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INSTALLATION ASSESSMENT OF HEADQUARTERS, WALTER REED ARMY MEDICAL CENTER, WASHINGTON, D.C., AND NONCONTIGUOUS SECTIONS FOREST GLEN, SILVER SPRING, MD., AND GLEN HAVEN, WHEATON, MD.
Report No. 342

B.M. McMaster, J.D. Bonds, B.S. Danahar, K.L. Hatfield, M.A. Keirn, E.A. Knauft, C.R. Neff, and K.A. Civitarese

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Washington, D.C. 20307

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Assessments Division
Aberdeen Proving Ground, Md. 21010

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INSTALLATION ASSESSMENT

OF

HEADQUARTERS, WALTER REED ARMY MEDICAL CENTER, WASH, DC

AND NONCONTIGUOUS SECTIONS

FOREST GLEN, SILVER SPRING, MD,

AND GLEN HAVEN, WHEATON, MD

REPORT NO. 341

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

An onsite installation assessment was conducted Jan. 16-20, 1984, at Headquarters, Walter Reed Army Medical Center, Washington, D.C., to determine the presence of any toxic or hazardous materials and to assess the potential for offpost migration. Based on the findings of this assessment, a field survey was not recommended.

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SUMMARY

An onsite installation assessment was conducted Jan. 16 - 20, 1984, at Headquarters, Walter Reed Army Medical Center (WRAMC), Washington, D.C., to determine past and current use of toxic and hazardous materials, as well as the potential for these substances to migrate off the installation.

Problems areas identified during the onsite assessment include the following:

1. Toxic/hazardous wastes are being stored in excess of the 90 days allowable, under U.S. Environmental Protection Agency Regulations (EPA, 1982a).
2. Wastewater discharges from the steam cleaning operation (Bldg. 601) and the wash rack (Bldg. 82) enter stormwater drainages and have not been permitted in accordance with the National Pollutant Discharge Elimination System.
3. The disposal of wipe rags contaminated with toxic wastes along with nonhazardous solid waste is in violation of Resource Conservation and Recovery Act regulations.
4. The mixing of carbon tetrachloride with waste oil makes the resulting mixture a hazardous waste (EPA, 1982b).
5. While the use of carbon tetrachloride as a degreasing agent by the Directorate of Industrial Operations motor pool is allowed by National Institute for Occupational Safety and Health/ Occupational Safety and Health Administration regulations, nonhazardous substitute solvents are available (NIOSH/OSHA, 1978).

Based on available geologic evidence and information on contaminated sources, offpost migration of contaminants via surface or subsurface waters is not indicated; therefore, no survey by the U.S. Army Toxic and

Hazardous Materials Agency (USATHAMA) was recommended. It was recommended, however, that WRAMC should:

1. Bring the hazardous waste program into compliance with U.S. Environmental Protection Agency regulations.
2. Consider eliminating the need for National Pollutant Discharge Elimination System permits by connecting these wastewater sources to the sanitary sewer system.
3. Properly dispose of the wipe rags which are contaminated with toxic materials.
4. Avoid contamination of waste oils with any substance which could cause them to be classified as hazardous wastes.
5. Consider replacing carbon tetrachloride with a less hazardous solvent or institute a monitoring program to ensure that atmospheric levels do not exceed concentrations allowed by occupational health regulations.

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LIST OF ACRONYMS AND ABBREVIATIONS

AAQS	ambient air quality standards
AFIP	Armed Forces Institute of Pathology
AG	Adjutant General
AGL	above ground level
AMC	Army Medical Center
AQCR	Air Quality Control Region
°C	degrees Celsius
CB	chemical/biological
CE	U.S. Army Corps of Engineers
Ci	curies
cm	centimeters
cm/hr	centimeters per hour
CO	carbon monoxide
CP	continental-polar
DA	Department of the Army
DARCOM	U.S. Army Materiel Development and Readiness Command
dB(A)	decibels (A-weighted)
DFAE	Directorate of Facilities Engineering
DIO	Directorate of Industrial Operations
DO	dissolved oxygen
DOD	U.S. Department of Defense
DORF	Diamond Ordnance Radiation Facility
DOT	U.S. Department of Transportation
DPCA	Directorate of Personnel and Community Activities
DPDO	Defense Property Disposal Office
DPTSEC	Directorate of Plans, Training, and Security
EIA	environmental impact assessment
EPA	U.S. Environmental Protection Agency
EPIC	Environmental Photographic Interpretation Center
ESE	Environmental Science and Engineering, Inc.

FHA	Federal Housing Authority
FWS	U.S. Fish and Wildlife Service
g	grams
gal	gallons
ha	hectares
HC	hydrocarbons
USC	U.S. Army Health Services Command
IIA	Initial Installation Assessment
in	inches
in/hr	inches per hour
I.V.	intravenous
kg	kilograms
kg/month	kilograms per month
kg/week	kilograms per week
kg/yr	kilograms per year
km	kilometers
kW	kilowatts
l	liters
lb	pounds
lb/hr	pounds per hour
lb/yr	pounds per year
l/month	liters per month
lpm	liters per minute
lpy	liters per year
l/week	liters per week
m	meters
MBTU/nr	million British thermal units per hour
mCi	millicuries
mCi/yr	millicuries per year
mg/cm^2/month	milligrams per square centimeter per month
mg/m^3	milligrams per cubic meter
MOGAS	motor vehicle gasoline
m/sec	meters per second
MSL	mean sea level

MT	maritime-tropical
n.d.	not dated
NIH	National Institutes of Health
NIOSH	National Institute for Occupational Safety and Health
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
POL	petroleum, oils, and lubricants
pt/wk	pints per week
PVNTMED	Preventive Medicine
PX	Post Exchange
RCRA	Resource Conservation and Recovery Act
SO_x	sulfur oxides
SPCC/ISCP	Spill Prevention Control and Countermeasure/Installation Spill Contingency Plan
TCE	trichloroethylene
TMP	transportation motor pool
uCi/month	microcuries per month
ug/l	micrograms per liter
ug/m^3	micrograms per cubic meter
USACIDC	U.S. Army Criminal Investigation Command
USADWSP	U.S. Army Drinking Water Surveillance Program
USAEHA	U.S. Army Environmental Hygiene Agency
USAIDR	U.S. Army Institute of Dental Research
USAMRIID	U.S. Army Medical Research Institute for Infectious Diseases
USARDA	U.S. Army Regional Dental Activity
USATHAMA	U.S. Army Toxic and Hazardous Materials Agency
USGS	U.S. Geological Survey
USSCS	U.S. Soil Conservation Service
WRAIR	Walter Reed Army Institute of Research

WRAMC	Headquarters, Walter Reed Army Medical Center
WSSC	Washington Suburban Sanitary Commission
yd^3	cubic yards
yd^3/week	cubic yards per week

1.0 GENERAL

1.1 PURPOSE OF THE ASSESSMENT

To determine the existence of toxic and hazardous materials and related contamination at Headquarters, Walter Reed Army Medical Center (WRAMC), Washington, D.C., and noncontiguous sections Forest Glen and Glen Haven located near Silver Spring and Wheaton, Md., respectively, emphasizing those substances posing a potential for migration off the installation.

1.2 AUTHORITY

U.S. Army Materiel Development and Readiness Command (DARCOM) Regulation 10-30, Mission and Major Functions of the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA), July 30, 1981.

1.3 INTRODUCTION

1. In response to a letter from the Commander, USATHAMA, requesting the identification of potentially contaminated installations, the Commander, U.S. Army Health Services Command (HSC), recommended that WRAMC and its sections be included in the Installation Restoration Program.
2. Presurvey instructions were forwarded to WRAMC by letter to outline assessment scope, provide guidelines to WRAMC personnel, and obtain advance information for review by the Initial Installation Assessment (IIA) Team.
3. WRAMC personnel were briefed on the Installation Restoration Program on Jan. 16, 1984, by a USATHAMA representative prior to the onsite installation assessment.
4. Various Government agencies were contacted for documents pertinent to the assessment effort. Agencies contacted include:
   a. National Archives and Records Service (Washington, D.C.)
   b. Washington National Records Center (Suitland, Md.)

c. U.S. Army Environmental Hygiene Agency (USAEHA), Aberdeen Proving Ground, Md.

d. U.S. Geological Survey (USGS), Arlington, Va.

e. U.S. Environmental Protection Agency (EPA), Environmental Photographic Interpretation Center (EPIC), Vint Hill Farms Station, Warrenton, Va.

f. D.C. Department of Environmental Affairs, Soil Erosion Group, Washington, D.C.

g. U.S. Fish and Wildlife Service (FWS), Office of Endangered Species, Boston, Mass.

5. The onsite phase of the assessment was conducted from Jan. 16-20, 1984. The information presented in this report is current, as of the date of the onsite assessment. The following personnel from Environmental Science and Engineering, Inc. (ESE), under Contract No. DAAK11-81-C-0093, were assigned to the IIA Team:

   . Dr. John Bonds, Team Leader
   . Mr. C. Richard Neff, Engineer
   . Ms. Karen Hatfield, Chemist
   . Dr. Michael Keirn, Environmental Scientist

6. In addition to the records review, interviews were conducted with current and former employees. Ground tours of the installation were made, and photographs were taken.

7. The installation assessment focused primarily on those facilities potentially involved in the handling, production, testing, and disposal of toxic and hazardous wastes.

1.4 CURRENT INSTALLATION ORGANIZATION

WRAMC and its two noncontiguous sections (Forest Glen and Glen Haven) are under the command of HSC with the mission to (WRAMC, 1983c):

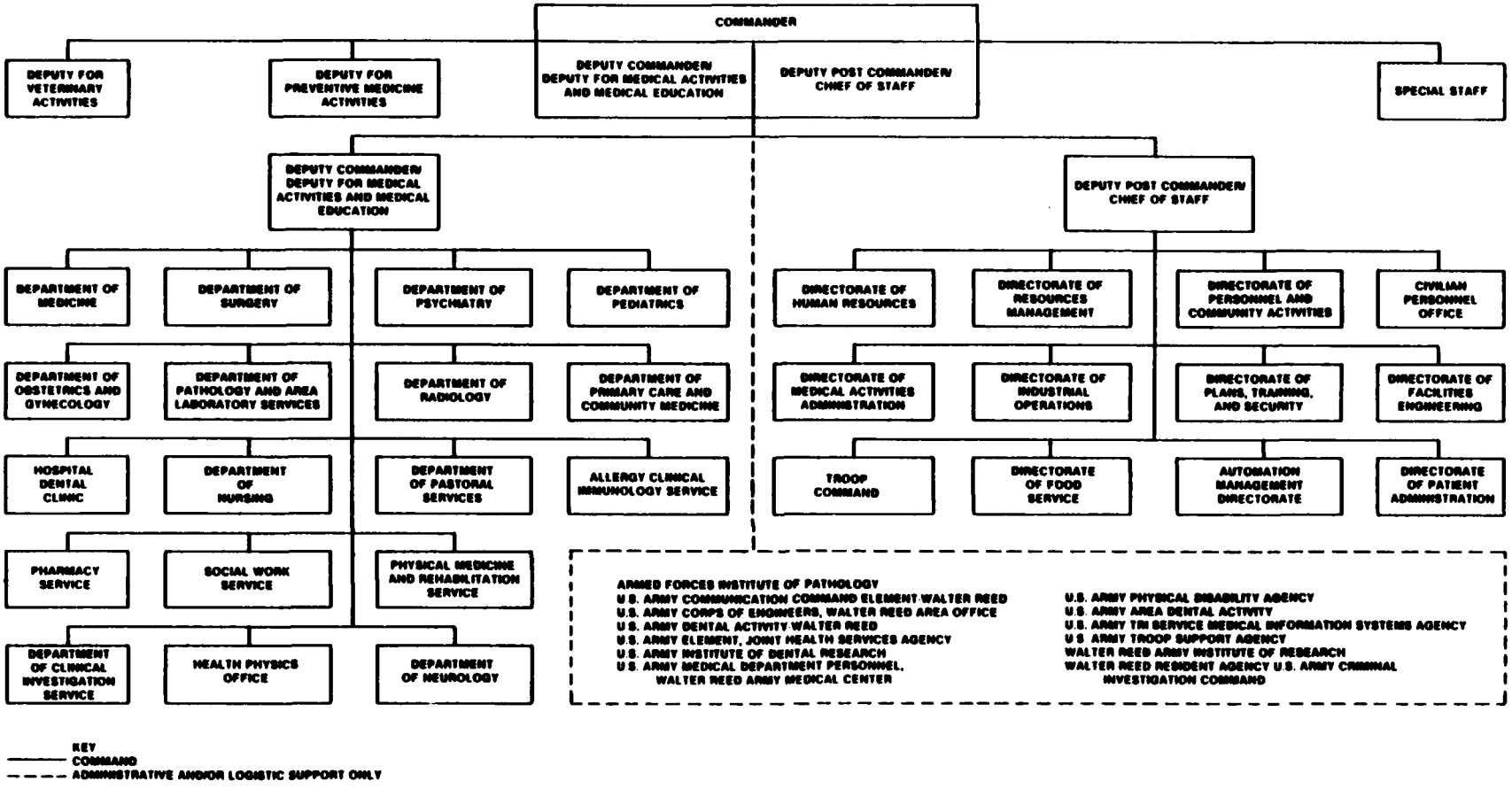
1. Operate a tertiary care medical center providing inpatient and outpatient general and specialized medical care;
2. Provide area health maintenance support;
3. Provide specialty and subspecialty health services on a worldwide referral basis;

4. Coordinate and evaluate health care delivery of, and provide consultative services to, medical facilities within the Walter Reed Health Service Region;
5. Conduct graduate medical education programs and technical education and training programs for health care professional and paramedical personnel;
6. Provide professional training and clinical teaching for medical students from Uniformed Services University of Health Sciences;
7. Conduct clinical investigation programs;
8. Provide authorized veterinary services;
9. Provide administrative and logistical support to tenant units, reserve component units, and satellite activities, as assigned; and
10. Test and evaluate new systems and concepts.

Fig. 1.4-1 is an organizational chart of WRAMC.

