	Civil Engineering	29
6	AFRES	Civil Engineering	27
7	AFRES	Supply	7
8	AFRES	Entomology	13
9	AFRES	Aircraft Maintenance	16
10	AFRES	Aircraft Maintenance	27
11	AFRES	Vehicle Maintenance	7
12	AFRES	Heavy Equipment Training	3
13	AFRES	Aircraft Maintenance	8
14	AFRES	Aircraft Maintenance	8
15	AFRES	Fire Department	27
16	AFRES	Fuels Management	8
17	AFRES	Civil Engineering	25
18	AFRES	Environmental Coordinator	1
19	ANG	Munitions	8
20	ANG	Aircraft Maintenance	24
21	ANG	Vehicle Maintenance	16
22	ANG	Aircraft Maintenance	12
23	ANG	Aircraft Maintenance	25
24	ANG	Aircraft Maintenance	26
25	ANG	Fuels	12
26	ANG	Civil Engineering	12
27	Navy	Aircraft Maintenance	2
28	Navy	Aircraft Maintenance	9
29	Navy	Ordnance	1
30	Navy	Electrical	1

Interviewee	Organization	Area of Knowledge	Years at Installation
31	Navy	Public Works	13
32	Navy	Public Works	14
33	Navy	Supply	4
34	Navy	Aircraft Maintenance	20
35	Navy	Aircraft Maintenance	2
36	Navy	Aircraft Maintenance	3
37	Navy	POL	12
38	Navy	Public Works	7
39	Navy	Public Works	18
40	Navy	Entomology	2
41	Navy	Entomology	9
42	Navy	Public Works	21
43	Army National Guard	Aircraft Maintenance	8
44	Army Reserve	Aircraft Maintenance	10
45	AF Plant #6	General Knowledge of Dobbins AFB	30

Appendix D
INSTALLATION HISTORY

Appendix D
INSTALLATION HISTORY

I. History

The installation's original 2,843-acre tract was acquired by the U.S. Government in 1943 for use by Bell Aircraft Corporation as a B-29 "Super Fortress" assembly site. The resultant airfield, temporarily known as Rickenbacker Field, was maintained by an Army Air Force caretaker detachment after Bell's operation ended in 1947.

The Georgia National Guard reorganized its principal flying unit at the base in 1946 when the Guard's 54th Fighter Wing Headquarters and its 116th Fighter Group and 128th Fighter Squadron received Federal recognition at this site. Today the Georgia Air National Guard is represented at Dobbins by the 116th Tactical Fighter Wing and its 128th Tactical Fighter Squadron flying the F-105 "Thunder Chief."

In 1948 the Air Force gave the base an additional mission of training Air Force Reservists and renamed the installation Marietta Air Force Base. In 1949 the Air Force Reserve 94th Bomb Wing was activated at the base. Reserve training has been the base's primary mission since then. Today's 94th Tactical Airlift Wing is the direct descendant of the old 94th Bomb Wing. The 94th now flies the C-7 "Caribou" transport and is the Air Force Reserve's primary unit at Dobbins. The 94th Combat Support Group Commander also serves as Dobbins Base Commander.

Marietta Air Force Base was renamed Dobbins Air Force Base on February 6, 1950, in honor of Captain Charles Dobbins of Marietta, Georgia. Dobbins was killed July 11, 1943, when his aircraft was shot down over the Mediterranean while returning from a combat mission off the coast of Sicily.

In February 1951, Lockheed Aircraft Corporation (now Lockheed-Georgia Company) began operation of the old Bell Plant, now Air Force Plant #6, as a contractor for the Air Force Systems Command. The assembly of C-141, C-5, and C-130 aircraft at the Lockheed facility has focused worldwide attention on the Dobbins complex, and the sale of C-130 aircraft to a large percentage of the free world nations makes Lockheed-Georgia a prominent member of the industrial community.

The installation's third major reserve component, the Naval Air Reserve, came to the base in 1959, moving into new facilities across the flight line from Dobbins Air Force Base. Naval Air Station Atlanta was formally commissioned in that year after a move from its World War II site in Chamblee, Georgia. Today, Naval Air Station Atlanta is the home of two Naval Air Reserve and two Marine Air Reserve squadrons, along with associated non-tactical support units.

The Dobbins flight line and base operations facility, due to its attractive location, has traditionally been one of the busiest air traffic terminals in the Southeast. The arrival and departure of an average of 90,000 flights per year normally involves over 450 high-ranking officials of the United States Government, as well as officials of other nations from around the world.

Although many organizational changes have occurred since 1948, Dobbins Air Force Base still retains its original charter: to recruit, equip, and train reserve personnel for support of national defense forces in time of emergency.

II. Mission

The principal mission of both Dobbins Air Force Base and Naval Air Station Atlanta involves reserve recruiting, training, and support. The Dobbins Air Force Base/Naval Air Station Atlanta complex is a unique Total Force installation supporting flying components of the Air Force Reserve, Air National Guard, Naval Air Reserve, Marine Air Reserve, Army Reserve, and Army National Guard. The installation also provides aerial access to the Lockheed-Georgia Company, one of the nation's largest military aircraft contractors.

Dobbins Air Force Base, Naval Air Station Atlanta, and Lockheed-Georgia Company share common flight line and runway facilities, operated by the 94th Combat Support Group. Air Force maintenance, administrative, and support facilities are located at the northeast side of the base runway. Navy facilities are on the opposite side of the base, southwest of the runway. Lockheed activities occupy the northwest portion of the base and the areas east of NAS Atlanta. Some 23 military units share Dobbins Air Force Base/Naval Air Station Atlanta facilities and account for a total of nearly 2,000 full-time military and civilian employees. Those employees, in turn, support the recruiting, training, and readiness of 4,500 Reservists and Guardsmen.

A. Dobbins Air Force Base

Primary Mission: The 94th Combat Support Group wartime mission is an expansion of its peacetime mission, which provides for the following:

a. The operation and maintenance of Air Force Reserve facilities during emergency or wartime conditions within the capability of the resources provided.

b. Base operating support requirements generated by the mobilization of Air Force Reserve and Air National Guard units and other contingents of various commands through augmentation to and expansion of the present peacetime civilian force.

c. Training of subordinate attached units and their assigned personnel to the degree of proficiency prescribed by applicable directives.

Tenant Missions: The 94th Combat Support Group (Air Force Reserve) serves as host to Reserve units representing every branch of the Department of Defense. The missions of these and other tenant organizations are described in the following paragraphs.

94th Tactical Airlift Wing

The 94tn Tactical Airlift Wing recruits, organizes, and trains Air Force Reservists to be prepared for active duty in time of war, national emergency, or when otherwise required to maintain national security. In the event the unit is mobilized, the operational functions of the 94th Tactical Airlift Wing are to provide air transportation, intratheater airlift, and tactical aeromedical evacuation.

The 94th Tactical Airlift Wing has two flying units under its control: the 700th Tactical Airlift Squadron (TAS) at Dobbins AFB, Georgia, and the 357th TAS at Maxwell AFB, Alabama.

Thirty-two C-7A Caribous are assigned to the 94th Tactical Airlift Wing: 16 at Dobbins and 16 at Maxwell AFB, Alabama. The Caribou is a twin-engine short take-off and landing aircraft designed for close ground logistical support.

The Wing's history can be traced back to the 94th Bombardment Wing (light), which was activated on 26 June 1949 at Marietta (now Dobbins) AFB, Georgia, and equipped with B-26's. In March 1951 the unit was ordered to active military service in the Korean conflict. However, on 1 April 1951 the Wing was deactivated and its personnel were used as replacements throughout the Air Force.

Redesignated as the 94th Tactical Reconnaissance Wing, the unit was activated again at Dobbins AFB, Georgia, on 14 June 1952 and equipped with B-26's. On 18 May 1955 the Wing was redesignated as a tactical bombardment wing and moved to Scott AFB, Illinois, still flying B-26's. On 1 July 1957 it was re-equipped with C-119 "flying boxcars" and redesignated as a troop carrier wing. It moved to L.G. Hanscom Field, Massachusetts, on 16 November 1957 and on 28 October 1962 was activated for 32 days during the Cuban missile crisis.

On 1 October 1966 the Wing converted to C-124 "Globemaster" aircraft and was redesignated as the 94th Military Airlift Wing. On 1 July 1972 the Wing returned to Dobbins AFB, Georgia, where it was equipped with the C-7A Caribou aircraft and redesignated as the 94th Tactical Airlift Wing. On its return to Dobbins AFB the Wing acquired command of the 700th Tactical Airlift Squadron and the detached 908th Tactical Airlift Group at Maxwell AFB, Alabama.

Headquarters, Fourteenth Air Force (Reserve)

The Fourteenth Air Force (Reserve) (formerly Eastern Air Force Reserve Region), headquartered at Dobbins Air Force Base, was formed on 8 October, 1976. It is charged with the administration of the Air Force Reserve Program within 20 eastern states, the District of Columbia, Puerto Rico, and the Virgin Islands.

The largest of three numbered air forces under Reserve command in terms of mission and manpower, Fourteenth Air Force (Reserve) is responsible for the supervision of unit training programs and for administration and material support for the Reserve units located within the area.

The Fourteenth Air Force (Reserve) represents the Air Force as a single point of contact in matters pertaining to emergency planning and actions, including civil defense, natural disaster relief, civil disturbances, and defense of the continental United States.

The Fourteenth Air Force (Reserve) also maintains the capability to augment active or reserve forces so that response to any need can be provided. In addition, it frequently coordinates with Army and Navy headquarters regarding Air Force participation in jointly established projects and armed forces exercises.

Civil Air Patrol--Southeast Region Office

The Southeast Region, Air Force Civil Air Patrol Liaison Office, encompasses the states of Alabama, Georgia, Florida, Mississippi, Tennessee, and the territory of Puerto Rico. The Region relocated at Dobbins in 1969, moving from Nashville, Tennessee.