A number of departments and activities at WRAMC are involved in operations that include the use, handling, and/or disposal of toxic/hazardous materials. Several such activities are under command of the Deputy Commander/Deputy for Medical Activities and Medical Education, which has the general mission to provide professional health care services to all patients of WRAMC (WRAMC, 1983c). These activities/departments are:

1. Department of Medicine,
2. Department of Surgery,
3. Department of Pediatrics,
4. Department of Obstetrics and Gynecology,
5. Department of Pathology and Area Laboratory Services,
6. Department of Radiology,
7. Department of Primary Care and Community Medicine,
8. Department of Dentistry,
9. Allergy-Clinical Immunology Service, and
10. Health Physics Office.



SOURCE: WRAMC, 1983d.

Figure 1.4-1
ORGANIZATIONAL CHART OF HEADQUARTERS, WALTER REED ARMY MEDICAL CENTER

Prepared for:
U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Ground, Maryland

Their involvement with toxic/hazardous materials generally includes work in clinics and various laboratories. More detailed discussion is provided in Sec. 2.0.

Several directorates under the command of the Deputy Installation Commander/Chief of Staff also conduct operations which involve the use, handling, and/or disposal of toxic/hazardous materials. These directorates and their respective missions are as follows (WRAMC, 1983c).

1. Directorate of Personnel and Community Activities (DPCA)--Provides personnel administration and management services for WRAMC and tenant military personnel; provides general and professional education development; organizes recreation, welfare, and morale programs, Army community services, and social entertainment facilities. The Morale Support Activities Division operates an Arts and Crafts Branch as well as an Auto Crafts Branch for maintenance and repair of privately owned automobiles.

2. Directorate of Industrial Operations (DIO)--Provides logistical support to WRAMC and tenant and satellite activities for supply, maintenance, housing, property management, purchasing and contracting, transportation, and laundry and linen. The Materiel Division manages the installation precious metal recovery program. The Support Services Division operates the laundry service. The Maintenance Division manages the overall policy, planning, and operation of all WRAMC and maintenance activities. The Transportation Division manages and operates the Transportation Motor Pool (TMP).

3. Directorate of Plans, Training, and Security (DPTSEC)--Coordinates matters pertaining to the organization, force management, audiovisual systems, intelligence and security, military training, mobilization expansion and contingency

planning, and coordination of regional medical programs. Within the Audiovisual Systems Division, the Photographic Branch provides laboratory services for color and black-and-white photographs.

4. Directorate of Facilities Engineering (DFAE)--Develops and implements the Facilities Engineer work plan; provides engineering support to WRAMC and tenant activities; and controls all construction, modification, alteration, maintenance, repair, and operation of all facilities regardless of funding. The Buildings and Grounds Division provides insect and rodent control services. The Utilities Division operates, maintains, and repairs utility plants and systems.

The Preventive Medicine (PVNTMED) Activity at WRAMC does not conduct activities involving the use, handling, and/or disposal of toxic/hazardous materials. The mission of PVNTMED is to assist the Commander in planning and executing a comprehensive installation and area preventive medicine program to reduce losses of military/civilian manhours; assist in prevention, control, and rehabilitative aspects of disease and injury on the total military community; and supervise operation of the U.S. Army Civilian Employees' Health Service, Department of Defense (DOD) (WRAMC, 1983c).

A number of tenants are located at WRAMC, including (WRAMC, 1983d):

1. Armed Forces Institute of Pathology (AFIP);
2. U.S. Army Communications Command Element--Walter Reed;
3. U.S. Army Corps of Engineers (CE), Walter Reed Area Office;
4. U.S. Army Dental Activity--Walter Reed;
5. U.S. Army Element, Joint Health Services Agency;
6. U.S. Army Institute of Dental Research (USAIDR);
7. U.S. Army Medical Department Personnel, WRAMC;
8. U.S. Army Physical Disability Agency;

9. U.S. Army Regional Dental Activity (USARDA);
10. U.S. Army Tri-Service Medical Information Systems Agency;
11. U.S. Army Troop Support Agency;
12. Walter Reed Army Institute of Research (WRAIR); and
13. Walter Reed Resident Agency U.S. Army Criminal Investigation Command (USACIDC).

Several of these tenants conduct activities involving the use, handling, and/or disposal of toxic/hazardous materials, mainly while engaged in research and laboratory work. More detailed discussion is provided in Sec. 2.0.

1.5 INSTALLATION HISTORY

1.5.1 GENERAL HISTORY

WRAMC

As early as 1905, the need was recognized for a complete medical center in the Washington, D.C. area, with facilities for research, teaching, and care of the sick and wounded, to replace the overcrowded Washington Barracks (now Fort McNair). Almost single-handedly, Major William Cline Borden, Commander of the Hospital at Washington Barracks, pushed through Congress a bill authorizing construction of "Walter Reed U.S. Army General Hospital." The name was chosen to honor the Army surgeon famed for his work in helping overcome Yellow Fever. The new 80-bed hospital opened on May 1, 1909 (RTKL Associates, Inc., 1976).

The hospital expanded gradually until 1918 and the beginning of World War I. At that time, an immediate building expansion program increased the hospital's capacity to 2,500 beds. By the 1930s, most temporary buildings erected during the war had been replaced with permanent structures.

In 1923, the Army Medical School, located in the central Washington, D.C. business district, was joined with the Veterinary School, the Army Dental School, and the Army School of Nursing to form the Medical Department Professional Schools. With their new title, the schools

moved to the Walter Reed Hospital area. On Sept. 1, 1923, a War Department Order (signed by General John J. Pershing) designated the hospital and Medical Department Professional Schools as the Army Medical Center (AMC), and assigned them under direct control of the Surgeon General of the Army (AMC, Historical Branch, 1950).

The hospital expanded again during World War II, handling up to 3,000 patients per day. During this time, Walter Reed was designated as a specialized treatment center for cases involving tumors, fractures, loss of hearing, and neurological and thoracic surgery. The hospital continued to have a large patient load during the Korean Conflict. On the 100th anniversary of the birth of Army Doctor (Major) Walter Reed (Sept. 13, 1951), AMC was officially renamed the Walter Reed Army Medical Center (RTKL Associates, Inc., 1976).

WRAMC has continued its physical expansion as well as expansions in many areas of medical development. The hospital averages 16,000 admissions annually and has one of the largest outpatient services in the Army. In April 1973, WRAMC was reassigned from the jurisdiction of the Surgeon General to the Commander, HSC.

Forest Glen

With the beginning of the United States' participation in World War II, a convalescent center was needed for patients from the Main Section of WRAMC. Therefore, the Medical Department purchased an approximately 75-hectare (ha) tract at Forest Glen, Md. Existing buildings, formerly part of the National Park Seminary for girls, were renovated, and convalescent patients were first received on Jan. 20, 1943. Peak patient load during World War II was 500 persons. As the war ended, the need for the convalescent center decreased, and by 1946 the space was used for other WRAMC activities (USAEHA, 1976).

Currently, WRAMC activities at Forest Glen include the Convalescent Hospital, the Audiology and Speech Center, some psychiatric and

orthopedic care, the Institute of Research, and various HSC and Surgeon General activities (USAEHA, 1976).

Glen Haven

On May 15, 1942, the U.S. Government Federal Housing Authority (FHA) purchased land near Wheaton, Md., on which FHA built 211 housing units and 29 other buildings. On Feb. 20, 1947, this 8-ha section was purchased from FHA for use by WRAMC as the Glen Haven housing area. Glen Haven currently continues to be used for housing.

1.5.2 ARCHAEOLOGICALLY AND HISTORICALLY SIGNIFICANT AREAS

No complete archaeological survey of WRAMC, Forest Glen, or Glen Haven has been conducted, and none is planned (USAEHA, 1976).

Two sites listed in the National Register of Historic Places are located on the installation (USAEHA, 1976). The National Park Seminary, located on Forest Glen, is in the National Register. The seminary was formerly a private school for girls. The second site, the Army Medical Museum, is located on the Main Section. The museum, currently a major department of AFIP, was founded in 1862 for the collection and display of specimens of war wounds and diseases used in training Army surgeons. WRAMC is taking appropriate actions to preserve both of these sites.

1.6 ENVIRONMENTAL SETTING

1.6.1 LOCATION

WRAMC

WRAMC is located in the northern section of D.C., approximately 8 kilometers (km) directly north of the White House (see Fig. 1.6-1). This section, containing the main hospital complex, is bounded by 16th St. on the northwest and Alaska Ave. (U.S. Route 29), Georgia Ave., and Fern and Aspen St.

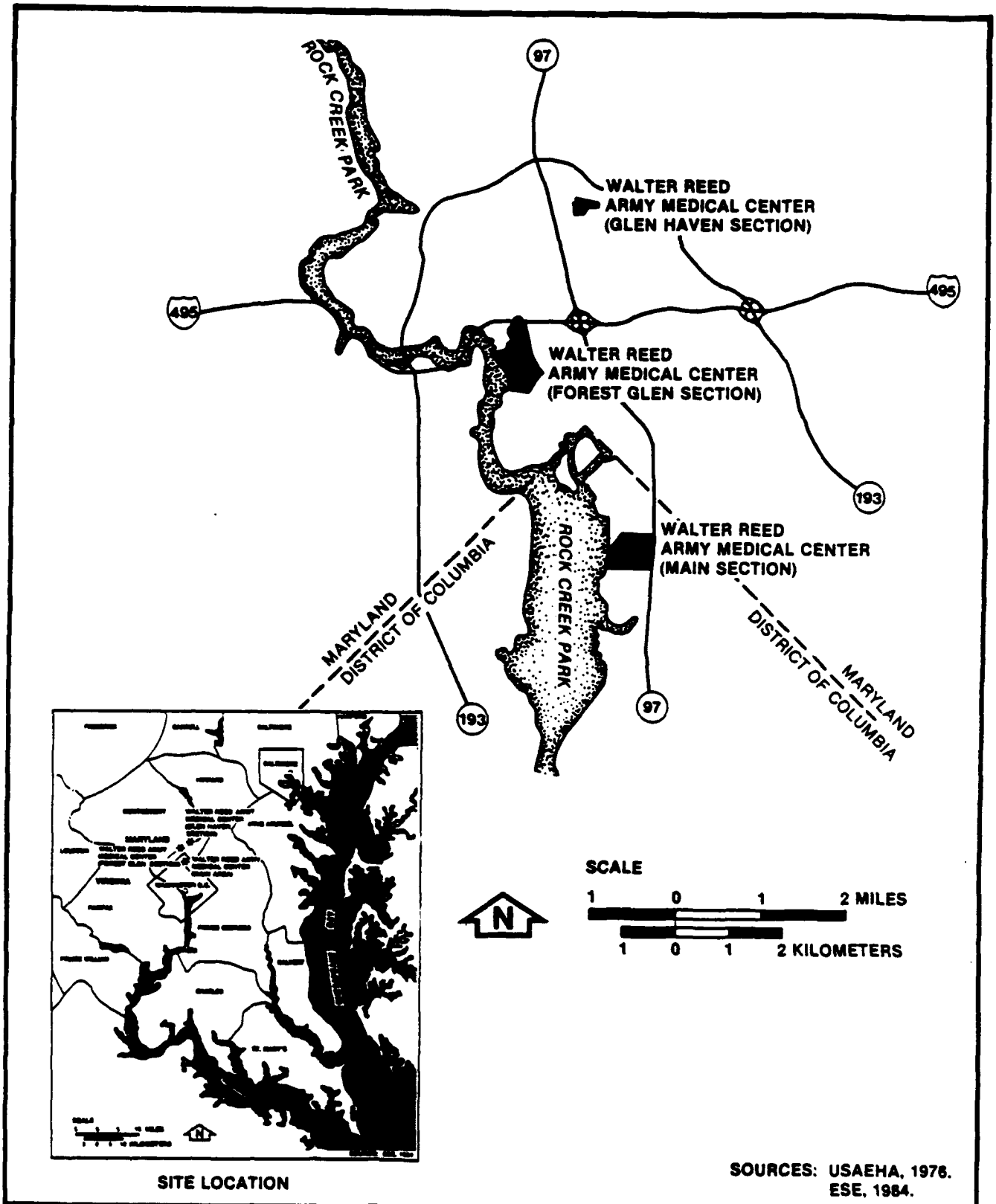


Figure 1.6-1
LOCATION MAP OF
WALTER REED ARMY MEDICAL CENTER

Prepared for:
U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Ground, Maryland

Forest Glen

Forest Glen is located approximately 2.4 km north of D.C. near the town of Silver Spring, Md. The Capital Beltway (I-495) bisects the northern end of the reservation. Major access roads to the Forest Glen Section include Forest Glen Rd., Linden La., and Brookeville Rd. Forest Glen is located approximately 4.5 km north of WRAMC (see Fig. 1.6-1).

Glen Haven

Glen Haven is located approximately 6.5 km north of WRAMC, immediately east of Wheaton, Md. Access to the Glen Haven housing area is via Maryland Route 193 (see Fig. 1.6-1).

1.6.2 METEOROLOGY

Weather conditions at WRAMC, Forest Glen, and Glen Haven are variable, with influences from the Chesapeake Bay and Atlantic Ocean to the east and the Appalachian Mountains to the west. Summers are characterized by maritime-tropical (MT) winds from the south and southwest, which bring warm, humid air to the region. High-pressure systems often stagnate over the area, creating the potential for air pollution episodes several times during the summer. Winter is characterized by cold, dry, continental-polar (CP) winds from the west and northwest (USAEHA, 1976).

Mean monthly temperatures range from a low of 1.7 degrees Celsius (°C) in January to a high of 25.9°C in July. Average precipitation varies from a low of 5.76 centimeters (cm) in January to a high of 11.9 cm in August.

The average annual precipitation in the WRAMC area is 90.85 cm. Precipitation in the form of snowfall averages approximately 50 cm per year. Monthly summaries of the climatological data for the WRAMC area are presented in Table 1.6-1.

Prevailing winds at WRAMC are from the northwest during the winter and from the south during the remainder of the year. Mean monthly wind

Table 1.6-1. Monthly Summaries of Climatological Data in the Vicinity of WRAMC

Month	Mean Temperature (°C)	Mean Precipitation (cm)
January	1.7	5.76
February	2.9	6.22
March	7.3	8.46
April	13.6	7.26
May	19.0	9.35
June	23.7	8.83
July	25.9	10.50
August	25.0	11.90
September	21.4	7.82
October	15.4	6.76
November	8.9	7.37
December	3.0	7.72
Annual	14.0 (Average)	90.85 (Total)

Note: Data averages are compiled for the years 1941-1982 at Washington National Airport.

Source: National Climatic Data Center, 1982.

speeds range from a low of 3.7 meters per second (m/sec) in July to a high of 5.0 m/sec in March. The annual mean wind speed is 4.2 m/sec (USAEHA, 1976).

1.6.3 GEOGRAPHY

Physiography

WRAMC--WRAMC is located on the eastern edge of the Piedmont Plateau physiographic province of the Appalachian Highlands. The area is characterized by gently rolling hills, with elevations on WRAMC varying from approximately 74 meters (m) above mean sea level (MSL) to 107 m MSL (USAEHA, 1976). Since most of the installation is covered by buildings and parking areas, the installation is relatively flat, except for slopes averaging approximately 10 percent which are found in the open areas. In general, the land at WRAMC slopes to the south-southwest toward Rock Creek and its drainage system.

Forest Glen--Forest Glen is located within the same physiographic province as WRAMC. The topography at Forest Glen shows much greater relief than WRAMC, with average slopes of 15 percent and slopes in excess of 50 percent along streambeds. Elevations on Forest Glen range from 57 m MSL to 105 m MSL. This area is comprised of rolling hills which slope mainly in a westerly direction toward the Rock Creek drainage system.

Glen Haven--Glen Haven is also located in the Piedmont Plateau area of the Appalachian Highlands. The Glen Haven section is relatively flat, with elevations ranging between 107 m MSL and 119 m MSL. The general slope in this area is toward the south-southwest.

Surface Hydrology

WRAMC--WRAMC is located within the Rock Creek Drainage Basin. Rock Creek originates to the north in Montgomery County, Md., flows adjacent to the western boundary of the installation, and empties into the Potomac River south of WRAMC. No streams exist on WRAMC. Surface

drainage is through the onpost storm sewer system, which is connected to D.C.'s storm sewer system. This system in the WRAMC area consists of the Luzon tunnel (2.44 m by 1.67 m), a tunnel which runs under the post from the intersection of Dahlia St. and Georgia Ave. to Rock Creek Park off the southwestern corner.

Forest Glen--Forest Glen is also located in the Rock Creek Drainage Basin. No perennial surface streams exist onpost; however, four streambeds exist where surface waters flow off the installation during periods of precipitation (see Fig. 1.6-2). Surface drainage in the developed areas of the post is collected and diverted into the existing streambeds or directly into Rock Creek.

Glen Haven--Glen Haven is located in the Sligo Creek Drainage Basin. This drainage basin is part of the Anacostia River drainage system. The Anacostia River, as well as Rock Creek, eventually empties into the Potomac River. No perennial surface streams exist on Glen Haven. Storm waters are collected and reportedly exit the installation either through a storm drainage system to the west or to the south through a ditch which exists in the central portion of the installation (see Fig. 1.6-3).

1.6.4 GEOHYDROLOGY

Geologic Setting

The lithology at the three WRAMC sites consists of a thin mantle of residuum soils approximately 2 m thick overlying massive, crystalline metamorphic schist and gneiss. The metamorphic rocks have been intruded by igneous rocks. Fig. 1.6-4 is a geologic cross section of the area.

Soils

WRAMC--The distribution of soil associations on WRAMC is shown in Fig. 1.6-5. The two predominant soil complexes onsite are the Urban Land Manor complex, covering 60 percent of the site, and the Urban Land Chillum complex, covering 27 percent of the site. The remaining

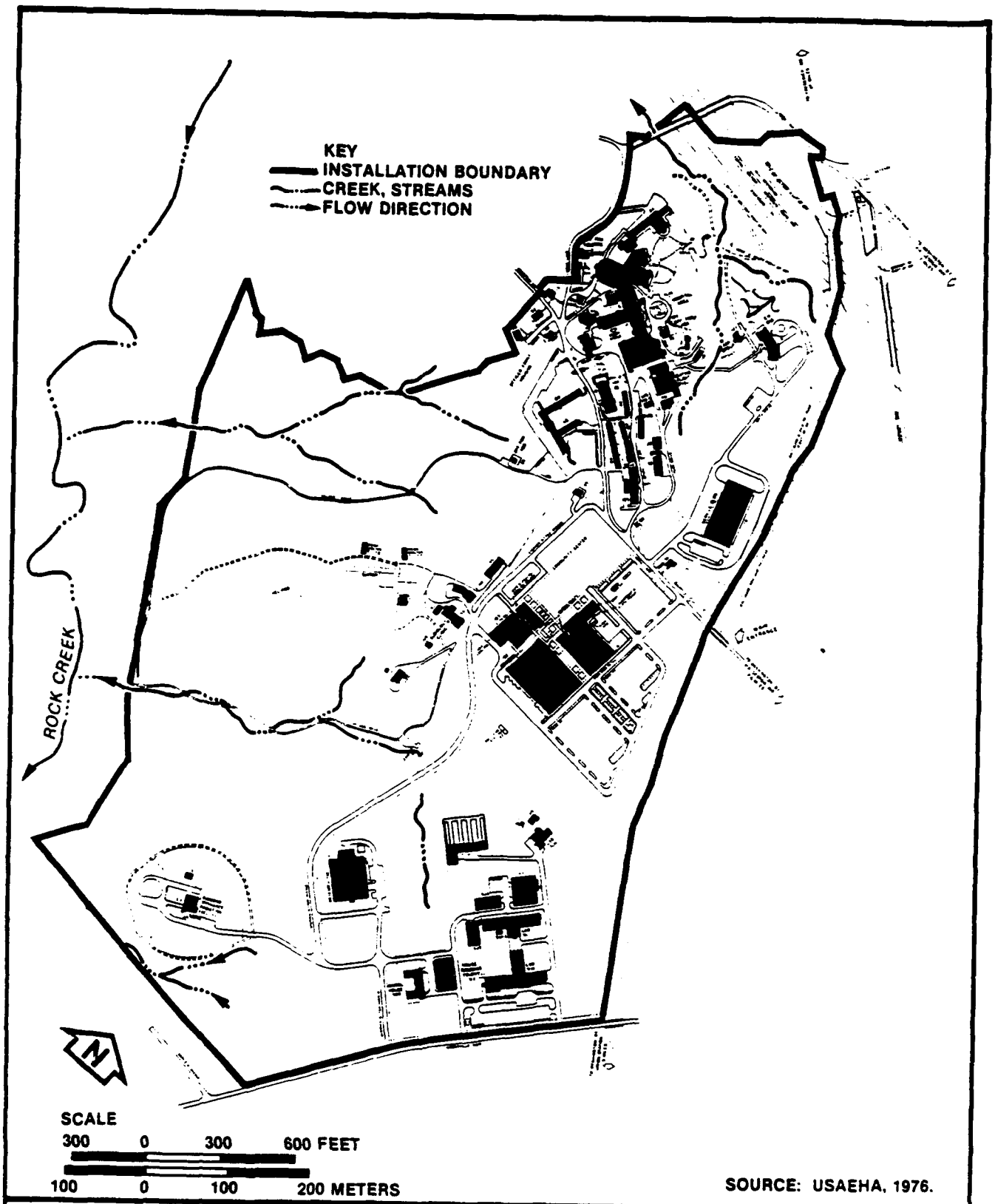


Figure 1.6-2
SURFACE DRAINAGE ON FOREST GLEN, WALTER REED ARMY MEDICAL CENTER

Prepared for:
U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Ground, Maryland

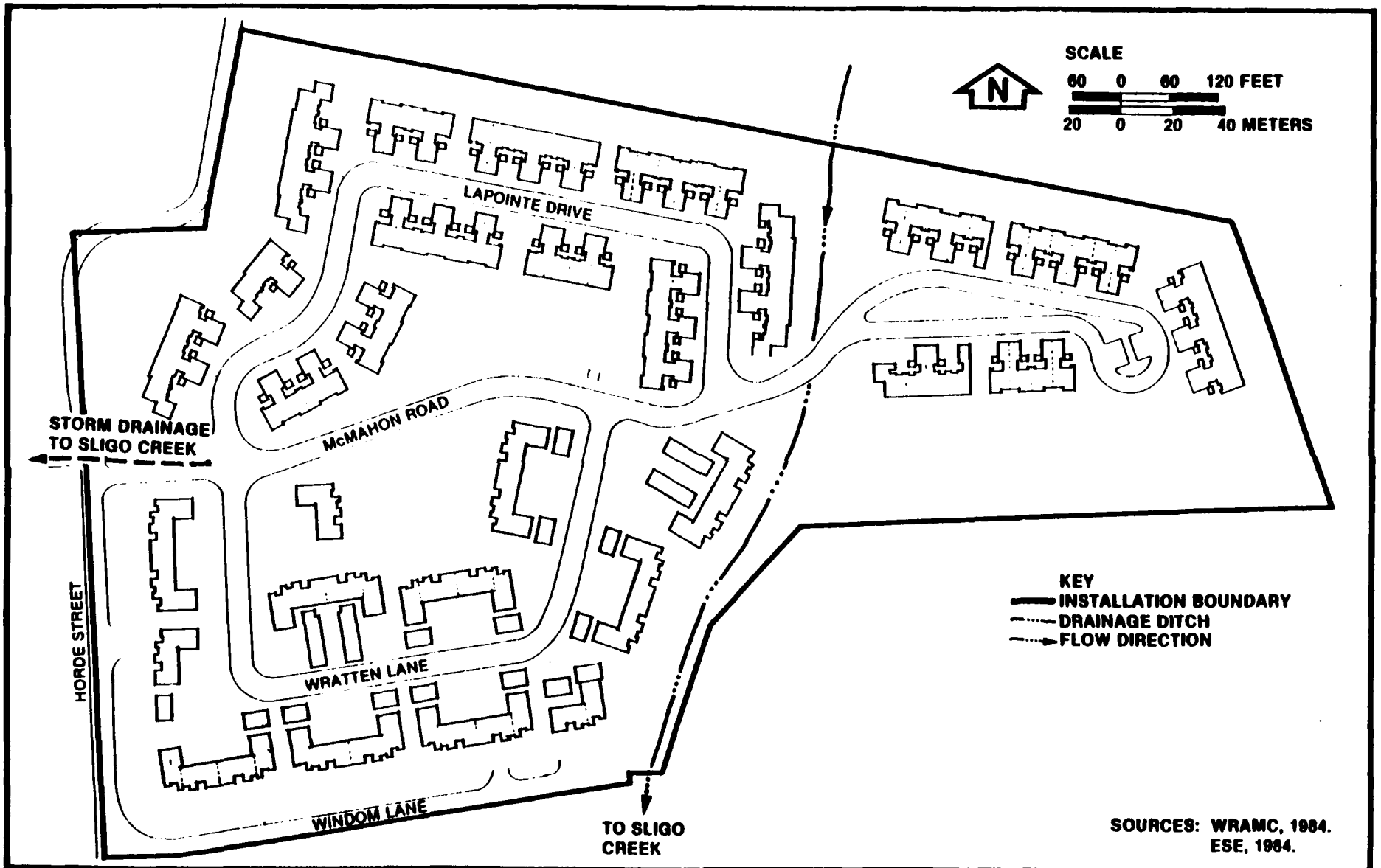


Figure 1.6-3
SURFACE DRAINAGE ON GLEN HAVEN, WALTER REED ARMY MEDICAL CENTER

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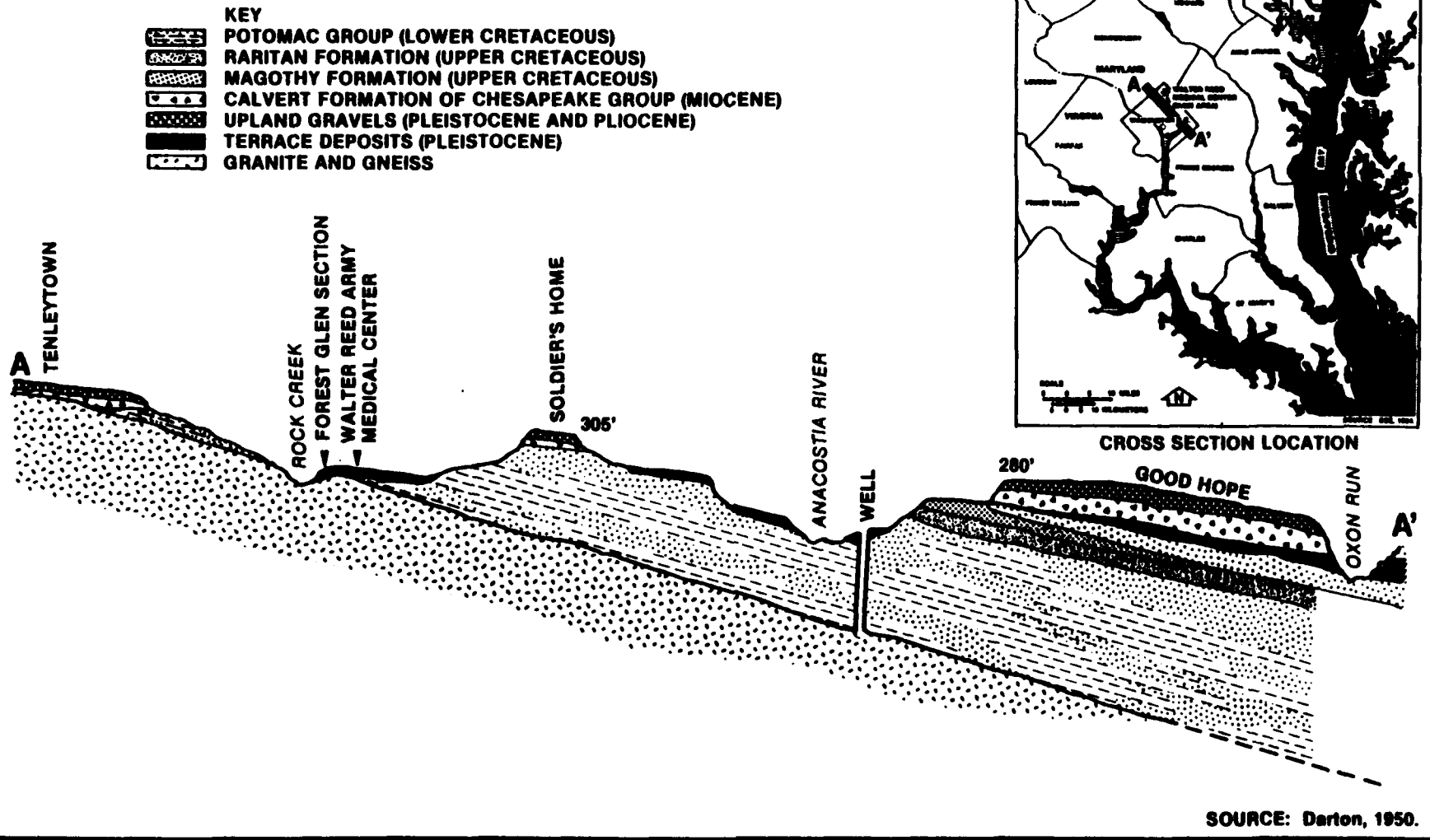
Aberdeen Proving Ground, Maryland



SOURCE: Darton, 1950.