The Southeast Region is responsible for implementing Headquarters, USAF, and Civil Air Patrol policies and procedures. A prime mission of the Region is to ensure that all Civil Air Patrol units are fully capable of conducting search and rescue and natural disaster relief operations.

The Region Liaison Officer also serves as field advisor to Civil Air Patrol units on such matters as organization, administration, operations, communications, information, inspection, materials, safety, aerospace education, and general military procedures.

Each state within the Southeast Region has a Civil Air Patrol Wing. The Georgia Wing is headquartered at Dobbins and has 29 squadrons located throughout the state.

2157th Communications Squadron

The 2157th Communications Squadron (Air Force Communications Service) provides navigational aids, air traffic control services, and base communications support for Dobbins Air Force Base. Formerly Detachment 1, 1926th Communication Squadron, the unit has been assigned to Dobbins Air Force Base since 1947.

Services include a 16-hour per day, 7-day-per-week operation of the control tower and Ground Control Approach and 24-hour service on base communications and switchboard activities.

The squadron also serves as the advisory unit in the training of Reserve communications personnel for the 94th Tactical Airlift Wing (Air Force Reserve) and 116th Tactical Fighter Wing (Air National Guard).

Air National Guard

Since its inception, the National Guard--dating back to early militia--has remained the only American military force with a dual state and Federal mission. The state mission is to provide disaster relief in the event of natural calamity, to maintain public peace and order, and to provide civil defense pre-attach planning. The Federal mission is to provide properly trained and equipped units available for prompt moblization in the event of national emergency or war. In peacetime and until Federally mobilized, the Guard units of each state and territory belong to the state or territory and are under the command of its Governor and the Adjutant General.

The Air National Guard, with an authorized strength of 95,000, is comprised of 24 Wings, made up of 91 flying units. The 116th Tactical Fighter Wing is one of the 24 Wings and is located at Dobbins Air Force Base. The Air National Guard plays a vital role in the nation's air defense and in providing the Air Force with combat-ready units, such as the 116th Tactical Fighter Wing, immediately available for duty.

On 4 April 1973, the 116th was reorganized and converted to a Tactical Fighter mission and was assigned F-100D aircraft. In September 1978 the 116th Tactical Fighter Wing began converting from the F-100D aircraft to the F-105G for its newly assigned "Wild Weasel" mission. Awards received by the 116th Tactical Fighter Wing in its long history are as follows:

Presidential Unit Citation, 1944
Air Force Outstanding Unit Award, 1975, 1976, 1977, 1979
Battle Campaign (Streamers)
Air Offensive Europe, 1942-1944
Normandy, 1944
Northern France, 1944
Rhineland, 1944-1945
Ardennes-Alsace, 1944-1945
Central Europe, 1945
Korean Service, 1950-1952
United Nations Summer-Fall Offensive, 1951
Second Korean Winter, 1951-1952
Korean Summer, Fall 1952

Detachment 31, 3rd Weather Squadron

Detachment 31, 3rd Weather Squadron, was assigned to Dobbins Air Force Base in June 1972. The Detachment provides meteorological services to Air Force, Air Force Reserve, and

Air National Guard flying units stationed at Dobbins. Detachment 31 also supports Lockheed-Georgia Company with weather services.

Detachment operates a base weather station, complete with comprehensive forecasting and observation functions 17 hours per day. In addition, a continuous meteorological watch is maintained at Dobbins, with severe weather advisories issued as required.

Army National Guard

The 159th Military Intelligence Company (Aerial Surveillance), Army National Guard, was organized 1 February 1968 and moved to Dobbins AFB from the Fulton County Airport in 1973. Its mission is to provide Corps and Division Commanders with tactical battlefield reconnaissance utilizing a combination of camera systems, infrared sensing devices, and side-looking air-borne radar (SLAR). At full strength the unit totals 235 personnel and 18 OV-1 aircraft.

U.S. Army Reserve

The 145th Medical Evacuation Company, United States Army Reserve, under command and control of the 81st Army Reserve Command came to the base in 1971. The unit provides helicopter airlift evacuation of casualties during combat and training conditions. In addition, the unit performs liaison missions for the parent command and provides airlift for airborne paratroop operations. The 145th is equipped with one fixed-wing U-8F and nine UH-1-H helicopters.

307 Civil Engineer Squadron (HR)

The 307 CES (HR) is an AFRES Heavy Equipment Training School with administrative headquarters and training facilities located at Dobbins AFB, Georgia. The mission is to train military personnel in the use of heavy equipment for rapid runway repair in the event of emergencies.

B. Air Force Plant #6

Air Foce Plant #6 (AFP #6) is a government-owned production facility operated by the Lockheed-Georgia Company, a major division of the Lockheed Corporation. AFP #6 occupies the largest single portion of space allocated to one organization on Dobbins Air Force Base. In addition to producing the entire fleet of active cargo aircraft employed by the Military Airlift Command (C-130, C-141, C-5A), Lockheed-Georgia commercial sales provide many versions of the C-130 to customers world-wide.

Air Force Plant Representative Office

The Air Force Plant Representative Office (AFPRO) performs the contract management functions for all government contracts with the Lockheed-Georgia Company. These functions include contract administration, quality assurance, engineering, safety, flight operations, material management, manufacturing operations surveillance, and management evaluation. The Air Force Plant Representative Office is responsible for ensuring an acceptable maintenance and utilization program by the contractor.

Surveillance over Lockheed-Georgia sub-assembly plants at Clarksburg, West Virginia, and Charleston, South Carolina, is also an Air Force Plant Representative Office responsibility.

The Air Force Plant Representative Office is a Field Detachment (Detachment 21) of the Air Force Contract Management Division, Air Force Systems Command.

C. Naval Air Station Atlanta

Naval Air Station Atlanta is a separate installation owned by the U.S. Navy. The Naval Air Station hosts two Navy Squadrons, four reinforcement squadrons, 14 non-tactical drilling units, the Marine Air Reserve squadrons, and two non-flying Marine Reserve units. NAS Atlanta also supports the training of five Intelligence Reserve units located in other states.

More than 1,300 reservists are assigned to the various tenant squadrons or units attached to Naval Air Station Atlanta. Many of these reservists are airlifted to and from their drills by VR-46, Transport Squadron 46.

Air Transportation duties are performed by Fleet Logistical Support Squadron 46 Detachment, which is based at NAS Atlanta to provide flight, ground, and logistical support to the Regular Navy and Naval Reserve. The squadron's C-118 Liftmaster aircraft are shared with two Squadron Reinforcement Units, VR-2608 and VR-2708.

Attack Squadron 205 flies the carrier-based A7 Corsair-II light attack jet aircraft. Although a tenant command of Naval Air Station Atlanta, VA-205 supports the flight and training programs of VA-2208 and VA-2308. These units are administered by the Naval Air Station Commanding Officer to provide pilots, ground officers, and maintenance personnel for transfer to the squadron as vacancies occur and to augment Fleet VA squadrons upon mobilization.

On 1 May, 1968, the Marine Light Helicopter Squadron 765, HML0765, was transferred to its present location with the Marine Air Reserve Training Detachment at Naval Air Station Atlanta. The squadron's mission is training pilots and crew members in the AH-1 Cobra and familiarization with combat tactics, including air-to-ground firing of the M-60 machine gun by crew members. The squadron has provided general Search and Rescue missions as well as support of experimental flights conducted by Lockheed-Georgia Company at Dobbins Air Force Base.

The Marine Fighter Squadron 351, VMF-351, was activated as a reserve unit with the Marine Air Reserve Training Detachment Atlanta on 1 July, 1946. Since 1946, VMF-351 has trained with a variety of aircraft including the Corsair (FAU), Skyraider (AD), Cougar (F9), Super F86 (FJ), Crusader (F8), and the Phantom (F4). The squadron is presently flying the Bronco (OV-10) aircraft.

Source: "Air Installation Compatible Use Zone (AICUZ)," Dobbins AFB, 1 June 1980.

Appendix E
BIG LAKE SEDIMENT AND
WATER QUALITY DATA

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30061

SOURCE: Big Lake (Bottom) - Dobbins AFB, Ga.
Date Received: 12 July 1979
Date Reported: 5 September 1979

Sampled by: Dobbins
Tested by: JH, JN, H
Checked by: JN

SEDIMENT

Lab No. / Field Identification (Big Lake)	C 52/3000 No. 1	FEB 74	3001 No. 2	FEB 74	3002 No. 3	FEB 74	3003 No. 4	FEB 74	3004 No. 5
PERCENT BY WEIGHT (DRY BASIS)									
Moisture Content	57		33		47		37		43
Volatile Solids	4.7	13.32	8.2	19.32	5.7	17.51	4.6	12.30	4.3
Total Organic Carbons	1.92	3.48	2.46	6.72	1.35	5.54	1.38	2.98	1.88
C.O.D.	9.26	11.49	23.95	27.15	9.85	20.57	8.18	9.07	4.55
Oil and Grease	2.85	1.31	0.31	3.49	0.95	2.30	0.22	0.47	2.90
Lead	0.0061	0.013	0.0050	0.016	0.0120	0.017	0.0130	0.017	0.0085
Zinc	0.032	0.040	0.018	0.064	0.024	0.060	0.036	0.032	0.018
Mercury	0.00010	0.0003	0.00010	0.0003	0.00020	0.00005	0.00010	0.00001	0.00005
Total Phosphorus as PO4	0.88	0.41	0.79	0.69	1.07	0.65	0.25	0.41	0.46
Iron	1.9	4.0	2.4	3.8	3.9	3.3	4.5	3.5	3.0
Cadmium	0.0005	0.0014	0.0005	0.0025	0.0008	0.0019	0.0008	0.0006	0.0003
Selenium	0.00005		0.00005		0.00005		0.00005		0.00005
Chromium	0.062	0.15	0.032	0.24	0.016	0.19	0.084	0.09	0.006
Nickel	0.004	0.003	0.004	0.003	0.008	0.002	0.007	0.003	0.005
Copper	0.0096	0.0073	0.0066	0.0054	0.0090	0.0047	0.0074	0.0041	0.0068
Arsenic	0.00025	0.005	0.00010	0.005	0.00050	0.005	0.00030	0.005	0.00050
Cobalt	0.0041		0.0059		0.0100		0.0100		0.0059
Organic, Nitrogen	0.103	0.157	0.048	0.295	0.022	0.242	0.041	0.151	0.037
Ammonia	0.016		0.011		0.021		0.027		0.015
Nitrogen, Kjeldahl	0.119	0.157	0.059	0.295	0.043	0.242	0.068	0.151	0.052
Vanadium	0.005		0.008		0.013		0.013		0.009
Berylium	0.005		0.005		0.005		0.005		0.005
CONCENTRATION, ppb (DRY BASIS)									
PCB's Total, as AR 1254	4371		570		4052		1947		5435
2, 4-D	20		20		20		20		20
Silvex	100		39		160		22		110
2, 4, 5-T	91		47		98		20		98