Figure 1.6-4
GEOLOGIC CROSS SECTION ACROSS THE DISTRICT OF COLUMBIA AREA

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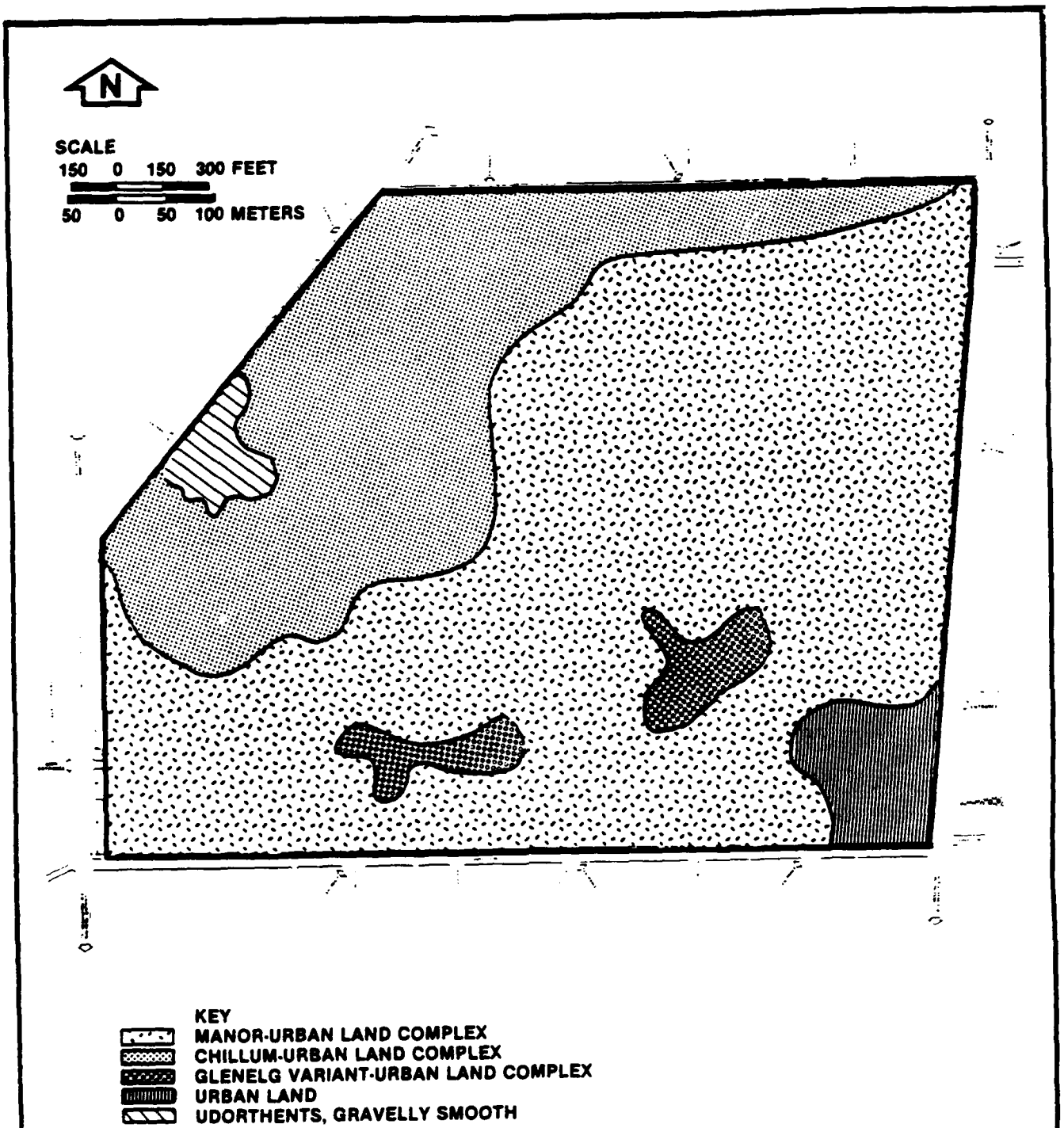

SOURCE: USSCS, 1976.

Figure 1.6-5
SOILS MAP OF MAIN SECTION, WALTER REED ARMY MEDICAL CENTER

Prepared for:
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Aberdeen Proving Ground, Maryland

13 percent of the site is covered by Urban Land, Udorthents gravelly smooth, and Glenelg Variant-Urban complex. Each soil complex is subdivided into several soil series, which are classified according to the percent of the area which is covered by buildings, concrete, asphalt, impermeable materials, or soils. Each soil complex and its soil associations are presented in Table 1.6-2.

Forest Glen--The distribution of soil associations on Forest Glen is shown in Fig. 1.6-6. The three predominant soil series onsite are the Brandywine loam, Glenelg silt loam, and the Manor-Channery silt loam, each covering approximately 28 percent of the site. The remaining 16 percent of the site is covered by the Glenville silt loam and the Wehadkee silt loam. Each soil series is subdivided into soil types which are classified according to the slope and erosion potential. Each soil series and soil type is presented in Table 1.6-3.

Glen Haven--The Glen Haven site is covered with Manor-Channery silt loam with slopes of 8 to 10 percent and moderate erosion. This soil is a shallow residuum weathered from hard schist. The permeability of the Manor-Channery silt loam ranges from 0.50 to 5.0 centimeters per hour (cm/hr).

Ground Water

The base rock under the Main Section, Forest Glen, and Glen Haven does not function as an aquifer. It is estimated that any wells drilled in the massive metamorphic rocks under the installation could potentially produce up to 75 liters per minute (lpm). The nearby productive aquifers are located to the southeast in the thick wedge of coastal sediments. Fig. 1.6-7 shows the coastal aquifers and their recharge boundaries in relationship to WRAMC, Forest Glen, and Glen Haven.

1.6.5 BIOTA

The biological resources of the Main Section, Forest Glen, and Glen Haven are limited to species characteristic of, and adapted to, urban

Table 1.6-2. Engineering Characteristics of Soils at WRAMC--Main Section

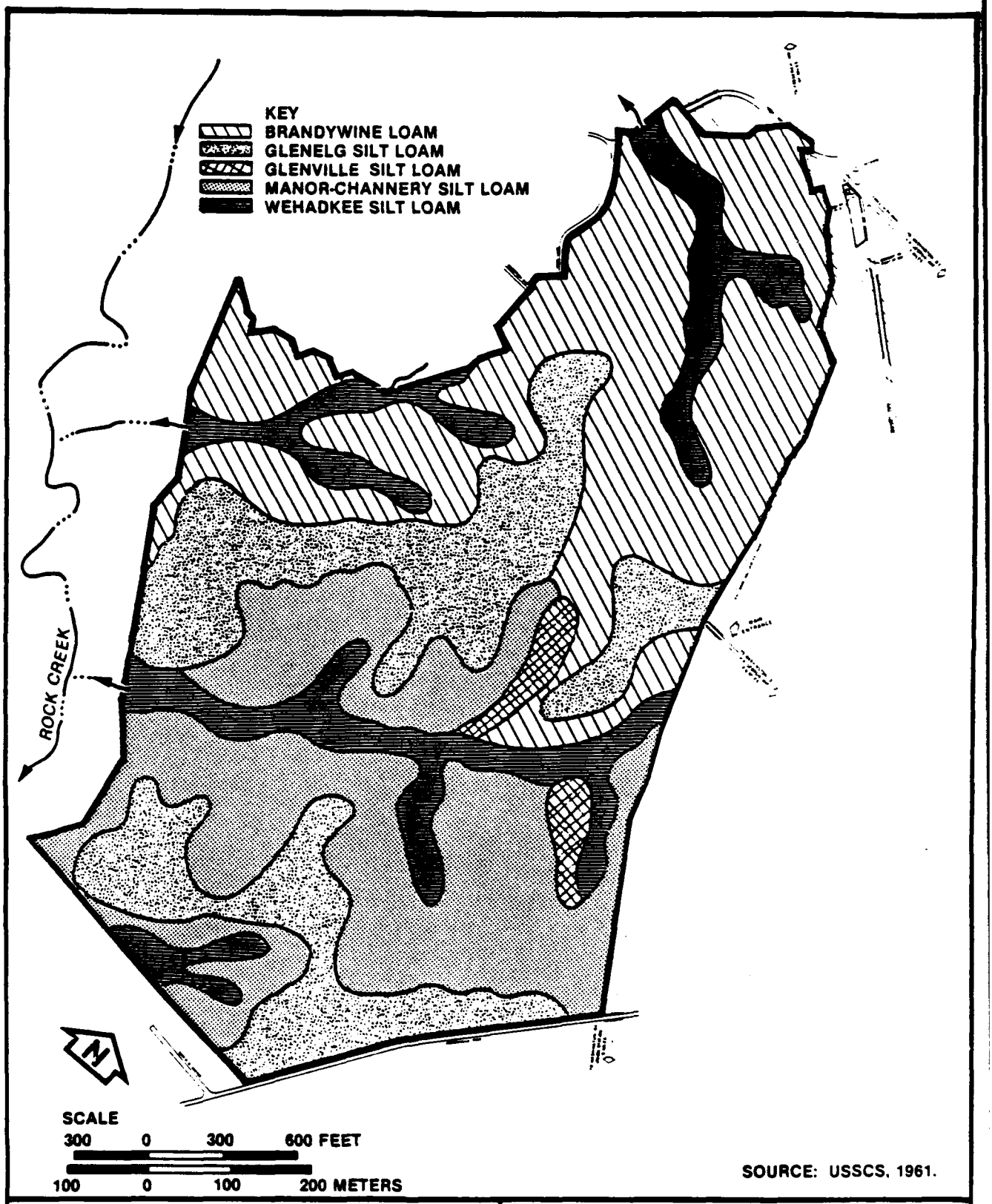
Soil Complex	Soil Series	Description	Percent Occurrence	Percent Slope	Permeability	Erosion
Urban Land and Manor		Well-drained to excessively well-drained loamy soils	60 of site			
	Urban Land-Manor (USC)	overlying base rock. These soils have generally been	70 30	8 to 15	Impermeable Moderately rapid 0.6 - 2.0 in/hr*	
	Manor-Urban Land (MdC)	cut, graded, filled, or otherwise disturbed. The Urban Land soils	40 40 20 other soils	8 to 15	Moderate Impermeable Moderate 0.6 - 2.0 in/hr	Slight
	Manor-Urban Land (MdD)	have been covered with concrete, asphalt, buildings, and other impermeable	40 40 20 other soils	15 to 40	Moderate Impermeable Moderate 0.6 - 2.0 in/hr	Excessive, runoff rapid
	Manor-Urban Land (MdB)	surfaces. Silty loam	40 40 20 other soils	0 to 8	Moderate Impermeable 0.6 - 2.0 in/hr	High potential for erosion, runoff moderate to rapid
Urban Land and Chillum Complex		This soil complex has been severely altered by	27 of site			
	Urban-Chillum (UeC)	grading for housing and shopping centers. The soils of the	70 30	8 to 15	Impermeable Moderate 0.2 - 2.0 in/hr	Severe
	Chillum-Urban Land (CdC)	Chillum use a silty, sandy loam. The Urban Land is covered with	40 40 20 other soils	0 to 8	Moderate Impermeable 0.6 - 2.0 in/hr	Severe

Table 1.6-2. Engineering Characteristics of Soils at WRAMC--Main Section (Continued, Page 2 of 2)

Soil Complex	Soil Series	Description	Percent Occurrence	Percent Slope	Permeability	Erosion
	Chillum-Urban Land	concrete, asphalt, buildings, or other impermeable structures	40 40 20 other soils	15 to 40	Moderate Impermeable 0.6 - 2.0 in/hr	Severe
Udorthents (U7) Gravelly, Smooth		Generally, cut and filled areas for grading of roads. Gravelly material	3	Slopes are complex	Variable	
Urban Land (UBi)		More than 80 percent of surface covered with impermeable material	5	Variable	Impermeable	Stable
Glenelg Variant-Urban Land Complex (GnB)		Flat depressed areas of silt loam	5	0 to 8	Moderate 0.6 - 2.0 in/hr	Moderate

* in/hr = inches per hour.

Source: USSCS, 1976.



SOURCE: USSCS, 1961.