NOTE: 1. ONLY 4 SAMPLES TAKEN IN FEB 74
2. BLANK SPACES ARE ELEMENTS NOT PREVIOUSLY TESTED

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30061

SOURCE: Big Lake (Bottom) - Dobbins AFB, Ga.
Date Received: 12 July 1979
Date Reported: 5 September 1979

Sampled by: Dobbins AFB Perso
Tested by: JH, JN, HM, EW
Checked by: JN

SEDIMENT

Lab No.	C 52/3000	3001	3002	3003	3004
Field Identification (Big Lake)	No. 1	No. 2	No. 3	No. 4	No. 5
PERCENT BY WEIGHT (DRY BASIS)					
Moisture Content	57	33	47	37	43
Volatile Solids	4.7	8.2	5.7	4.6	4.3
Total Organic Carbons	1.92	2.46	1.35	1.38	1.88
C.O.D.	9.26	23.95	9.85	8.38	4.55
Oil and Grease	2.85	0.31	0.95	0.22	2.90
Lead	0.0061	0.0050	0.0120	0.0130	0.0085
Zinc	0.032	0.018	0.024	0.036	0.018
Mercury	0.00010	0.00010	0.00020	0.00010	0.00005
Total Phosphorus as PO_4	0.88	0.79	1.07	0.25	0.46
Iron	1.9	2.4	3.9	4.5	3.0
Cadmium	0.0005	0.0005	0.0008	0.0008	0.0003
Selenium	0.00005	0.00005	0.00005	0.00005	0.00005
Chromium	0.062	0.032	0.016	0.084	0.006
Nickel	0.004	0.004	0.008	0.007	0.005
Copper	0.0096	0.0066	0.0090	0.0074	0.0068
Arsenic	0.00025	0.00010	0.00050	0.00030	0.00050
Cobalt	0.0041	0.0059	0.0100	0.0100	0.0059
Organic, Nitrogen	0.103	0.048	0.022	0.041	0.037
Ammonia	0.016	0.011	0.021	0.027	0.015
Nitrogen, Kjeldahl	0.119	0.059	0.043	0.068	0.052
Vanadium	0.005	0.008	0.013	0.013	0.009
Berylium	0.005	0.005	0.005	0.005	0.005
CONCENTRATION, ppb (DRY BASIS)					
PCB's Total, as AR 1254	4371	570	4052	1947	5435
2, 4-D	20	20	20	20	20
Silvex	100	39	160	22	110
2, 4, 5-T	91	47	98	20	98

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30061

SOURCE: Big Lake - Dobbins AFB, Georgia
Date Received: 12 July 1979
Date Reported: 5 September 1979

Sampled by: Dobbins AFB Personnel
Tested by: JH, JN, HM, EW
Checked by: JN

WATER

Lab No.	C 52/3005	/3006	/3007	/3008	/3009
Field Identification (Big Lake)	No. 1	No. 2	No. 3	No. 4	No. 5
pH	6.6	6.5	6.5	6.6	6.6
	TEST RESULTS EXPRESSED IN MILLIGRAMS PER LITER				
Silver	0.002	0.002	0.002	0.002	0.002
Barium	0.13	0.13	0.19	0.13	0.13
Total Organic Carbon	8	8	10	11	4
Suspended Solids	2.4	13	16	13	5.2
Dissolved Solids	109	114	693	129	505
Calcium	7.2	7.2	15	7.3	6.6
Magnesium	3.3	2.8	23	3.9	1.8
Sodium	15	15	150	18	5.0
Potassium	2.0	2.0	11	2.2	1.0
Sulfates as SO_4	148*	27	68	24	14
Chlorides	38	23	339	35	233
Bicarbonates as HCO_3 (Alkalinity as HCO_3)	26	33	24	26	23
Alkalinity as $CaCo_3$ (Ca, Mg, and Fe)	21	27	20	21	19
Silica as SiO_2, Total	9.6	13	34	6.4	6.4
Silica as SiO_2, Dissolved	9.0	9.0	9.0	8.0	8.5
Oil and Grease	1.0	0.5	0.5	0.7	1.9
Total Hardness as $CaCO_3$	32.8	30.8	133.2	35.9	25.5
Chemical Oxygen Demand (C.O.D.)	12	14	20	27	15
Ammonia Nitrogen as N	0.22	0.09	0.22	0.06	0.09
Organic Nitrogen as N	0.22	0.90	0.02	0.36	0.13
Kjeldahl Nitrogen as N	0.44 1.2	0.99 1.7	0.24 2.9	0.42 1.1	0.22 1.0
Nitrate Nitrogen as N	0.74	0.74	2.68	0.72	0.70
Nitrite Nitrogen as N	0.015	0.015	0.020	0.020	0.015
Total Phosphate as P	0.03	0.42	0.11	0.06	0.02
Orthophosphate as P	0.02	0.02	0.02	0.02	0.02
Mercury Total	0.0002	0.0002	0.0002	0.0002	0.0002
Iron, Total	0.70	0.70	0.58	0.88	0.88
Manganese, Total	0.100	0.040	0.100	0.120	0.280
Cadmium, Total	0.002	0.002	0.002	0.002	0.002
Lead, Total	0.002	0.002	0.002	0.002	0.002
Zinc, Total	0.024	0.032	0.026	0.028	0.034
Copper, Total	0.005	0.010	0.002	0.002	0.002
Arsenic, Total	0.005	0.005	0.005	0.005	0.005
Selenium, Total	0.005	0.005	0.005	0.005	0.005
Nickel, Total	0.002	0.002	0.002	0.002	0.002
Chromium, Total	0.016	0.016	0.015	0.018	0.003

*Sample was depleted before this result could be checked.

Appendix F
MASTER LIST OF INDUSTRIAL SHOPS AND LABORATORIES

Appendix F
MASTER LIST OF INDUSTRIAL SHOPS AND LABORATORIES

Shop Name	Present Location and Dates (Facility No.)	Past Location and Dates (Facility No.)	Generates Significant Quantities of Hazardous Wastes (See Table 4)	Oil/Water Separator (See Table 5)
AFRES				
Corrosion Control	817 (1948-1981)	Flightline Near 817		
Washrack	989 (1968-1981)	(1960's-1968)	X	X
General Aircraft Maintenance	Flight Line		X	
Phase Inspection				
Transient Alert				
C-7A Flight Line				
Metal Processing	804 (1965-1980)			
Parachute Shop	807 (1955-1981)			
Repair and Reclamation	808 (1955-1981)		X	
Pneudraulics	808 (1955-1981)		X	
Electric/Battery	808 (1955-1981)		X	
Fuel Cell Shop	808 (1955-1981)			
Propulsion	819 (1976-1981)	742 (1948-1976)	X	
AGE	823 (1975-1981)	741 (1967-1975)	X	
		808 (1955-1967)		
NDI Lab	741 (1975-1981)		X	
Instrument Shop	742 (1948-1981)			
Avionics	742 (1948-1981)			
Life Support	730 (1948-1981)			
Photo Lab	820 (1952-1981)			
Vehicle Maintenance	516 (1973-1981)		X	
Vehicle Maintenance	512 (1956-1981)			
Vehicle Maintenance	515 (1952-1981)			
Protective Coating	504 (1952-1981)			
CE Pavement and Grounds	504 (1952-1981)			
Electric	504 (1952-1981)			
Mechanical	504 (1952-1981)			
Plumbing Metals	504 (1952-1981)			
CE Structural	504 (1952-1981)			
CE Welding	505 (1953-1981)			
Fuels Management	531 (1972-1981)			
CE Entomology	504 (1952-1981)			
Base Publications	931 (1953-1981)			
Central Heating Plant	728 (1954-1981)			
TACAN	2036 (1973-1981)			
700th TAS	733 (1948-1981)			

Appendix F—Continued

Shop Name	Present Location and Dates (Facility No.)	Past Location and Dates (Facility No.)	Generates Significant Quantities of Hazardous Wastes (See Table 4)	Oil/Water Separator (See Table 5)
Georgia ANG				
Aerospace Systems	838 (1946-1981)		X	
Fuel/Environmental/Egress	(temporarily in 916)			
Repair and Reclamation				
Pneudraulics				
Electric				
Fabrication	838 (1946-1981)			
Battery Shop				
Engine Test Shop				
Machine Shop				
Corrosion Control				
Washrack	989 (1971-1981)		X	X
Paint Shop	838 (1946-1981)		X	
NDI Lab	838 (1976-1981)	914 (1972-1976)	X	
Parachute Shop	838 (1946-1981)			
Nose Docks	838 (1946-1981)			
Welding Shop	838 (1946-1981)			
Doppler/Inertial Navigation Systems	838 (1946-1981)			
Instrument/Auto Pilot	838 (1946-1981)			
Communication/Navigation	838 (1946-1981)			
Weapons				
Gun Shop	838 (1946-1981)			
Missile Maintenance	952 (1953-1981)			
Munitions Inspection	948 (1953-1981)			
Munitions Office	944 (1974-1981)	831 (1970-1974)		
Munitions Storage	954/950 (1953-1981)			
Munitions Trailer Maintenance	946 (1946-1981)			
Weapons Cleaning	957 (1956-1981)			
Weapons Control	903 (1980-1981)	838 (1946-1980)		
Weapons/Release Shop	838 (1946-1981)			
AGE	928 (1981)	903 (1952-1981)	X	
Motor Pool	965 (1980-1981)	829 (1950-1980)	X	X
Carpenter Shop	838 (1946-1981)			
Photo Lab	838 (1946-1981)			
Supply	826 (1950-1981)			
CE Storage	826 (1950-1981)			
Mobility/Storage	831 (1970-1981)			
Hospital	838 (1946-1981)			

Appendix F—Continued

Shop Name	Present Location and Dates (Facility No.)	Past Location and Dates (Facility No.)	Generates Significant Quantities of Hazardous Wastes (See Table 4)	Oil/Water Separator (See Table 5)
NAS Atlanta				
Aircraft Maintenance	1 (1958-1981)		X	X
Air Frames				
Hydraulics				
Welding				
Machine Shop				
Parachute/Survival	1 (1958-1981)			
Engine Maintenance	1 (1958-1981)			
Avionics	1 (1958-1981)			
Aviation Armaments	1 (1958-1981)			
NDI	1 (13)		X	
Electrical/Battery	1 (1958-1981)		X	
Aircraft/Equipment Maintenance	17 (1959-1981)		X	X
Vehicle Maintenance	70 (1958-1981)		X	X
Fuels Management	16 (1959-1981)			
Refuel Vehicle Shop	10 (1976-1981)	70 (1958-1976)		
Instrument/Calibration	2 (1960-1981)			
Service Station	85 (1961-1981)			X
Auto Hobby Shop	27 (1964-1981)			X
Boiler House	71 (1958-1981)			
Dispensary/Clinic	550 (1973-1981)			
Army National Guard				
General Aircraft Maintenance	747 (1973-1981)		X	
U.S. Army Reserve				
General Aircraft Maintenance	1011 (1978-1981) 1012 (1978-1981) 1013 (1978-1981) 1014 (1978-1981)	730 (1971-1978)	X	

Appendix G
INVENTORY OF STORAGE TANKS

Appendix G
INVENTORY OF STORAGE TANKS

Facility No.	Type of Material	Capacity (gallons)	Type of Tank
AFRES			
531	JP-4	210,000	Aboveground/Diked
531	AVGAS	84,000	Aboveground/Diked
531	AVGAS	25,000 (3)[1]	Belowground
531	No. 2 Fuel Oil	25,000 (3)	Belowground
531	No. 2 Fuel Oil	10,000 (2)	Elevated/Diked
531	MOGAS	5,000	Elevated/Diked
531	Diesel	5,000	Elevated/Diked
515	Inactive	5,000	Underground
515	MOGAS	10,000 (2)	Underground
730/733	MOGAS	5,000	Underground
728	No. 5 Fuel Oil	30,000 (2)	Underground
728	No. 5 Fuel Oil	50,000 (2)	Underground
817	Waste Oil	1,000	Underground
2071	Contaminated Fuel	2,500	Aboveground/Diked
ANG			
989	PD 680 Solvent	3,000	Underground
989	Alkaline Soap	3,000	Underground
989	Oil/Water Separator	1,000	Underground
965	MOGAS (regular)	5,000	Underground
965	MOGAS (unleaded)	2,000	Underground
965	No. 2 Fuel Oil	2,000	Underground
965	Waste Oil	500	Underground
829	MOGAS	3,000	Underground
829	No. 2 Fuel Oil	2,000	Underground
903	No. 2 Fuel Oil	300	Aboveground

[1]( ) denotes the number of tanks of indicated size.

INVENTORY OF STORAGE TANKS

Facility No.	Type of Material	Capacity (gallons)	Type of Tank
Navy			
16	Oil/Water Separator	30,000	Underground
49	Oil/Water Separator	30,000	Underground
43	JP-5	90,000	Aboveground/Diked
44	JP-5	90,000	Aboveground/Diked
45	JP-5	90,000	Aboveground/Diked
46	JP-5	45,000	Aboveground/Diked
78 (70)	MOGAS	10,000	Underground
23 (17)	MOGAS	8,000	Underground
17	MOGAS	600	Aboveground
85	MOGAS	6,000	Underground
85	MOGAS	10,000	Underground
71	No. 2 Fuel Oil	6,000	Underground
71	Waste Oil	6,000	Underground
Army National Guard			
747	MOGAS	1,200	Underground
747	JP-4	5,000	Underground
747	JP-4	1,200 (2)[1]	Underground
747	Diesel	5,000	Aboveground
U.S. Army Reserve			
1011	Waste Oil (abandoned)	500	Underground
1011	No. 2 Fuel Oil	3,000 (2)	Underground
1011	No. 2 Fuel Oil	1,000	Underground
1011	Alkaline Solvent	300	Underground

[1]( ) denotes the number of tanks of indicated size.

Appendix H
SITE HAZARD EVALUATION METHODOLOGY

USAF INSTALLATION RESTORATION PROGRAM
HAZARD ASSESSMENT RATING METHODOLOGY

BACKGROUND

The Department of Defense (DOD) has established a comprehensive program to identify, evaluate, and control problems associated with past disposal practices at DOD facilities. One of the actions required under this program is to:

> "develop and maintain a priority listing of contaminated installations and facilities for remedial action based on potential hazard to public health, welfare, and environmental impacts." (Reference: DEQPPM 81-5, 11 December 1981).

Accordingly, the United States Air Force (USAF) has sought to establish a system to set priorities for taking further actions at sites based upon information gathered during the Records Search phase of its Installation Restoration Program (IRP).

The first site rating model was developed in June 1981 at a meeting with representatives from USAF Occupational Environmental Health Laboratory (OEHL), Air Force Engineering Services Center (AFESC), Engineering-Science (ES) and CH_2M Hill. The basis for this model was a system developed for EPA by JRB Associates of McLean, Virginia. The JRB model was modified to meet Air Force needs.

After using this model for 6 months at over 20 Air Force installations, certain inadequacies became apparent. Therefore, on January 26 and 27, 1982, representatives of USAF OEHL, AFESC, various major commands, Engineering Science, and CH_2M Hill met to address the inadequacies. The result of the meeting was a new site rating model designed to present a better picture of the hazards posed by sites at Air Force installations. The new rating model described in this presentation is referred to as the Hazard Assessment Rating Methodology.

PURPOSE

The purpose of the site rating model is to provide a relative ranking of sites of suspected contamination from hazardous substances. This model will assist the Air Force in setting priorities for follow-on site investigations and confirmation work under Phase II of IRP.

This rating system is used only after it has been determined that (1) potential for contamination exists (hazardous wastes present in sufficient quantity), and (2) potential for migration exists. A site can be deleted from consideration for rating on either basis.

DESCRIPTION OF MODEL

Like the other hazardous waste site ranking models, the U.S. Air Force's site rating model uses a scoring system to rank sites for priority attention. However, in developing this model, the designers incorporated some special features to meet specific DOD program needs.

The model uses data readily obtained during the Record Search portion (Phase I) of the IRP. Scoring judgments and computations are easily made. In assessing the hazards at a given site, the model develops a score based on the most likely routes of contamination and the worst hazards at the site. Sites are given low scores only if there are clearly no hazards at the site. This approach meshes well with the policy for evaluating and setting restrictions on excess DOD properties.

Site scores are developed using the appropriate ranking factors according to the method presented in the flow chart (Figure 1). The site rating form is provided in Figure 2 and the rating factor guidelines are provided in Table 1.

As with the previous model, this model considers four aspects of the hazard posed by a specific site: the possible receptors of the contamination the waste and its characteristics, potential pathways for waste contaminant migration, and any efforts to contain the contaminants. Each of these categories contains a number of rating factors that are used in the overall hazard rating.

The receptors category rating is calculated by scoring each factor, multiplying by a factor weighting constant and adding the weighted scores to obtain a total category score.

The pathways category rating is based on evidence of contaminant migration or an evaluation of the highest potential (worst case) for contaminant migration along one of three pathways. If evidence of contaminant migration exists, the category is given a subscore of 80 to 100 points. For indirect evidence, 80 points are assigned and for direct evidence 100 points are assigned. If no evidence is found, the highest score among three possible routes is used. These routes are surface water migration, flooding, and ground-water migration. Evaluation of each route involves factors associated with the particular migration route. The three pathways are evaluated and the highest score among all four of the potential scores is used.

The waste characteristics category is scored in three steps. First, a point rating is assigned based on an assessment of the waste quantity and the hazard (worst case) associated with the site. The level of confidence in the information is also factored into the assessment. Next, the score is multiplied by a waste persistence factor, which acts to reduce the score if the waste is not very persistent. Finally, the score is further modified by the physical state of the waste. Liquid wastes receive the maximum score, while scores for sludges and solids are reduced.

The scores for each of the three categories are then added together and normalized to a maximum possible score of 100. Then the waste management practice category is scored. Sites at which there is no containment are not reduced in score. Scores for sites with limited containment can be reduced by 5 percent. If a site is contained and well managed, its score can be reduced by 90 percent. The final site score is calculated by applying the waste managment practices category factor to the sum of the scores for the other three categories.