Figure 1.6-6
SOILS MAP OF FOREST GLEN, WALTER REED ARMY MEDICAL CENTER

Prepared for:
U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Ground, Maryland

Table 1.6-3. Engineering Characteristics of Soils at Forest Glen, WRAMC

Soil Series	Soil Type	Description	Percent Site Covered	Percent Slope	Permeability (in/hr)	Erosion
Brandywine (Br)		Very shallow, excessively drained soils developed from granitic rock	28	—		
	Brandywine Loam (BrC_2)	Moderately eroded	—	3 to 15	2.0 to 6.3	Moderate
	Brandywine Loam (BrD_2)	Moderately eroded	—	15 to 25	—	Moderate
	Brandywine Loam (BrD_3)	Severely eroded	—	15 to 25	—	Severe
Glenelg (Gh)		Moderately deep, well-drained soils from soft, weathered micas, schist, granitized schist, or gneiss	28			
	Glenelg Channery Silt Loam (GhB_2)	Minimal erosion control needed	—	3 to 8	0.63 to 2.0	Slight
	Glenelg Channery Silt Loam (GhC_2)	Moderately eroded	—	8 to 15		Moderate
	Glenelg Channery Silt Loam (GhD_3)	Intensive erosion control needed	—	15 to 25		Severe

Table 1.6-3. Engineering Characteristics of Soils at Forest Glen, WRAMC (Continued, Page 2 of 2)

Soil Series	Soil Type	Description	Percent Site Covered	Percent Slope	Permeability (in/hr)	Erosion
Glenville		Moderately well-drained soils with fragipans or silt-pans; these soils occur on upland flats and depressions	4			
	Glenville Silt Loam (GnB)	Soils are wet		3 to 8	0.06 to 2.0	Slight
Manor		Shallow soils occurring on uplands	28			
	Manor Silt Loam (MdB_2)	Slopes moderately eroded		3 to 8	0.63 to 2.0	Moderate
	Manor Silt Loam (MdC_2)	Micaceous soil, some erosion protection necessary		8 to 15	0.20 to 2.0	Slight
	Manor Silt Loam (MdD_2)	Soil should be protected from erosion		15 to 25		Moderate
	Manor Silt Loam (MdD_3)	Soil should be protected from erosion		15 to 25		Severe
	Manor Silt Loam (MdE_2)	Forested, very little erosion		25 to 40		Severe
Wehadkee		Poorly drained silt loam	12			
	Wehadkee Silt Loam (WhA)			0 to 3	0.63 to 2.0	None

Source: USSCS, 1961.

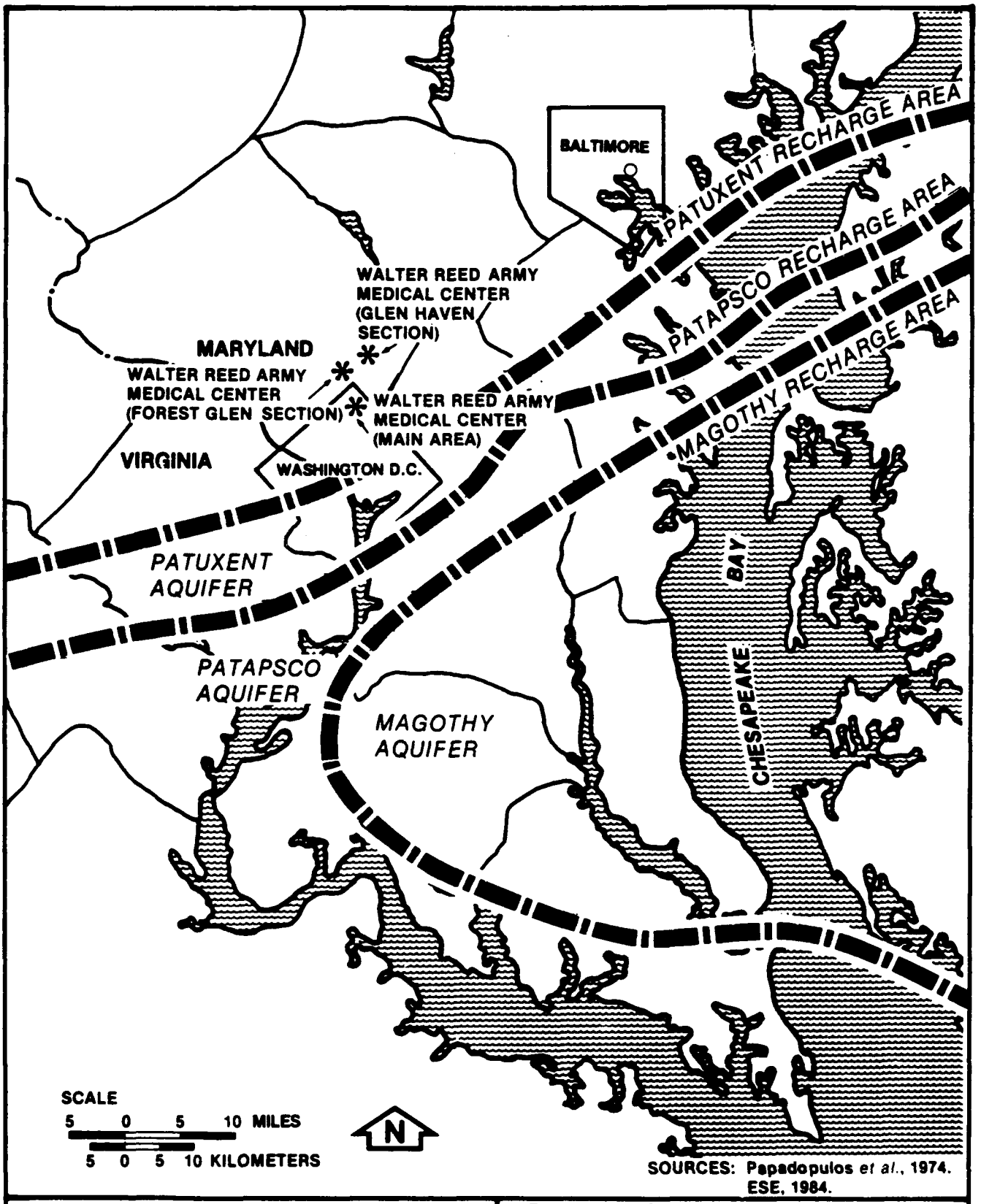


Figure 1.6-7
LOCATIONS OF AQUIFER RECHARGE AREAS NEAR WALTER REED ARMY MEDICAL CENTER

Prepared for:
U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Ground, Maryland

habitats. Of the three areas, the Main Section and Glen Haven are the most limited in terms of wildlife resources and native vegetation communities, since most of the areas consist of improved, maintained grounds.

The three WRAMC sections are located in the Oak-Chestnut region of the Piedmont Plateau physiographic province. Dominant trees consist mostly of white oak (Quercus alba), black oak (Q. velutina), tulip tree (Liriodendron tulipifera), smoothbark hickories (Carya sp.), and occasional chestnut oak (Q. prinus), scarlet oak (Q. coccinea), scrub pine (Pinus virginiana), and pitch pine (P. rigida) (USAEHA, 1976). Other flora found on the three WRAMC sections are those commonly found in developed, urban settings.

Because no surface streams exist on the Main Section, no fish species are found onpost. Forest Glen has no perennial surface streams; however, four streambeds exist where surface waters flow off the installation during periods of precipitation. This condition virtually eliminates the possibility of fish species being present onpost. Glen Haven also has no perennial streams, and therefore no fish species onpost.

With the exception of avian nesting activities, the Main Section does not provide wildlife habitat due to the urban setting. Approximately 5 ha of Forest Glen are maintained as improved open space. Well-developed tree and ground cover on this section provides habitat for birds, small mammals, reptiles, and amphibians adapted to an urban environment. Glen Haven, developed as a housing area, also provides limited habitat to animal species common to urban areas.

No Federally listed threatened or endangered flora or fauna reside on the Main Section, Forest Glen, or Glen Haven, and no FWS-designated Critical Habitats are located onpost.

1.7 REAL ESTATE/LEASES AND PERMITS

WRAMC

The Main Section (referred to throughout this report as WRAMC) comprises approximately 46 ha owned in fee simple. The original site (17 ha) was purchased in 1905, with the remainder being purchased in 1918 (USAEHA, 1976).

WRAMC holds no permits or leases which involve toxic or hazardous materials. See App. A for a complete listing of outgrants.

FOREST GLEN

In 1976, the Forest Glen Section consisted of 74 ha, with approximately one-half of the area developed as improved grounds (USAEHA, 1976). Several past excessing or proposed excessing actions have occurred since 1976 (see Fig. 1.7-1), totalling less than 5 ha.

Several leases and permits are in effect on Forest Glen, most involved with rights-of-way, sewer lines, building space, etc. The one permit which may have involved toxic/hazardous materials is Permit No. DACA-31-4-68-116 to the National Institutes of Health (NIH) for construction and maintenance of a tri-service incinerator. The permit was issued Mar. 27, 1968, and is for an indefinite period. However, reportedly the incinerator was decommissioned in February 1984. Although the outgrant is still in effect, actions to terminate it should be completed some time in 1984. See App. A for a complete list of outgrants.

GLEN HAVEN

This section consists of approximately 8 ha and serves as a housing area. Land along the western and southwestern boundaries is under consideration for excessing (see Fig. 1.7-2). Excessing actions, if completed, will transfer road rights-of-way to state control and simplify the Glen Haven boundaries.

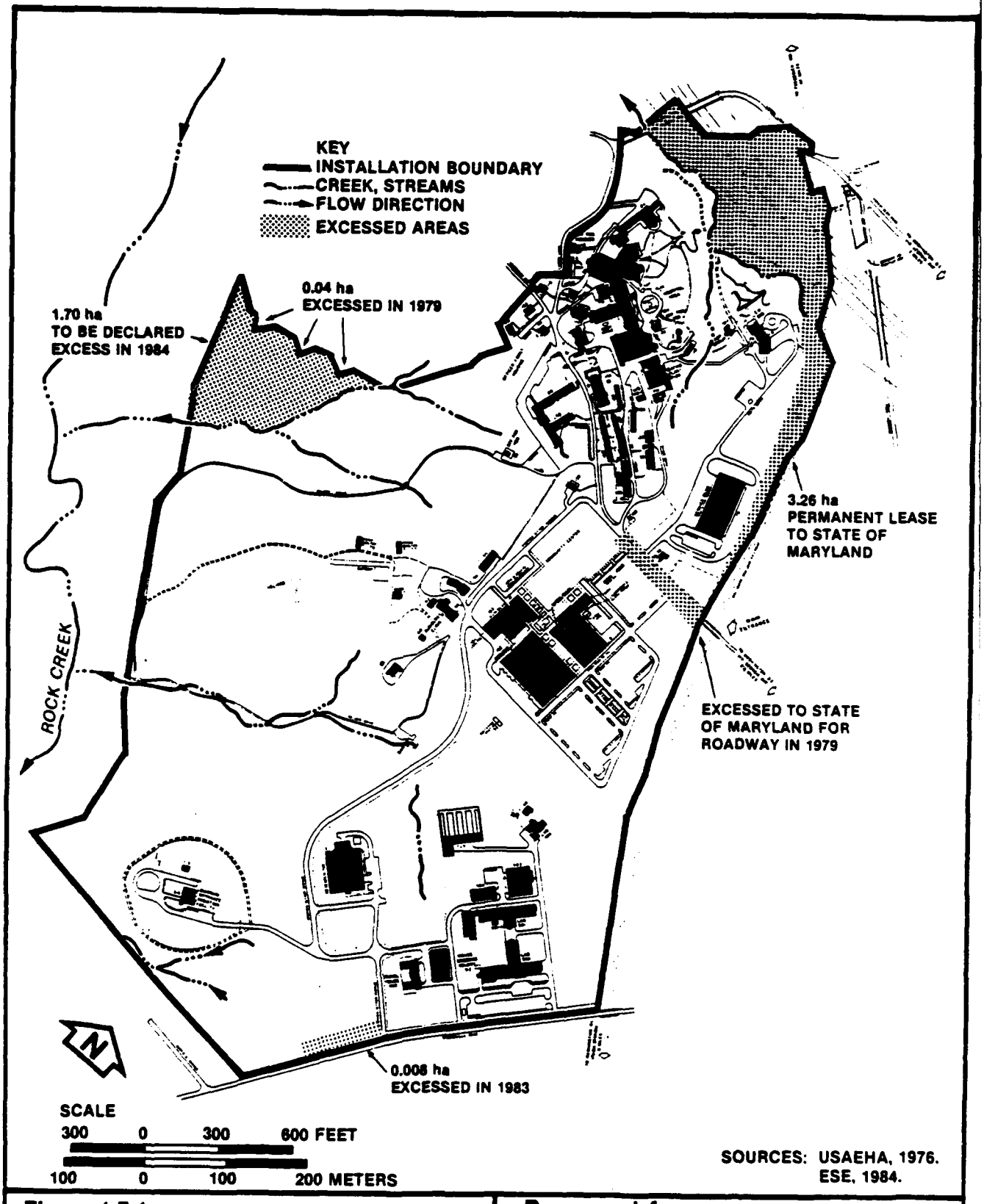


Figure 1.7-1
PAST REAL ESTATE TRANSACTIONS COMPLETED AND CURRENT ACTIONS PROPOSED AT THE FOREST GLEN SECTION

Prepared for:
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Aberdeen Proving Ground, Maryland