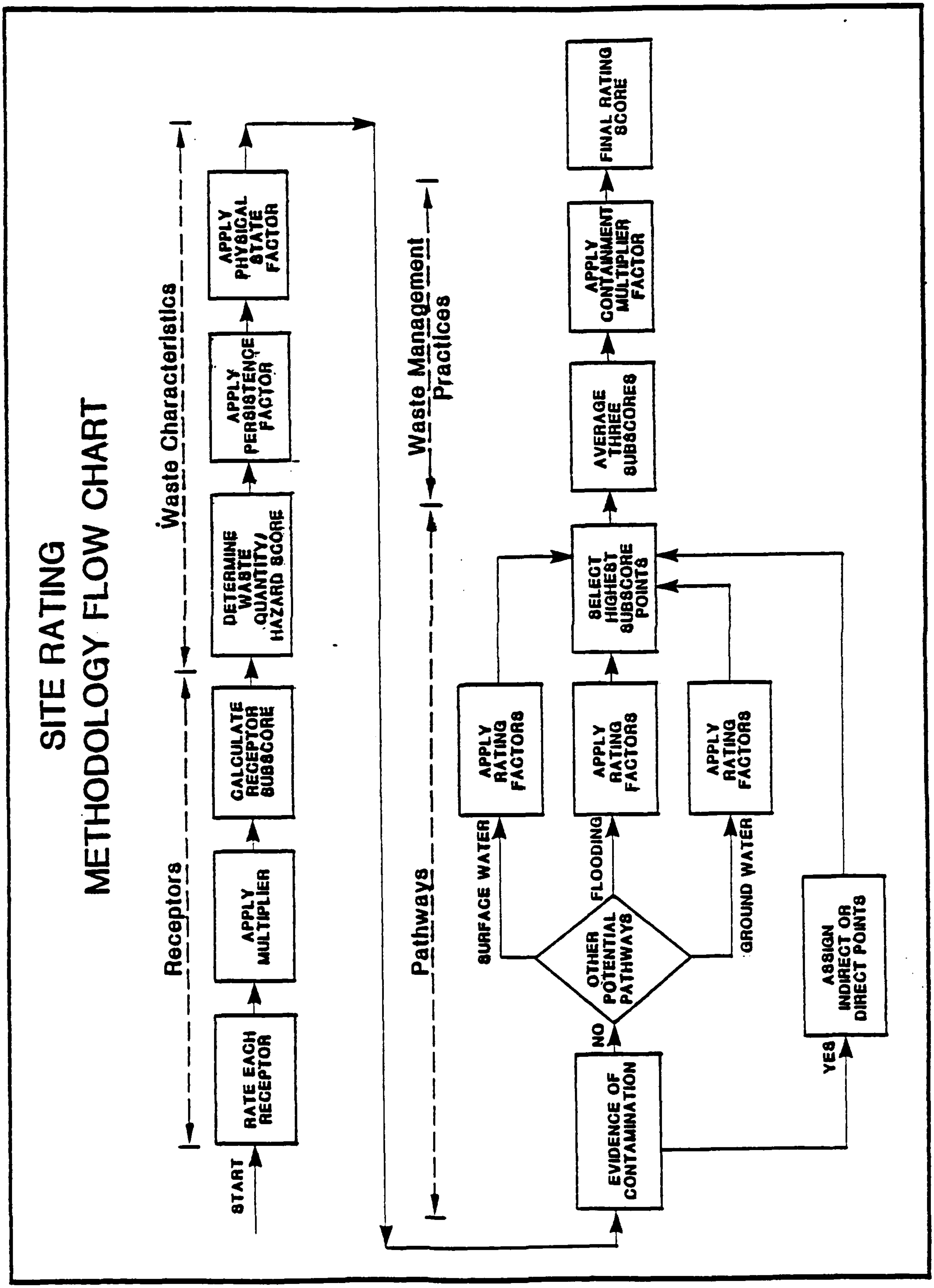
SITE RATING
METHODOLOGY FLOW CHART
Receptors
Waste Characteristics
START
RATE EACH RECEPTOR
APPLY MULTIPLIER
CALCULATE RECEPTOR SUBSCORE
DETERMINE WASTE QUANTITY/ HAZARD SCORE
APPLY PERSISTENCE FACTOR
APPLY PHYSICAL STATE FACTOR
Pathways
Waste Management Practices
EVIDENCE OF CONTAMINATION
NO
YES
OTHER POTENTIAL PATHWAYS
SURFACE WATER
FLOODING
GROUND WATER
APPLY RATING FACTORS
APPLY RATING FACTORS
APPLY RATING FACTORS
ASSIGN INDIRECT OR DIRECT POINTS
SELECT HIGHEST SUBSCORE POINTS
AVERAGE THREE SUBSCORES
APPLY CONTAINMENT MULTIPLIER FACTOR
FINAL RATING SCORE

FIGURE 2

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE ____________________

LOCATION ____________________

DATE OF OPERATION OR OCCURRENCE ____________________

OWNER/OPERATOR ____________________

COMMENTS/DESCRIPTION ____________________

SITE RATED BY ____________________

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site		4		
B. Distance to nearest well		10		
C. Land use/zoning within 1 mile radius		3		
D. Distance to reservation boundary		6		
E. Critical environments within 1 mile radius of site		10		
F. Water quality of nearest surface water body		6		
G. Ground water use of uppermost aquifer		9		
H. Population served by surface water supply within 3 miles downstream of site		6		
I. Population served by ground-water supply within 3 miles of site		6		
Subtotals			______	______

Receptors subscore (100 X factor score subtotal/maximum score subtotal) ______

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = Large) ______
2. Confidence level (C = confirmed, S = suspected) ______
3. Hazard rating (H = high, M = medium, L = low) ______

Factor Subscore A (from 20 to 100 based on factor score matrix) ______

B. Apply persistence factor
Factor Subscore A X Persistence Factor = Subscore B

______ X ______ = ______

C. Apply physical state multiplier

Subscore B X Physical State Multiplier = Waste Characteristics Subscore

______ X ______ = ______

III. PATHWAYS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore ______

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.

1. Surface water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Distance to nearest surface water		8		
Net precipitation		6		
Surface erosion		8		
Surface permeability		6		
Rainfall intensity		8		

Subtotals ______ ______

Subscore (100 X factor score subtotal/maximum score subtotal) ______

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
2. Flooding		1		

Subscore (100 x factor score/3) ______

3. Ground-water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Depth to ground water		8		
Net precipitation		6		
Soil permeability		8		
Subsurface flows		8		
Direct access to ground water		8		

Subtotals ______ ______

Subscore (100 x factor score subtotal/maximum score subtotal) ______

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore ______

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors ______
Waste Characteristics ______
Pathways ______

Total ______ divided by 3 = ______
Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score X Waste Management Practices Factor = Final Score

______ X ______ = [ ]

TABLE 1

HAZARDOUS ASSESSMENT RATING METHODOLOGY GUIDELINES

I. RECEPTORS CATEGORY

Rating Factors	Rating Scale Levels 0	1	2	3	Multiplier
A. Population within 1,000 feet (includes on-base facilities)	0	1 - 25	26 - 100	Greater than 100	4
B. Distance to nearest water well	Greater than 3 miles	1 to 3 miles	3,001 feet to 1 mile	0 to 3,000 feet	10
C. Distance to installation boundary	Greater than 2 miles	1 to 2 miles	1,001 feet to 1 mile	0 to 1,000 feet	3
D. Land Use/Zoning (within 1 mile radius)	Completely remote (zoning not applicable)	Agricultural	Commercial or Industrial	Residential	6
E. Critical environments (within 1 mile radius)	Not a critical environment	Natural areas	Pristine natural areas; minor wet-lands; preserved areas; presence of economically impor-tant natural re-sources susceptible to contamination.	Major habitat of an en-dangered or threatened species; presence of recharge area; major wetlands.	10
F. Water quality/use designation of nearest surface water body	Agricultural or industrial use.	Recreation, propa-gation and manage-ment of fish and wildlife.	Shellfish propaga-tion and harvesting.	Potable water supplies	6
G. Ground-Water use of uppermost aquifer	Not used, other sources readily available.	Commercial, in-dustrial, or irrigation, very limited other water sources.	Drinking water, municipal water available.	Drinking water, no muni-cipal water available; commercial, industrial, or irrigation, no other water source available.	9
H. Population served by surface water supplies within 3 miles down-stream of site	0	1 - 50	51 - 1,000	Greater than 1,000	6
I. Population served by aquifer supplies within 3 miles of site	0	1 - 50	51 - 1,000	Greater than 1, 000	6

TABLE 1 (Continued)

HAZARDOUS ASSESSMENT RATING METHODOLOGY GUIDELINES (Cont'd)

II. WASTE CHARACTERISTICS

A-1 Hazardous Waste Quantity

S = Small quantity (5 tons or 20 drums of liquid)
M = Moderate quantity (5 to 20 tons or 21 to 85 drums of liquid)
L = Large quantity (20 tons or 85 drums of liquid)

A-2 Confidence Level of Information

C = Confirmed confidence level (minimum criteria below)

- o Verbal reports from interviewer (at least 2) or written information from the records.
- o Knowledge of types and quantities of wastes generated by shops and other areas on base.
- o Based on the above, a determination of the types and *quantities of waste* disposed of at the site.

S = Suspected confidence level

- o No verbal reports or conflicting verbal reports and no written information from the records.
- o Logic based on a knowledge of the types and quantities of hazardous wastes generated at the base, and a history of past waste disposal practices indicate that these wastes were disposed of at a site.

A-3 Hazard Rating

Hazard Category	Rating Scale Levels 0	1	2	3
Toxicity	Sax's Level 0	Sax's Level 1	Sax's Level 2	Sax's Level 3
Ignitability	Flash point greater than 200°F	Flash point at 140°F to 200°F	Flash point at 80°F to 140°F	Flash point less than 80°F
Radioactivity	At or below background levels	1 to 3 times background levels	3 to 5 times background levels	Over 5 times background levels

Use the highest individual rating based on toxicity, ignitability and radioactivity and determine the hazard rating.