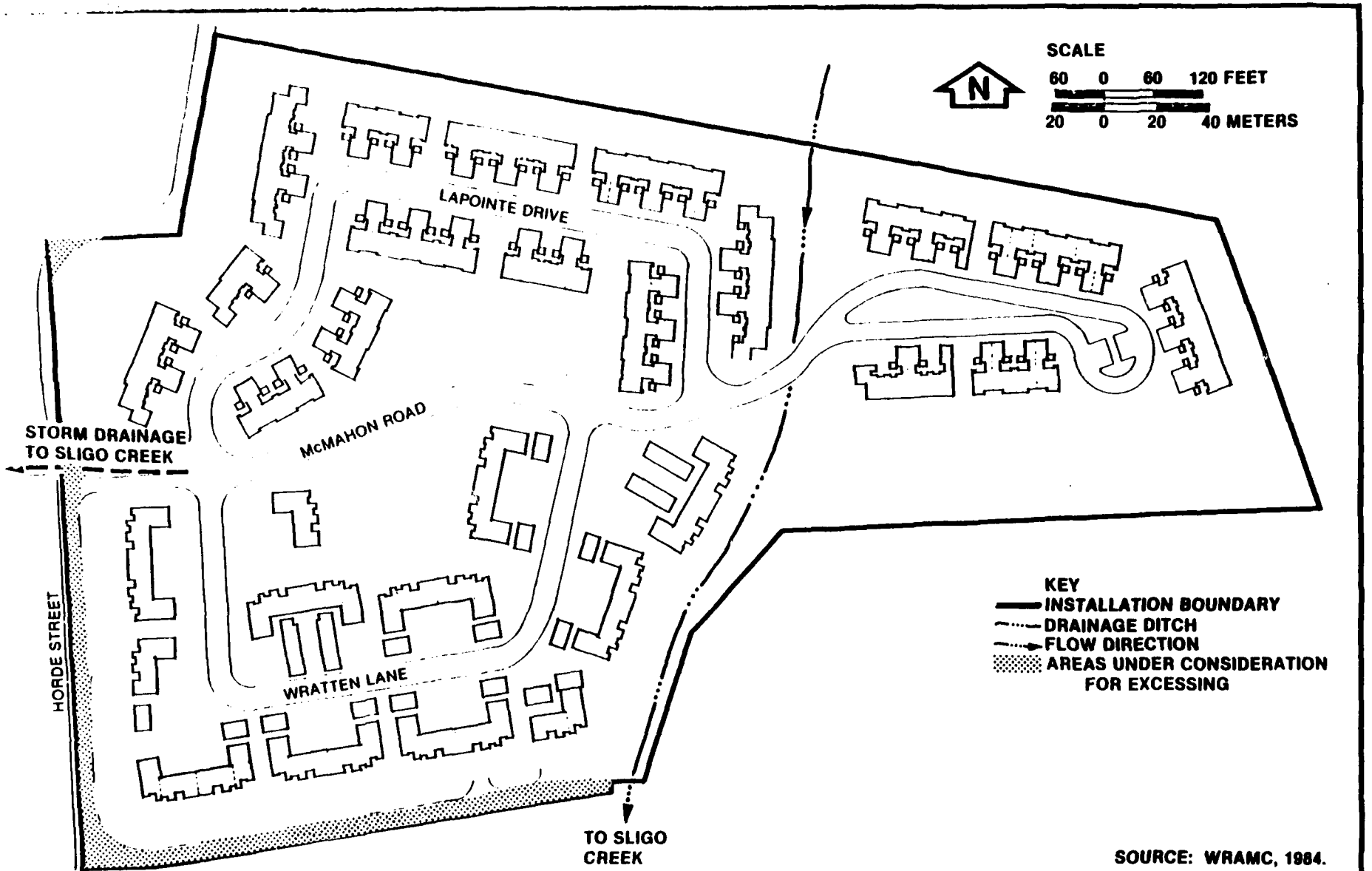


Figure 1.7-2
AREAS ON GLEN HAVEN UNDER CONSIDERATION FOR EXCESSING ACTIONS

Prepared for:
U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Ground, Maryland

Glen Haven holds no permits or leases which involve toxic or hazardous materials. See App. A for a complete listing of outgrants.

1.8 LEGAL CLAIMS

Records searched did not indicate any legal claims against WRAMC, Forest Glen, or Glen Haven with respect to the migration of toxic or hazardous materials.

2.0 PAST AND CURRENT ACTIVITY REVIEW

2.1 INSTALLATION OPERATIONS

2.1.1 INDUSTRIAL OPERATIONS

The primary mission of WRAMC is to provide medical and surgical care for members of all branches of the Armed Forces, retired military personnel, and dependents of both groups, and hospital support to the U.S. Army Military District of Washington. Because of the nature of this mission, industrial operations at WRAMC serve as a supporting function; discussion of these various activities is provided in the following sections.

Motor Vehicle Maintenance

Four motor vehicle maintenance shops are located at WRAMC: the DIO motor pool shop (Bldg. 605), DFAE vehicle maintenance shop (Bldg. 601), and Post Exchange (PX) auto repair shop (Bldg. 162) are located at Forest Glen; the auto self-help shop is located on the Main Section (Bldg. 82).

The DIO motor pool shop has been located in Bldg. 605 on Forest Glen since 1975; prior to 1975, the shop was located in Bldg. 41 on the Main Section. Bldg. 41 was razed during the construction of the new hospital. The shop provides routine tuneups, automotive maintenance, and parts replacement service for all military vehicles at WRAMC; this service mission excludes the rebuilding of engines or engine parts. Currently, the shop services 151 vehicles (ranging from sedans to tractor/trailers). The DIO maintenance mission has not changed since the early 1950s; the number of vehicles served has been slowly declining from approximately 200 in 1953 to the current level.

The DFAE vehicle maintenance shop has been located in Bldg. 601 on Forest Glen since 1972; prior to this, the shop was located in Bldg. T-32 on the Main Section. Bldg. T-32 is still used occasionally

for small engine maintenance. The shop in Bldg. 601 provides routine tuneups, engine maintenance, and parts replacement for approximately 20 pickup trucks and heavy maintenance vehicles and approximately 180 lawn mowers, portable generators, and other nonself-propelled equipment. The number and types of vehicles/equipment serviced and the maintenance shop's mission are relatively unchanged since at least 1960.

The PX auto repair shop, since 1973 located adjacent to Bldg. 162 on Forest Glen, provides service station automobile repair services to active and retired military personnel and their dependents. The PX auto repair shop services approximately 300 automobiles per month; the number of vehicles serviced is relatively unchanged from 1973 to present.

The auto self-help shop is located in Bldg. 82 on the Main Section and provides the facilities for personal automotive maintenance for active military personnel only. The auto self-help shop facility has been in operation since 1978 and currently handles between 300 and 400 vehicles per month.

Boiler Plants

A total of 26 steam and hot water boiler plants is located at WRAMC; 5 steam boilers are located at the Main Section, and the remaining 21 boilers are located on the Forest Glen Section. A listing of the boiler locations and sizes is presented in Table 2.1-1. The feed water to the steam boilers is deoxygenated with a sulfide compound and treated with sodium hexametaphosphate, sodium hydroxide, and tannin to reduce scaling and corrosion potential. Boilers are fueled as noted in Table 2.1-1. Refer to Sec. 2.4 for a discussion of air permits and emissions. A discussion of wastewater disposal from the boiler plants is presented in Sec. 2.2.1.

Laundry Facility

The laundry facility is located in Bldg. 606 on the Forest Glen Section; prior to 1976, the laundry facility was in Bldg. 56 on the Main Section.

Table 2.1-1. Boiler Location and Size at WRAMC

Building Number	Number of Boilers	Steam Rating (lb/hr)	Fuel Used
		MAIN SECTION	
15	2	75,000	No. 6 oil
15	2	60,000	No. 6 oil
88	1	3,720	No. 2 oil
		FOREST GLEN SECTION	
120	1	23,000	No. 2 oil
120	1	21,000	No. 2 oil
500	4	2,600 each	No. 2 oil
506	1	800	No. 2 oil
508	1	3,450	No. 2 oil
511	2	6,900 each	No. 2 oil
606	3	8,500 each	No. 2 oil
163	1	5,116	Gas
163	1	4,480	Gas and oil (No. 2)
120	1	Hot water boiler 14 MBTU/hr	No. 2 oil
133	1	Hot water boiler 0.13 MBTU/hr	No. 2 oil
135	1	Hot water boiler 0.13 MBTU/hr	No. 2 oil
156	1	Hot water boiler 0.7 MBTU/hr	No. 2 oil
601	1	Hot water boiler 2 MBTU/hr	No. 2 oil
605	1	Hot water boiler 0.58 MBTU/hr	No. 2 oil

Abbreviations:
lb/hr = pounds per hour.
MBTU/hr = million British thermal units per hour.

Sources: USAEHA, 1976.
ESE, 1984.

The laundry facility provides laundry services for the hospital at WRAMC; no drycleaning facilities are or have been located at WRAMC. Currently, the facility handles approximately 52,160 kilograms (kg) of laundry per week. Detergent and liquid chlorine bleach are used in the laundry operation; disposal of laundry wastewater is discussed in Sec. 2.2.1.

Print Shops

Two print shops are located at WRAMC. The Adjutant General (AG) shop has been located in Bldg. 1 on the Main Section since 1977; prior to 1977, the shop was located in Bldg. 122 on the Forest Glen Section. The AFIP print shop has been located in Bldg. 40 on the Main Section since its inception in 1954. Both print shops are equipped with three offset printers; additionally, there is a small photography laboratory at the AFIP shop. Solvents used for press cleaning at the AG shop are petroleum distillate and methylene chloride; isopropyl and isobutyl alcohol, petroleum distillate, and photographic chemicals are used at the AFIP shop. Waste disposal practices for the print shops are discussed in Sec. 2.2.1.

Office Machine Repair Shop

The office machine repair shop has been located in Bldg. 1 since about 1977; prior to this, the shop was located in Bldg. 33. Both buildings are on the Main Section of WRAMC. The office machine repair shop provides cleaning and routine maintenance of the various types of office machines used at WRAMC. Prior to the early 1970s, the two full-time employees used a 3-percent perchloroethylene solution as a cleaning solvent (USAEHA, 1972a). Currently, the shop employs 10 to 12 persons full-time, and a 1:4 benzene:petroleum distillate solution and trichloroethylene (TCE) are used as cleaning solvents. A discussion of the wastes generated and methods of disposal from the shop is presented in Sec. 2.2.1.

Paint Shop

The paint shop at WRAMC has been located in Bldg. 601 on the Forest Glen Section since 1972; prior to 1972, it was located in Bldg. 5 on the Main Section. The paint shop provides building interior maintenance painting and linoleum flooring services at WRAMC. Bldg. 601 is equipped with a spray painting booth; however, due to the type of painting performed, the booth has never been connected and is not in use.

2.1.2 LESSEE INDUSTRIAL OPERATIONS

No lessee industrial operations are located at WRAMC, Forest Glen, or Glen Haven.

2.1.3 LABORATORY OPERATIONS

Numerous laboratory operations are associated with the medical, dental, and veterinary activities at WRAMC and Forest Glen. No laboratories are located on Glen Haven, which serves as a housing area. Since laboratory activities and locations vary depending on the nature of the research conducted, it is difficult to define exact locations and activities for each individual laboratory. A general description of each major laboratory activity is given in the following sections. Table 2.1-2 lists the major laboratory activities at WRAMC and Forest Glen and their locations.

WRAIR

WRAIR, located in Bldg. 40, Main Section, and in numerous buildings on Forest Glen (see Table 2.1-1), contains chemical and biological laboratories involved in medical research and the Animal Resources Service, which provides test animals for research and clinical requirements of WRAIR, AFIP, and WRAMC. WRAIR has been in operation since 1925. Wastes generated at WRAIR include hazardous and flammable chemicals, photographic wastes, infectious wastes, pathological wastes, and radiological wastes.

Table 2.1-2. Major Laboratory Activities at WRAMC

Laboratory	Activity	Location
WRAIR	Chemical and biological medical research	Bldgs. 40, 189, 500, 501, 502, 503, 504, 505, 506, 507, 508, 511, 512, and 101
	Animal resources	Bldgs. 509, 511
AFIP	Histology and chemistry research	Bldg. 54
USAIDR	Chemical, biological, and histological dental research	Bldg. 40
USARDA	Dental clinic, patient care	Bldg. 2
USARDA	Dental clinic, dentures and bridges	Bldg. 91
Veterinary clinic	Care of installation domestic animals	Bldg. 156
WRAMC	Clinical and patient care, includes Pathology Department, Department of Clinical Investigations, Radiology and Nuclear Medicine	Bldg. 2
DPTC	Photographic laboratory	Bldg. 1, Room B-19
Recreation Department Arts and Crafts	Photographic craft shop/ laboratory	Bldg. 163 (Community Services Building, Forest Glen)

Source: ESE, 1984.

WRAIR has been participating in the centralized hazardous waste program at WRAMC since 1980. Spent solutions are returned to their containers, appropriately labeled, and transferred to the hazardous waste storage bunkers (Bldg. 40, Main Section, and Bldg. 507, Forest Glen). The major chemicals disposed of in this manner include (USAEHA, 1981b):

Acetone	2-3 pints per week (pt/wk)
Methanol	2-3 pt/wk
HCl/Chromic Acid Mix	45 liters per year (lpy)
Dilute HCl	182 lpy

A logbook with the description of materials and the date in and date out is kept for each bunker. App. B shows the items currently stored in these bunkers. Periodically, the chemicals are picked up and disposed of by an approved hazardous waste contractor. Due to a contract dispute, chemicals had not been picked up since September 1983. The contractor who made the last pickup was Environmental Cleaning Specialist in Kingston, Pa.

A listing of those chemicals from all WRAMC activities disposed of at this time is given in App. C. Wastes currently stored in the bunkers at WRAIR have exceeded the 90-day holding period allowed by the Federal hazardous waste regulations (EPA, 1982b). Prior to 1980, most chemicals used at WRAIR were disposed of in the sanitary sewer system.

Photographic wastes generated at WRAIR are processed for silver recovery, and the recovered silver is turned in to the Defense Property Disposal Office (DPDO) for subsequent disposal.

Radiological wastes are handled and disposed of separately by the Health Physics Office in accordance with the U.S. Nuclear Regulatory Commission (NRC) regulations. These procedures are described later in this section under the heading of Radiological Materials.

Disposal procedures for contaminated, infectious, and pathological wastes are described in Sec. 2.2.3.

AFIP

AFIP, located in Bldg. 54, Main Section, contains histology and chemistry laboratories involved in consultation, research, and education. AFIP has been in operation since 1955. Wastes generated at AFIP include hazardous and flammable chemicals, photographic wastes, and radiological wastes.

AFIP has been participating in the centralized hazardous waste program at WRAMC since 1980. Spent solutions are returned to their containers, appropriately labeled, and transferred to the hazardous waste storage bunker at Bldg. 54. The major chemicals disposed of in this manner include (USAEHA, 1981b):

Xylene	284 liters per week (l/week)
Acetone	19 liters per month (l/month)
Chloroform	19 l/month

At the time of the site visit, an inventory of the contents of the bunker was not available. Approximately one hundred 5-gallon (gal) drums of assorted chemicals were stored in the bunker at this time. Periodically, the chemicals are picked up and disposed of by an approved hazardous waste contractor. AFIP is experiencing the same problems with pickup as WRAIR. It was reported that some chemicals had been disposed of in the dumpster due to the length of time that had elapsed between pickups. Wastes currently stored in the bunker at AFIP have exceeded the 90-day holding period allowed by the Federal hazardous waste regulations (EPA, 1982b). Prior to 1980, most chemicals used at AFIP were disposed of in the sanitary sewer system.

Photographic wastes generated at AFIP are processed for silver recovery, and the recovered silver is turned in to DPDO. Approximately 908 grams (g) of silver sludge were turned in to DPDO in August 1983.

Radiological, infectious, and pathological wastes produced at AFIP are handled in the same manner as at WRAIR. Ten to 12 animal carcasses from AFIP are disposed of weekly at the Forest Glen infectious waste incinerator (USAEHA, 1981b).

USAIDR

USAIDR, which is located in one segment of Bldg. 40 on the Main Section, contains chemical, biological, and histological laboratories involved in dental research. USAIDR has been in operation since 1962. Wastes generated at USAIDR include hazardous and flammable chemicals, photographic wastes, infectious wastes, pathological wastes, and radiological wastes.

USAIDR utilizes the same storage areas for waste as WRAIR and follows the same disposal procedures for hazardous and flammable chemicals, infectious wastes, pathological wastes, and radiological wastes. There is a small X-ray unit at USAIDR which does not recover silver.

USARDA

USARDA has dental clinics in Bldg. 2 and Bldg. 91, Main Section. X-ray solutions generated in Bldg. 2 are processed for silver recovery and turned in to DPDO. Scrap film and lead foil are also turned over to DPDO on a quarterly basis. The following amounts were turned in to DPDO in August 1983:

Exposed film	11.4 kg
Wet silver	342 g
Lead foil	13.6 kg

Amalgams are collected regularly, stored under glycerin, and periodically turned in to DPDO.

Activities conducted in Bldg. 91 include the preparation of bridges, crowns, and dentures. Dilute quantities of waste reagents are

discharged to the sanitary sewer. Less than 4 lpy are disposed of in this manner.

WRAMC

The clinical and patient care facility of WRAMC, located in Bldg. 2, Main Section, contains diagnostic laboratory and treatment facilities for patients of WRAMC. This building has been in operation since 1979. Prior to that time, patient care was effected in a complex of buildings at the Main Section which dated back to 1905 (USAEHA, 1976). The level of activity has been relatively constant for the past 15 years. Wastes generated at WRAMC include hazardous and flammable chemicals, spent X-ray solution, infectious and pathological wastes, and radiological wastes. The major laboratory operations in the chemical and patient care facility are the following.

Radiology and Nuclear Medicine--This department consists of radiology, which provides diagnostic and therapeutic X-ray services, and nuclear medicine, which provides radioisotope-related diagnosis and treatment.

Department of Pathology--This department provides tissue examination, autopsy, blood bank, and microbiological diagnostic services.

Department of Clinical Investigation--This department consists of a complex of 15 laboratories involved in clinical research related to WRAMC patients. This department contains laboratories conducting pediatric, gastroenteral, hematological, oncological, organ transplant, infectious disease, immunological/allergy, urological, and biochemical research.

WRAMC departments have been participating in the centralized hazardous waste program at WRAMC since 1980 and are the largest generator of waste chemicals and precious metals at WRAMC. With the exception of the wastes generated for the other smaller-scale laboratories, the remainder of the 50,000 lpy of waste chemicals is generated by the medical center.

Over 1.5 million X-rays per year are performed by WRAMC. Photographic/ X-ray wastes are processed for silver recovery and the recovered silver turned in to DPDO. The amounts generated are shown in Sec. 2.1.6. Radiological wastes are handled and disposed of separately by the Health Physics Office as described in Sec. 2.1.6.

Infectious and pathological wastes are treated as described in Sec. 2.2.3. In the past, disposal practices were similar for medical center activities as for the other laboratory operations described previously. The only past problems reportedly have been the disposal of infectious waste into the solid waste system (see Sec. 2.2.3) and the storage of waste chemicals for longer than 90 days as a result of a contract dispute with the hauler/disposer contractor.

Veterinary Clinic Activity

A veterinary clinic, located at Bldg. 156, Forest Glen, provides care for domestic animals owned by WRAMC staff, military personnel, and retired military personnel located in the WRAMC area. This activity consists of diagnostic and treatment facilities.

Small amounts (<4 lpy) of stains and dilute diagnostic reagents are disposed of via the sanitary sewer. Infectious material and specimens are autoclaved and disposed of into the solid waste disposal system. Less than 10 kilograms per month (kg/month) of this material are generated.

DPTSEC Photography Laboratory

The audiovisual support photography laboratory has been located in Room B-19 of Bldg. 1, Main Section, for the past 3 or 4 years. Previously, the room was the main radioisotope laboratory. Before locating in Room B-19, the photography laboratory activities were scattered in several areas of Bldg. 1. Reportedly, black-and-white processing only has been performed at the DPTC photography laboratory. Prior to 1983, no precious metal recovery program was in place. Prior

to that time, all photography laboratory wastes were discharged to the sanitary sewer. Currently, recovered silver is sent to DPDO. The rate of generation of waste silver varies widely. Overall WRAMC generation rates for precious metals are presented in Sec. 2.1.6.

Recreation Department Photography Shop

A small photographic laboratory for recreational use has been in operation at the Community Services building (Bldg. 163) at Forest Glen. Both black-and-white and color processing are performed. Rates of use are highly variable. Silver is recovered and sent to DPDO.

Precious Metal Recovery

Prior to 1977, no precious metal recovery program was operated at WRAMC (USAEHA, 1977b), and all photographic and X-ray waste solutions were disposed of into the sanitary sewer. Reportedly, a precious metal recovery program was instituted in 1980. Current generation rates for medical, photographic, research, and dental activities at Forest Glen and the Main Section reportedly are as follows (based on 1983 records):

Silver amalgam	100 kilograms per year (kg/yr)
Silver from photographic wastes and X-ray wastes	1,000 kg/yr
Gold dust	100 kg (one time only)
Gold scrap	1 kg/yr

2.1.4 MATERIEL PROOF AND SURVEILLANCE TESTING

No materiel proof and surveillance testing activities have ever been carried out at WRAMC or its noncontiguous sections, Forest Glen and Glen Haven.

2.1.5 TRAINING AREAS AND RANGES

WRAMC

No training or range areas currently exist at WRAMC, nor were outdoor range and training activities carried out in the past.

An indoor ballistics range, located in the basement of Bldg. 54 at AFIP, was used for wound effects research and also as an indoor pistol range during the period approximately 1955 to 1980. This operation was discontinued as a result of the occurrence of excessive lead levels in the range atmosphere (WRAMC, Health and Environmental Activity, 1978).

Training at WRAMC is restricted to classroom and clinical activity. Field training exercises involving WRAMC personnel reportedly are held offpost at Fort Hill and Fort Pickett in Virginia.

Forest Glen

No training or range areas currently exist on Forest Glen, nor were range or training activities carried out in the past.

Glen Haven

No training or range areas currently exist on Glen Haven, nor were range or training activities carried out in the past.

2.1.6 TOXIC/HAZARDOUS MATERIALS (HANDLING AND STORAGE)

This section describes the past and current handling and storage of pesticides, polychlorinated biphenyls (PCBs), chemicals, radiological materials, and chemical/biological (CB) agents.

Pesticides

Pesticides (insecticides, herbicides, fungicides, and rodenticides) have been and are currently used throughout WRAMC to prevent pest-related health problems. Pest control services offered at WRAMC include household, structural, health-related, and nuisance insect and rodent control programs.

The storage, mixing, and application of pesticides for all areas are currently under the jurisdiction of DEH, Buildings and Grounds Section. Bldg. 602 at Forest Glen has been used as a pesticide storage and mixing area for the past 10 years. The types and quantities of pesticides

currently stored in Bldg. 602 are presented in App. D. The storage/mixing area is kept locked and is marked with the appropriate warning signs. The facility, which has a concrete floor with continuous curbing to contain spills and a sink with a backflow prevention device, meets Federal and USAEHA regulations for a pesticide storage/mixing area (EPA, 1982c; USAEHA, 1975).

The mixing and formulation of pesticide solutions, performed in Bldg. 602, are minimal since most of the pesticides utilized at WRAMC are received premixed. Pesticide usage for March through November 1983 is provided in Table 2.1-3. Empty containers are triple rinsed, crushed, punctured, and disposed of in the dumpster. Rinse water is used as a diluent for future formulations.

DFAE employed four pesticide operators at the time of the site visit. The foreman in charge of pesticide operations is certified. DD 1532 forms were being maintained appropriately.

There does not appear to be a problem with the use and/or storage of "banned pesticides." It was reported that DDT had not been used on WRAMC since approximately 1965.

Prior to 1975, pesticides were stored and mixed in Bldg. 16, Main Section, and at the greenhouse (Bldgs. 50 and 51). These facilities did not meet USAEHA and Federal regulations (USAEHA, 1975; EPA, 1982c) for a pesticide storage/mixing area. App. D shows the types and quantities of pesticides which were stored in Bldgs. 16, 50, and 51 in 1975. App. D also gives the pesticide usage for 1974-1975 at WRAMC. It was reported that pesticide wastes were disposed of under the benches in the greenhouse (Bldgs. 50 and 51) and in the sanitary sewer during this time period.

Table 2.1-3. Pesticide Usage at WRAMC (March through November 1983)

Pesticide	Concentration (%)	Quantity (l)*	Use Against
Ficam	0.25	2,272	Roaches
Baygon	1.00	983	Roaches
Dursban	0.50	3,032	Roaches
Diazinon	0.50	499	Roaches
Drione	1.00	49	Roaches
Ounglyphosphate	2.00	1,425	Vegetation
Chlordane	1.00	756	Termites

* l = liters.

Source: WRAMC, 1983b.

PCBs

PCB-containing transformers have been used and are currently in use at WRAMC. A survey of all in-service transformers was completed in 1982. At that time, 120 in-service transformers were properly labeled as PCB-contaminated and PCB transformers. Sixty-three of these are located at the Main Section, and 57 are located at Forest Glen. Weekly leak inspections are conducted on these transformers.

Transformers which are no longer serviceable are drained at the service site. A licensed firm is contracted to drain the fluid and to dispose of it properly. The transformer carcass is then taken to Fort Belvoir, Va., for disposal by DPDO. The last contract to dispose of PCB transformers was in summer 1982 with the American Electric Co., located in Jacksonville, Fla. At that time, five transformers were removed from service and disposed of. Out-of-service PCB transformers are not currently stored at WRAMC. No PCB spills or leaks were reported.

Chemicals

The research and patient care facilities of WRAMC and USARDA, and the research activities of AFIP, WRAIR, and USAIDR require the handling, storage, and disposal of a variety of reagents in quantities of a few liters per month. Pharmaceuticals and solvents, particularly xylene and toluene, are used in much larger quantities. As described in Sec. 2.1.3, each laboratory stores approximately a 1-week supply of reagents and solvents for ready use. WRAMC maintains a centralized store of chemical reagents and pharmaceuticals which is managed by DPDO (Bldg. 178, Forest Glen). Overage chemicals and pharmaceuticals are turned in to DPDO for recycle or disposal. No problems were observed or reported regarding the storage of incompatible chemicals or improper storage of chemicals. Adequate warning signs were posted in laboratory reagent storage areas and in the central store.

Laboratory and chemical operations generate the largest quantity of industrial wastes at WRAMC and Forest Glen. These wastes consist mainly

of used reagents, radioactive wastes, and infectious/pathological waste. The latter two categories are discussed later in this section and in Sec. 2.2.3, respectively.

DFAE instituted a comprehensive hazardous waste management program to handle waste reagents in 1980. This system is handled through DPDO. Since 1981, overage chemicals have been disposed of by a licensed hazardous waste contractor.

Currently, laboratories collect and store reagents and chemicals/pharmaceuticals scheduled for destruction at five temporary-storage locations. These locations are the loading docks of Bldg. 40, WRAIR; Bldg. 54, AFIP; and Bldg. 2, WRAMC on the Main Section and Bldgs. 507 and 516 at Forest Glen. These chemicals are later collected by a licensed hazardous transporter/disposer and taken to a hazardous waste landfill for disposal off the installation. Because of a contract dispute, no waste chemicals have been disposed of since September 1983. This storage exceeds 90 days and violates the storage limit of the installation Resource Conservation and Recovery Act (RCRA) permit (see Sec. 2.2.4). In addition, because of the filling of storage bunkers, some reagents have reportedly been flushed to the sanitary sewer or disposed of in the solid waste dumpsters.

An example of a manifest and supporting documents for spring 1981 and examples of current disposition forms for WRAIR for fall 1983 are shown in App. C. Reportedly, overall quantities of reagents currently disposed of by WRAMC activities are as follows.

Reagent	Quantity (lpy)
Nonradioactive toluene	34,000
Xylene	11,300
Chloroform	450
Acids	450
Reactives	450
Poisons	450
Flammable liquids (solvents)	2,720

Other types of waste solvents (generated at up to 60.5 lpy each) are isopropanol, hexane, acetic acid, ethanol, methanol, formic acid, acetonitrile, ethyl acetate, methylene chloride, and isopropyl acetate.

Prior to 1980, waste reagents used in the laboratories were disposed of into the sanitary sewer. According to USAEHA (USAEHA, 1970a, 1981a), the quantities did not exceed the maximum allowable under RCRA based on the overall sewage flow.

It was recommended that a centralized hazardous waste program be organized which would manage not only overage reagents and pharmaceuticals turned in for disposal but also used reagent solutions which had been disposed of into the sanitary sewer system.

Radiological Materials

Research activities at AFIP, USAIDR, and WRAIR and research and clinical activities at WRAMC require extensive use of both ionizing and non-ionizing radiation. The radiation protection program for WRAMC; Forest Glen; Fort Meade, Md.; and the U.S. Army Medical Research Institute for Infectious Diseases (USAMRIID), Fort Detrick, Md., is administered by the Health Physics Office, Bldg. 188, Forest Glen. Three NRC licenses and one Department of the Army (DA) Authorization for isotopes not regulated by NRC are currently held by WRAMC. Copies of these licenses are available from the WRAMC Health Physics Office. The ionizing radiation protection program covering the use of X-ray, X-ray diffraction, electron microscope, and the non-ionizing radiation equipment (laser and microwave) is also administered by the Health Physics Office.