Hazard Rating	Points
High (H)	3
Medium (M)	2
Low (L)	1

HAZARDOUS ASSESSMENT RATING METHODOLOGY GUIDELINES (Cont'd)

II. WASTE CHARACTERISTICS (Continued)

Waste Characteristics Matrix

Point Rating	Hazardous Waste Quantity	Confidence Level of Information	Hazard Rating
100	L	C	H
80	L	C	M
	M	C	H
70	L	S	H
60	S	C	H
	M	C	M
50	L	S	M
	L	C	L
	M	S	H
	S	C	M
40	S	S	H
	M	S	M
	M	C	L
	L	S	L
30	S	C	L
	M	S	L
	S	S	M
20	S	S	L

Notes:

For a site with more than one hazardous waste, the waste quantities may be added using the following rules:

Confidence Level

- o Confirmed confidence levels (C) can be added
- o Suspected confidence levels (S) can be added
- o Confirmed confidence levels cannot be added with suspected confidence levels

Waste Hazard Rating

- o Wastes with the same hazard rating can be added
- o Wastes with different hazard ratings can only be added in a downgrade mode, e.g., MCM + SCH = LCM if the total quantity is greater than 20 tons.

Example: Several wastes may be present at a site, each having an MCM designation (60 points). By adding the quantities of each waste, the designation may change to LCM (80 points). In this case, the correct point rating for the waste is 80.

B. Persistence Multiplier for Point Rating

Persistence Criteria	Multiply Point Rating From Part A by the Following
Metals, polycyclic compounds, and halogenated hydrocarbons	1.0
Substituted and other ring compounds	0.9
Straight chain hydrocarbons	0.8
Easily biodegradable compounds	0.4

C. Physical State Multiplier

Physical State	Multiply Point Total From Parts A and B by the Following
Liquid	1.0
Sludge	0.75
Solid	0.50

TABLE 1 (Continued)

HAZARDOUS ASSESSMENT RATING METHODOLOGY GUIDELINES (Cont'd)

III. PATHWAYS CATEGORY

A. Evidence of Contamination

Direct evidence is obtained from laboratory analyses of hazardous contaminants present above natural background levels in surface water, ground water, or air. Evidence should confirm that the source of contamination is the site being evaluated.

Indirect evidence might be from visual observation (i.e., leachate), vegetation stress, sludge deposits, presence of taste and odors in drinking water, or reported discharges that cannot be directly confirmed as resulting from the site, but the site is greatly suspected of being a source of contamination.

B-1 POTENTIAL FOR SURFACE WATER CONTAMINATION

Rating Factor	Rating Scale Levels 0	1	2	3	Multiplier
Distance to nearest surface water (includes drainage ditches and storm sewers)	Greater than 1 mile	2,001 feet to 1 mile	501 feet to 2,000 feet	0 to 500 feet	8
Net precipitation	Less than -10 in.	-10 to + 5 in.	+5 to +20 in.	Greater than +20 in.	6
Surface erosion	None	Slight	Moderate	Severe	8
Surface permeability	0% to 15% clay ($>10^{-2}$ cm/sec)	15% to 30% clay (10^{-2} to 10^{-4} cm/sec)	30% to 50% clay (10^{-4} to 10^{-6} cm/sec)	Greater than 50% clay ($<10^{-6}$ cm/sec)	6
Rainfall intensity based on 1 year 24-hr rainfall	<1.0 inch	1.0-2.0 inches	2.1-3.0 inches	>3.0 inches	8

B-2 POTENTIAL FOR FLOODING

Rating Factor	0	1	2	3	Multiplier
Floodplain	Beyond 100-year floodplain	In 25-year floodplain	In 10-year floodplain	Floods annually	1

B-3 POTENTIAL FOR GROUND-WATER CONTAMINATION

Rating Factor	0	1	2	3	Multiplier
Depth to ground water	Greater than 500 ft	50 to 500 feet	11 to 50 feet	0 to 10 feet	8
Net precipitation	Less than -10 in.	-10 to +5 in.	+5 to +20 in.	Greater than +20 in.	6
Soil permeability	Greater than 50% clay ($>10^{-6}$ cm/sec)	30% to 50% clay (10^{-4} to 10^{-6} cm/sec)	15% to 30% clay (10^{-2} to 10^{-4} cm/sec)	0% to 15% clay ($<10^{-2}$ cm/sec)	8
Subsurface flows	Bottom of site greater than 5 feet above high ground-water level	Bottom of site occasionally submerged	Bottom of site frequently submerged	Bottom of site located below mean ground-water level	8
Direct access to ground water (through faults, fractures, faulty well casings, subsidence fissures,	No evidence of risk	Low risk	Moderate risk	High risk	8

TABLE 1 (Continued)

HAZARDOUS ASSESSMENT RATING METHODOLOGY GUIDELINES (Cont'd)

IV. WASTE MANAGEMENT PRACTICES CATEGORY

A. This category adjusts the total risk as determined from the receptors, pathways, and waste characteristics categories for waste management practices and engineering controls designed to reduce this risk. The total risk is determined by first averaging the receptors, pathways, and waste characteristics subscores.

B. WASTE MANAGEMENT PRACTICES FACTOR

The following multipliers are then applied to the total risk points (from A):

Waste Management Practice	Multiplier
No containment	1.0
Limited containment	0.95
Fully contained and in full compliance	0.10

Guidelines for fully contained:

Landfills:

- o Clay cap or other impermeable cover
- o Leachate collection system
- o Liners in good condition
- o Adequate monitoring wells

Surface Impoundments:

- o Liners in good condition
- o Sound dikes and adequate freeboard
- o Adequate monitoring wells

Spills:

- o Quick spill cleanup action taken
- o Contaminated soil removed
- o Soil and/or water samples confirm total cleanup of the spill

Fire Proection Training Areas:

- o Concrete surface and berms
- o Oil/water separator for pretreatment of runoff
- o Effluent from oil/water separator to treatment plant

General Note: If data are not available or known to be complete the factor ratings under items I-A through I, III-B-1 or III-B-3, then leave blank for calculation of factor score and maximum possible score.

Appendix I
PHOTOGRAPHS

GN14649.HO

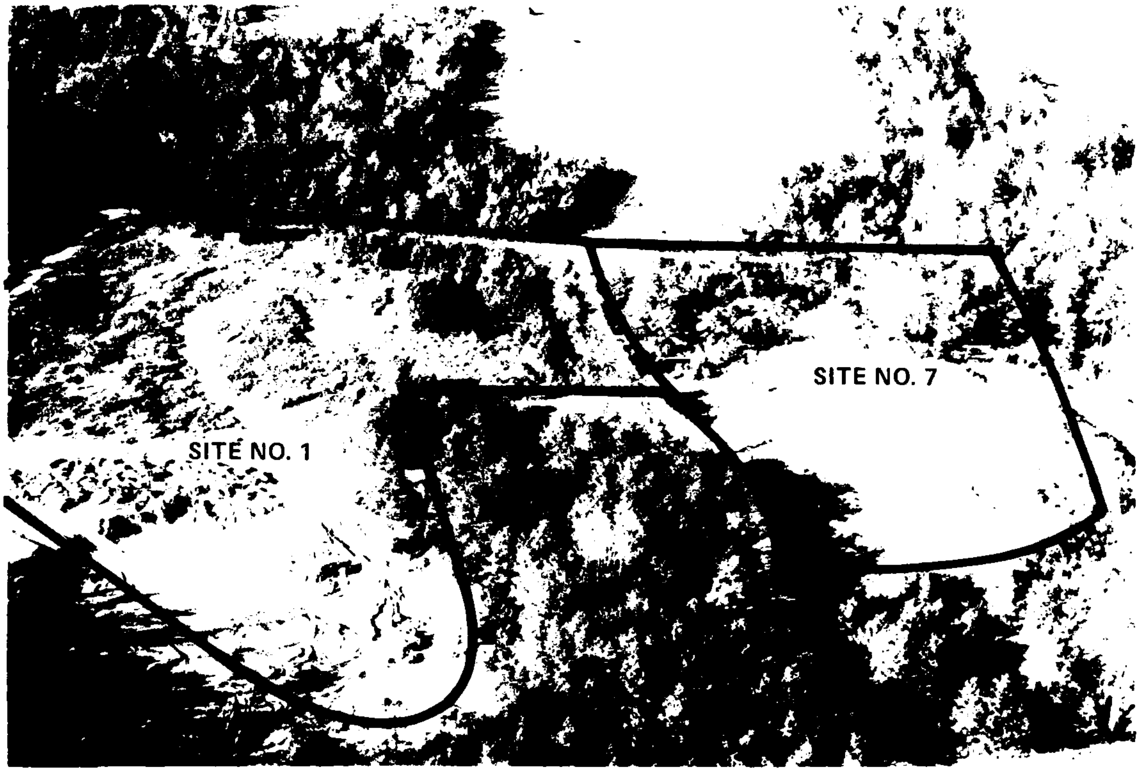

FIGURE I-1. Site No. 1, past base landfill, and Site No. 7, rubble landfill.

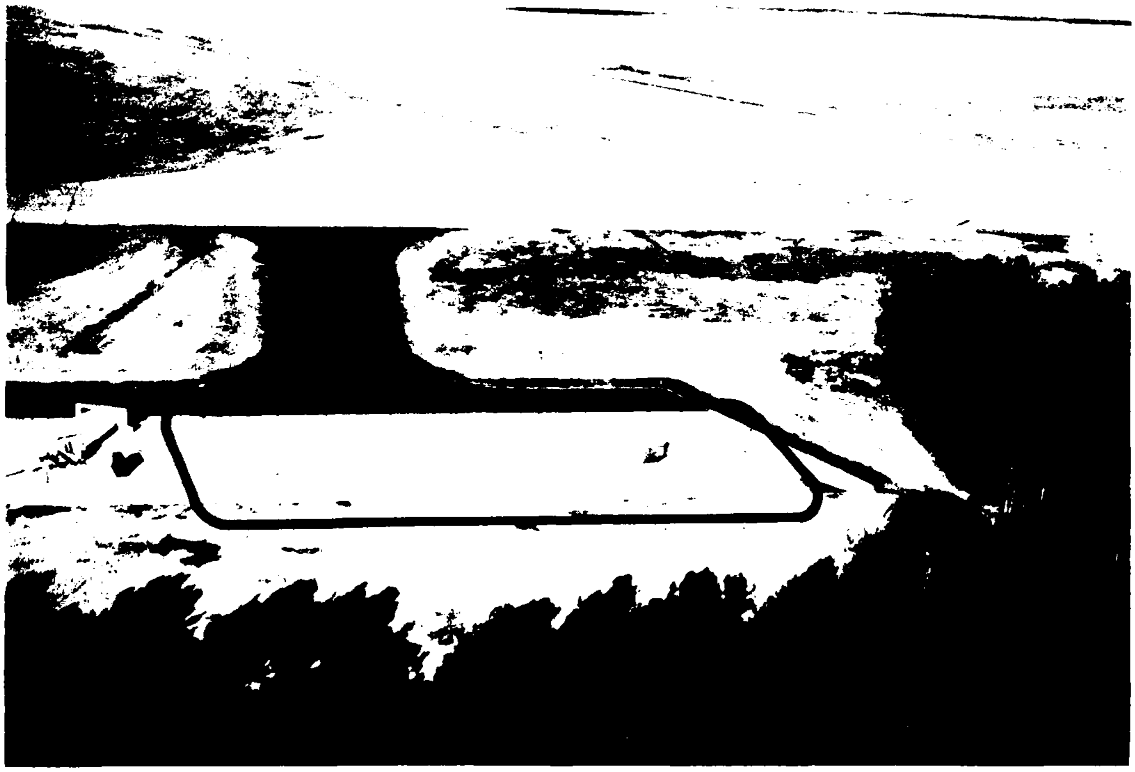

FIGURE I-2. Site No. 2, past fire tiuiiiiiy aiea.

GN14649.HO

FIGURE I-3. Site No. 3, present fire training area.

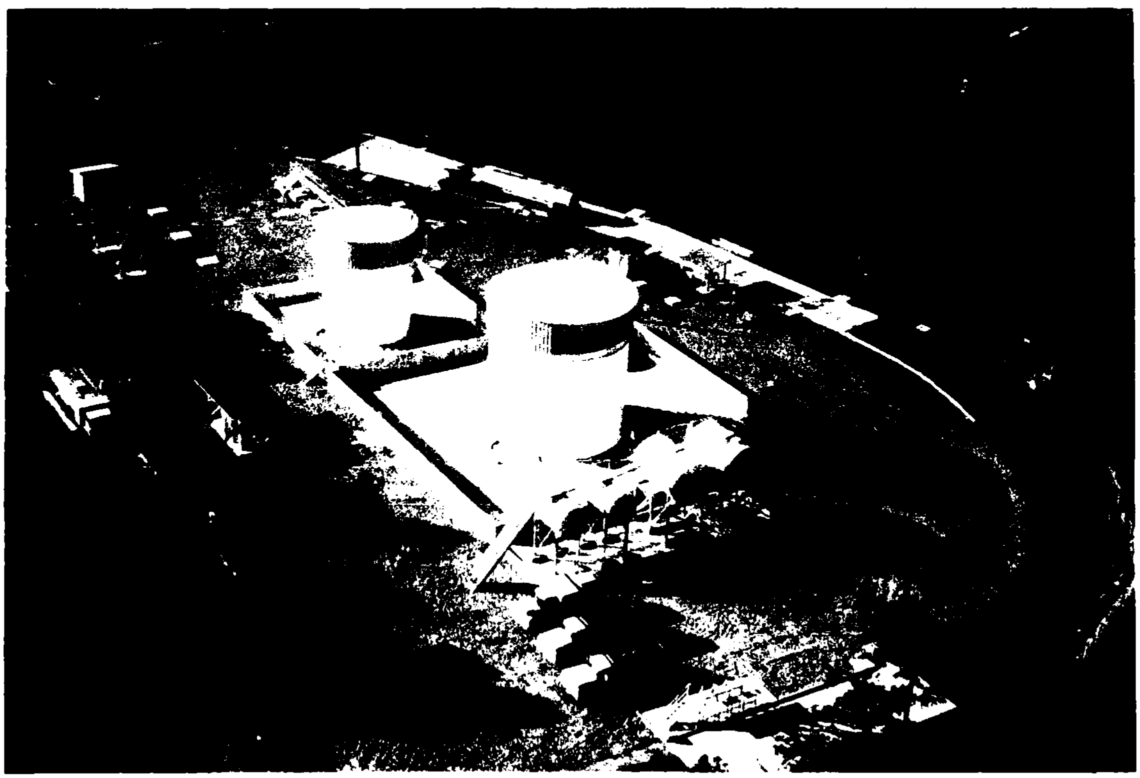

FIGURE I-4. AFRES POL tanks. Location of Site No. 5, AVGAS sludge burial Site A.

Appendix J
SITE ASSESSMENT AND RATING FORMS

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE ① Past Base Landfill
LOCATION Dobbins AFB
DATE OF OPERATION OR OCCURRENCE 1955-1974; intermittent to present
OWNER/OPERATOR Dobbins AFB
COMMENTS/DESCRIPTION
SITE RATED BY BJ Haas and DMMoccia

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site	0	4	0	12
B. Distance to nearest well	1	10	10	30
C. Land use/zoning within 1 mile radius	3	3	9	9
D. Distance to reservation boundary	3	6	18	18
E. Critical environments within 1 mile radius of site	1	10	10	30
F. Water quality of nearest surface water body	1	6	6	18
G. Ground water use of uppermost aquifer	0	9	0	27
H. Population served by surface water supply within 3 miles downstream of site	0	6	0	18
I. Population served by ground-water supply within 3 miles of site	0	6	0	18
		Subtotals	53	180

Receptors subscore (100 X factor score subtotal/maximum score subtotal) 29

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) L
2. Confidence level (C = confirmed, S = suspected) C
3. Hazard rating (H = high, M = medium, L = low) H

Factor Subscore A (from 20 to 100 based on factor score matrix) 100

B. Apply persistence factor
Factor Subscore A X Persistence Factor = Subscore B

100 x 0.8 = 80

C. Apply physical state multiplier

Subscore B X Physical State Multiplier = Waste Characteristics Subscore

80 x 1.0 = 80

III. PATHWAYS (1)

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore ______

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.

1. Surface water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Distance to nearest surface water	3	8	24	24
Net precipitation	2	6	12	18
Surface erosion	3	8	24	24
Surface permeability	2	6	12	18
Rainfall intensity	2	8	16	24
		Subtotals	88	108

Subscore (100 X factor score subtotal/maximum score subtotal) 81

2. Flooding

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Flooding	0	1	0	

Subscore (100 x factor score/3) 0

3. Ground-water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Depth to ground water	2	8	16	24
Net precipitation	2	6	12	18
Soil permeability	1	8	8	24
Subsurface flows	0	8	0	24
Direct access to ground water	—	8	—	—
		Subtotals	36	90

Subscore (100 x factor score subtotal/maximum score subtotal) 40

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 81

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors	29
Waste Characteristics	80
Pathways	81

Total 190 divided by 3 = 63 Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score X Waste Management Practices Factor = Final Score

63 x 1.0 = 63

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE ② Post Fire Training Area
LOCATION Dobbins AFB
DATE OF OPERATION OR OCCURRENCE 1955-19755
OWNER/OPERATOR Dobbins AFB
COMMENTS/DESCRIPTION
SITE RATED BY BJ Haas and DM Moccia

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site	0	4	0	12
B. Distance to nearest well	3	10	30	30
C. Land use/zoning within 1 mile radius	3	3	9	9
D. Distance to reservation boundary	2	6	12	18
E. Critical environments within 1 mile radius of site	1	10	10	30
F. Water quality of nearest surface water body	1	6	6	18
G. Ground water use of uppermost aquifer	0	9	0	27
H. Population served by surface water supply within 3 miles downstream of site	0	6	0	18
I. Population served by ground-water supply within 3 miles of site	0	6	0	18
		Subtotals	67	180

Receptors subscore (100 X factor score subtotal/maximum score subtotal) 37

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) S
2. Confidence level (C = confirmed, S = suspected) C
3. Hazard rating (H = high, M = medium, L = low) H

Factor Subscore A (from 20 to 100 based on factor score matrix) 60

B. Apply persistence factor
Factor Subscore A X Persistence Factor = Subscore B

60 x 1.0 = 60

C. Apply physical state multiplier

Subscore B X Physical State Multiplier = Waste Characteristics Subscore

60 x 1.0 = 60

III. PATHWAYS (2)

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore ______

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.

1. Surface water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Distance to nearest surface water	2	8	16	24
Net precipitation	2	6	12	18
Surface erosion	2	8	16	24
Surface permeability	2	6	12	18
Rainfall intensity	2	8	16	24
		Subtotals	72	108

Subscore (100 X factor score subtotal/maximum score subtotal) 67

2. Flooding

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Flooding	0	1	0	

Subscore (100 x factor score/3) ______

3. Ground-water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Depth to ground water	2	8	16	24
Net precipitation	2	6	12	18
Soil permeability	1	8	8	24
Subsurface flows	0	8	0	24
Direct access to ground water	—	8	—	—
		Subtotals	36	90

Subscore (100 x factor score subtotal/maximum score subtotal) 40

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 67

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors	37
Waste Characteristics	60
Pathways	67

Total 164 divided by 3 = 55 Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score X Waste Management Practices Factor = Final Score

55 x 1.0 = 55

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE (3) Present Fire Training Area

LOCATION Dobbins AFB

DATE OF OPERATION OR OCCURRENCE 1975-Present

OWNER/OPERATOR Dobbins AFB

COMMENTS/DESCRIPTION

SITE RATED BY BJ Haas and DM Maccia

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site	0	4	0	12
B. Distance to nearest well	3	10	30	30
C. Land use/zoning within 1 mile radius	3	3	9	9
D. Distance to reservation boundary	2	6	12	18
E. Critical environments within 1 mile radius of site	1	10	10	30
F. Water quality of nearest surface water body	1	6	6	18
G. Ground water use of uppermost aquifer	0	9	0	27
H. Population served by surface water supply within 3 miles downstream of site	0	6	0	18
I. Population served by ground-water supply within 3 miles of site	0	6	0	18
		Subtotals	67	180

Receptors subscore (100 X factor score subtotal/maximum score subtotal) 37

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) S
2. Confidence level (C = confirmed, S = suspected) C
3. Hazard rating (H = high, M = medium, L = low) H

Factor Subscore A (from 20 to 100 based on factor score matrix) 60

B. Apply persistence factor
Factor Subscore A X Persistence Factor = Subscore B

60 x .8 = 48

C. Apply physical state multiplier

Subscore B X Physical State Multiplier = Waste Characteristics Subscore

48 x 1.0 = 48

III. PATHWAYS (3)

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore ______

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.

1. Surface water migration N/A

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Distance to nearest surface water		8		
Net precipitation		6		
Surface erosion		8		
Surface permeability		6		
Rainfall intensity		8		
Subtotals				

Subscore (100 X factor score subtotal/maximum score subtotal) ______

2. Flooding

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Flooding	0	1	0	

Subscore (100 x factor score/3) 0

3. Ground-water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Depth to ground water	2	8	16	24
Net precipitation	2	6	12	18
Soil permeability	0	8	0	24
Subsurface flows	0	8	0	24
Direct access to ground water	—	8	—	—
Subtotals			28	90

Subscore (100 x factor score subtotal/maximum score subtotal) 31

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 31

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors	37
Waste Characteristics	48
Pathways	31
Total 116 divided by 3 =	39 Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score X Waste Management Practices Factor = Final Score

39 x .10 = 4.0

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE (4) Big Lake

LOCATION Dobbins AFB

DATE OF OPERATION OR OCCURRENCE Drainage from AFP #6 1940's-Present

OWNER/OPERATOR Dobbins

COMMENTS/DESCRIPTION

SITE RATED BY [illegible] and [illegible]

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site	2	4	8	12
B. Distance to nearest well	3	10	30	30
C. Land use/zoning within 1 mile radius	3	3	9	9
D. Distance to reservation boundary	2	6	12	18
E. Critical environments within 1 mile radius of site	1	10	10	30
F. Water quality of nearest surface water body	1	6	6	18
G. Ground water use of uppermost aquifer	0	9	0	27
H. Population served by surface water supply within 3 miles downstream of site	0	6	0	18
I. Population served by ground-water supply within 3 miles of site	0	6	0	18
		Subtotals	75	180

Receptors subscore (100 X factor score subtotal/maximum score subtotal) 42

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) L
2. Confidence level (C = confirmed, S = suspected) S
3. Hazard rating (H = high, M = medium, L = low) H

Factor Subscore A (from 20 to 100 based on factor score matrix) 70

B. Apply persistence factor
Factor Subscore A X Persistence Factor = Subscore B

70 x 1.0 = 70

C. Apply physical state multiplier

Subscore B X Physical State Multiplier = Waste Characteristics Subscore

70 x 0.5 = 35

III. PATHWAYS (4)

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore —

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.

1. Surface water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Distance to nearest surface water	3	8	24	24
Net precipitation	2	6	12	18
Surface erosion	1	8	8	24
Surface permeability	n/A	6	—	—
Rainfall intensity	2	8	16	24
		Subtotals	60	90

Subscore (100 X factor score subtotal/maximum score subtotal) 67

2. Flooding n/A

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Flooding n/A		1		

Subscore (100 x factor score/3) n/A

3. Ground-water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Depth to ground water	3	8	24	24
Net precipitation	n/A	6	—	—
Soil permeability	1	8	8	24
Subsurface flows	3	8	24	24
Direct access to ground water	3	8	24	24
		Subtotals	80	96

Subscore (100 x factor score subtotal/maximum score subtotal) 83

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 83

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors	42
Waste Characteristics	35
Pathways	83

Total 160 divided by 3 = 53 Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score X Waste Management Practices Factor = Final Score

53 x 1.0 = 53

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE (5) AUBAS Sludge Burial Site A

LOCATION Dobbins AFB

DATE OF OPERATION OR OCCURRENCE 1940's to Present

OWNER/OPERATOR Dobbins AFB

COMMENTS/DESCRIPTION

SITE RATED BY BJHaas and DM Maccia

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site	2	4	8	12
B. Distance to nearest well	3	10	30	30
C. Land use/zoning within 1 mile radius	3	3	9	9
D. Distance to reservation boundary	2	6	12	18
E. Critical environments within 1 mile radius of site	1	10	10	30
F. Water quality of nearest surface water body	1	6	6	18
G. Ground water use of uppermost aquifer	0	9	0	27
H. Population served by surface water supply within 3 miles downstream of site	0	6	0	18
I. Population served by ground-water supply within 3 miles of site	0	6	0	18
		Subtotals	75	180

Receptors subscore (100 X factor score subtotal/maximum score subtotal) 42

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) S
2. Confidence level (C = confirmed, S = suspected) C
3. Hazard rating (H = high, M = medium, L = low) H

Factor Subscore A (from 20 to 100 based on factor score matrix) 60

B. Apply persistence factor
Factor Subscore A X Persistence Factor = Subscore B

60 x 1.0 = 60

C. Apply physical state multiplier

Subscore B X Physical State Multiplier = Waste Characteristics Subscore

60 x 0.5 = 30

III. PATHWAYS (5)

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore —

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.

1. Surface water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Distance to nearest surface water	3	8	24	24
Net precipitation	2	6	12	18
Surface erosion	0	8	0	24
Surface permeability	2	6	12	18
Rainfall intensity	2	8	16	24
		Subtotals	64	108

Subscore (100 X factor score subtotal/maximum score subtotal) 59

2. Flooding

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Flooding	0	1	0	

Subscore (100 x factor score/3) 0

3. Ground-water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Depth to ground water	2	8	16	24
Net precipitation	2	6	12	18
Soil permeability	1	8	8	24
Subsurface flows	0	8	0	24
Direct access to ground water	—	8	—	—
		Subtotals	36	90

Subscore (100 x factor score subtotal/maximum score subtotal) 40

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 59

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors	42
Waste Characteristics	30
Pathways	59

Total 131 divided by 3 = 44 Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score X Waste Management Practices Factor = Final Score

44 x 1.0 = 44

HAZARDOUS ASSESSMENT RATING FORM

NAME OF SITE (6) AVGAS Burial Site B

LOCATION Dobbins AFB

DATE OF OPERATION OR OCCURRENCE 1966-1969

OWNER/OPERATOR Dobbins AFB

COMMENTS/DESCRIPTION

SITE RATED BY BSHaas and DMMaccia

I. RECEPTORS

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
A. Population within 1,000 feet of site	2	4	8	12
B. Distance to nearest well	3	10	30	30
C. Land use/zoning within 1 mile radius	3	3	9	9
D. Distance to reservation boundary	2	6	12	18
E. Critical environments within 1 mile radius of site	1	10	10	30
F. Water quality of nearest surface water body	1	6	6	18
G. Ground water use of uppermost aquifer	0	9	0	27
H. Population served by surface water supply within 3 miles downstream of site	0	6	0	18
I. Population served by ground-water supply within 3 miles of site	0	6	0	18
		Subtotals	75	180

Receptors subscore (100 X factor score subtotal/maximum score subtotal) 42

II. WASTE CHARACTERISTICS

A. Select the factor score based on the estimated quantity, the degree of hazard, and the confidence level of the information.

1. Waste quantity (S = small, M = medium, L = large) S
2. Confidence level (C = confirmed, S = suspected) S
3. Hazard rating (H = high, M = medium, L = low) H

Factor Subscore A (from 20 to 100 based on factor score matrix) 40

B. Apply persistence factor
Factor Subscore A X Persistence Factor = Subscore B

40 x 1.0 = 40

C. Apply physical state multiplier

Subscore B X Physical State Multiplier = Waste Characteristics Subscore

40 x 0.5 = 20

III. PATHWAYS (6)

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score

A. If there is evidence of migration of hazardous contaminants, assign maximum factor subscore of 100 points for direct evidence or 80 points for indirect evidence. If direct evidence exists then proceed to C. If no evidence or indirect evidence exists, proceed to B.

Subscore —

B. Rate the migration potential for 3 potential pathways: surface water migration, flooding, and ground-water migration. Select the highest rating, and proceed to C.

1. Surface water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Distance to nearest surface water	3	8	24	24
Net precipitation	2	6	12	18
Surface erosion	2	8	16	24
Surface permeability	2	6	12	18
Rainfall intensity	2	8	16	24
		Subtotals	80	108

Subscore (100 X factor score subtotal/maximum score subtotal) 74

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
2. Flooding	0	1	0	

Subscore (100 x factor score/3) —

3. Ground-water migration

Rating Factor	Factor Rating (0-3)	Multiplier	Factor Score	Maximum Possible Score
Depth to ground water	2	8	16	24
Net precipitation	2	6	12	18
Soil permeability	1	8	8	24
Subsurface flows	0	8	0	24
Direct access to ground water	—	8	—	—
		Subtotals	36	90

Subscore (100 x factor score subtotal/maximum score subtotal) 40

C. Highest pathway subscore.

Enter the highest subscore value from A, B-1, B-2 or B-3 above.

Pathways Subscore 74

IV. WASTE MANAGEMENT PRACTICES

A. Average the three subscores for receptors, waste characteristics, and pathways.

Receptors	42
Waste Characteristics	20
Pathways	75

Total 136 divided by 3 = 45 Gross Total Score

B. Apply factor for waste containment from waste management practices

Gross Total Score X Waste Management Practices Factor = Final Score

45 x 1.0 = 45