Table 2.1-4 summarizes the current possession limits for WRAMC as a whole. Reportedly, the overall possession fluctuates between 10 and 30 percent of the allowable limits. The Health Physics Office dispenses and controls isotope use by means of 80 internal authorizations to use and store radioactive materials. Possession and usage for individual authorizations are highly variable, especially for research activities. The locations of authorized use of isotopes are described in the

Table 2.1-4. Current Possession Limits for Radioisotopes at WRAMC

	Material	Physical/Chemical Formulation	Maximum Amount At Any Time
A.	Carbon-14	Any	2 Ci
	Chromium 51	Any	750 mCi*
	Iodine-125	Any	1 Ci
	Iodine-131	Any	1 Ci
	Iridium-192	Any	1 Ci
	Gold-198	Any	1 Ci
	Krypton-85	Any	1 Ci
	Phosphorus-32	Any	2 Ci
	Xenon-133	Any	1 Ci
	Any element with atomic numbers 3-83 (inclusive)	Any	400 mCi each
	TOTAL OF A:		26 Ci
B.	Hydrogen-3 (Tritium)	Any	5 Ci
C.	Molybdenum-99	Molybdenum-99/Technetium-99 Generators	20 Ci
D.	Technetium-99	Any	10 Ci
E.	Iodine-125	Sealed Sources	1 Ci
F.	Cesium-137	3M 6D6C-CA Sources	2 Ci
G.	Cesium-137	American Nuclear Corp. Type 127 Sealed Source	150 Ci
H.	Cesium-137	Sealed Sources (AECL Model C-161 Type 8), 4 Sources	8,400 Ci
I.	Cesium-137	Other Sealed Sources	1,250 mCi
J.	Cobalt-60	Sealed Sources (AECL Models C-166, C-167, or C-198)	16,000 Ci each
K.	Cobalt-60	Sealed Source AECL Model C-198	26,400 Ci
L.	Cobalt-60	Other Sealed Sources	500 mCi
M.	Americium-241	Any	300 mCi
N.	Americium-241	Monsanto Model MRC-2704 Sealed Source	21 Ci
O.	Polonium-210	Any	15 mCi
P.	Nickel-63	Sealed Sources and Foil	1 Ci
Q.	Thorium	Any	5 kg
R.	Uranium (Natural or Depleted)	Any	400 kg
S.	Radium-D	Sealed Sources	250 mCi
T.	Radium-226	Sealed Sources	300 mCi
U.	Radon-222	Sealed Sources	500 mCi

* mCi = millicuries.

Sources: NRC, 1980, 1981.
WRAMC, Health Physics Office, 1979.

following paragraphs specific to WRAMC and Forest Glen. As shown in Table 2.1-4, a total of 50,889 curies (Ci) of radioisotopes, 5 kg of thorium, and 400 kg of uranium (the current limits) are comparable to 1976 limits (USAEHA, 1976) of 42,728 Ci of isotopes, 300 kg of uranium, 5 kg of thorium, 203 g of plutonium, and 1 g of radium. Review of available radiological hygiene survey reports (USAEHA, 1961, 1963a, 1963b, 1965, 1970b, 1972c) dating to 1960 indicated that materials on hand did not exceed licensed limits and, in general, were less than 40 percent of licensed limits.

The Health Physics Office maintains all inventory, use, and disposal records for WRAMC and Forest Glen for 5 years, as required by NRC, and maintains DD 1141, Record of Occupational Exposure to Ionizing Radiation, for isotope use and ionizing radiation generated by X-ray and other equipment. The Health Physics Office also performs all surveys and testing required by NRC in accordance with existing licenses and Federal and Army regulations (U.S. Army, 1980; NRC, 1976, 1977, 1982; U.S. Army, Headquarters, 1973; DOD Defense Supply Agency, 1976). All areas where isotopes are stored or ionizing radiation is generated are marked in accordance with NRC regulations.

Currently, isotopes are received and stored at Bldgs. 188 and 149-A at Forest Glen and dispensed to authorized users. Reportedly, prior to approximately 1972, isotopes were partially handled at the research reactor facility at Bldg. 40, WRAMC. The remainder was received and handled at Room G-19 of Bldg 1. During the period 1972-1975, this practice continued. Reportedly, no spills or losses which resulted in environmental contamination by radioactive materials have occurred at WRAMC, Forest Glen, or any of the offpost activities which used isotopes in the past, including Fort Detrick (USAMRIID) and activities at Fort Meade and Fort Myer. Only USAIDR; Fort Meade; and USAMRIID, Fort Detrick, currently use isotope materials.

Radioactive waste handling at WRAMC and Forest Glen is under the control of the Health Physics Office. Radioactive wastes are disposed of in

accordance with the following procedures, which comply with NRC regulations. Wastes are taken from WRAMC laboratories to designated pickup points (Room G-2 in Bldg. 2 for WRAMC and Room B-079 in Bldg. 40 for WRAIR) from which Health Physics Office personnel transport them to Bldg. 516, Forest Glen, three times per week for handling as follows. Wastes from WRAIR activities at Forest Glen are taken directly to Bldg. 516. Isotopes used at USAMRIID are returned to the Health Physics Office for disposal at Bldg. 516. At Bldg. 516, wastes are segregated and materials with half-life shorter than 65 days held until decayed, then disposed of either as regular solid waste or flushed to the sanitary sewer system. Material not disposed of in this manner is packed in accordance with U.S. Department of Transportation (DOT) regulations and shipped to the Hanford disposal facility, Richland, Wash.

Approximately two-hundred 55-gal drums of waste are shipped to Hanford yearly. Prior to 1980, the generation rate was approximately 600 drums/year; however, toluene- and xylene-based scintillation fluid now is permitted to be disposed of as nonradioactive hazardous chemical waste. At the time of the site visit, approximately 70 drums of scintillation fluid (approximately 14,550 l) were stored at Bldg. 516 awaiting disposal. This material was stored in a below-ground-level area which complies with flammable liquid storage requirements. However, storage beyond 90 days (in violation of RCRA regulations) was occurring.

Animals contaminated by radioactive materials during research activities are bagged after sacrifice and stored frozen at Bldg. 516 prior to shipment to Hanford or during authorized isotope decay.

In accordance with NRC regulations, WRAMC is allowed to release up to 1 Ci carbon-14 per year, 5 Ci hydrogen-3 per year, and 100 microcuries per month (uCi/month) of all other isotopes to the atmosphere or sanitary sewer. Reportedly, the rate of release is less than 90 millicuries per year (mCi/yr) for all radioactive materials,

including carbon-14 and hydrogen-3. Iodine-125 and iodine-131 vapors are collected on filters which have been tested to be 95- to 98-percent efficient. Used filters are disposed of at Bldg. 516. Samples are collected in fume hoods during radioactive iodine use. Reportedly, releases have never exceeded allowable atmospheric levels.

Release of radioactive materials at Bldg. 516 is monitored weekly by the Health Physics Office. Records of weekly monitoring of individual laboratories are maintained, and checks of records and monitoring of contamination are made periodically by Health Physics personnel.

Reportedly (USAEHA, 1976), past radioactive waste disposal rates have been similar to current levels, or approximately 1 percent of allowable discharges.

Based on the available records, no problems with contamination or contaminant migration by radioactive materials as a result of past or current radioisotope use have occurred.

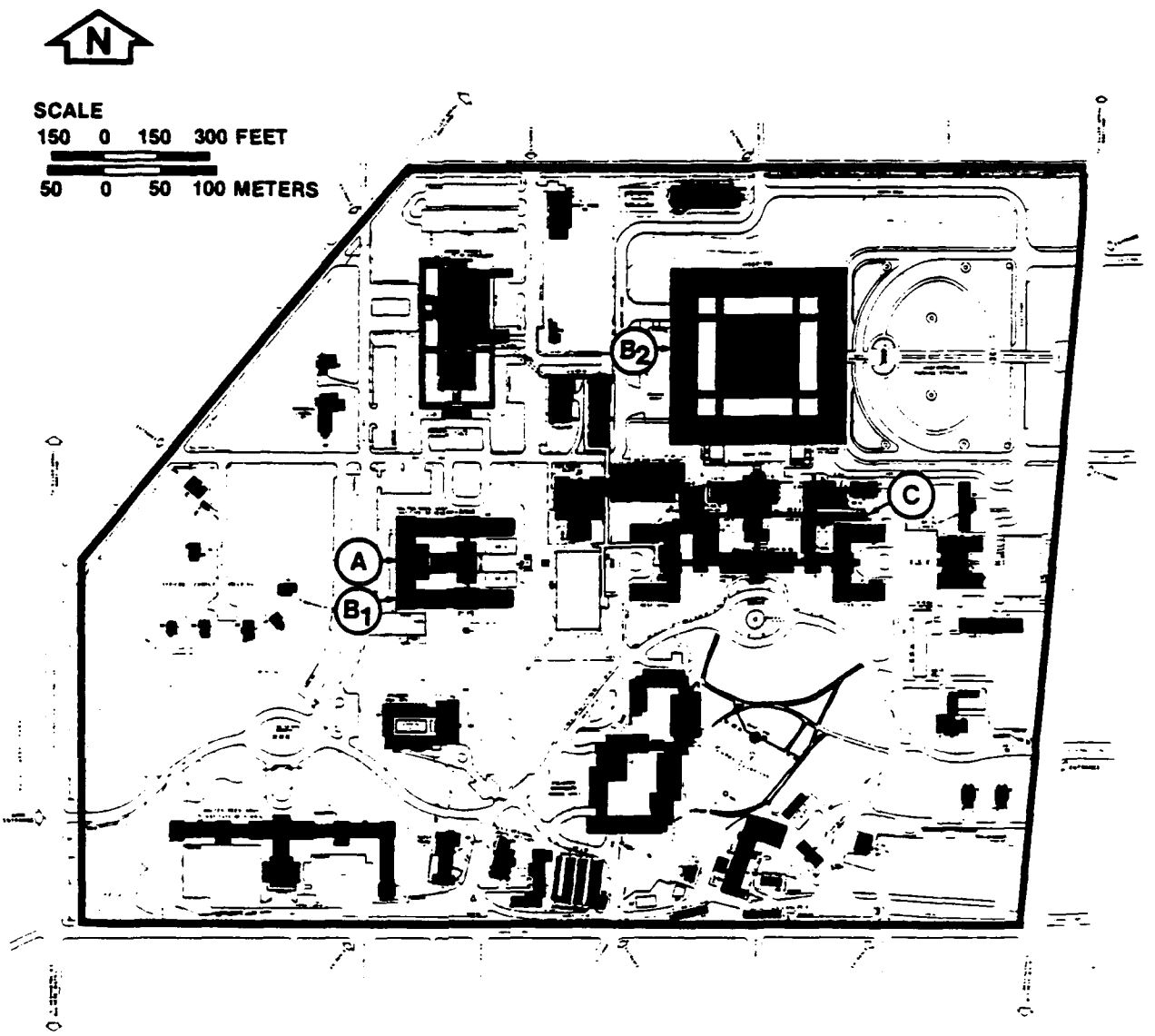
The following paragraphs describe the locations of current use of radioisotopes at WRAMC and Forest Glen and the operation and decommissioning of research reactors formerly present at WRAIR or WRAMC and at the Diamond Ordnance Radiation Facility (DORF) at Forest Glen. No radiological material use or disposal activities have ever occurred at Glen Haven.

WRAMC--App. E is a summary of laboratories at WRAMC which handle radioisotopes. On the Main Section, these laboratories are located in: AFIP, Bldg. 54; WRAIR, Bldg. 40 and Bldg. T-2; and the main hospital and clinics, Bldg. 2. As described in the preceding paragraphs, the radionuclides on hand vary widely within the authorized limits, based on research activity and/or patient load. Radiological wastes are disposed of as follows. Small amounts (within the limits described in the preceding paragraphs) of carbon-14, iodine-131, iodine-125, and

hydrogen-3 are discharged to the atmosphere or into the sanitary sewer. The remaining material is taken to Room B-079 in Bldg. 40 and Room G-2 in Bldg. 2 for transport to Forest Glen. Prior to 1975, handling and disposal of isotopes occurred primarily in Room G-19 of Bldg. 1, the former radioisotope laboratory, and the former research reactor located in the basement of Bldg. 40 (WRAIR). The locations of the current and former radiological waste storage facilities and the research reactor are shown in Fig. 2.1-1. Also housed in Bldg. 40, Room B-079, are an AECL Gamma Cell 220 irradiator and Model 40 Irradiator used for small animal irradiation and medical research. These units use sealed sources consisting of 16,000 Ci of cobalt-60 and 2,100 Ci of cesium-137, respectively.

During the period 1961 to 1972, a 50,000-kilowatt (kW) homogeneous core nuclear research reactor was located in the basement of the west wing of Bldg. 40 and used for radiobiological research. Reportedly, no spills resulting in environmental contamination occurred during operation of this facility. In 1971-1972, the reactor was decommissioned and the uranyl sulfate fuel sent to the Hanford Research facility in Washington. Irradiated components of the reactor structure were removed and shipped to the NRC waste disposal site at Morehead, Ky. A radiation survey after removal of these components reportedly indicated that the reactor area was safe for unrestricted use. Currently, the former reactor area is used for microwave research activities and storage. Records were not located which described any decommissioning activities conducted for this reactor.

Forest Glen--App. E also summarizes the laboratories at Forest Glen where radioisotopes are used. In addition, the Health Physics Office and isotope storage (Bldgs. 188 and 149-A) as well as radiological waste storage (Bldg. 516, the former DORF) are located at Forest Glen. The locations of the storage and handling facilities are shown in Fig. 2.1-2. As described in the preceding paragraphs, no spills or



KEY

INSTALLATION BOUNDARY

(A) LOCATION OF WRAIR RESEARCH REACTOR 1961-1972

CURRENT RADIOLOGICAL WASTE STORAGE AREAS:

(B1) BLDG. 40, ROOM B-079

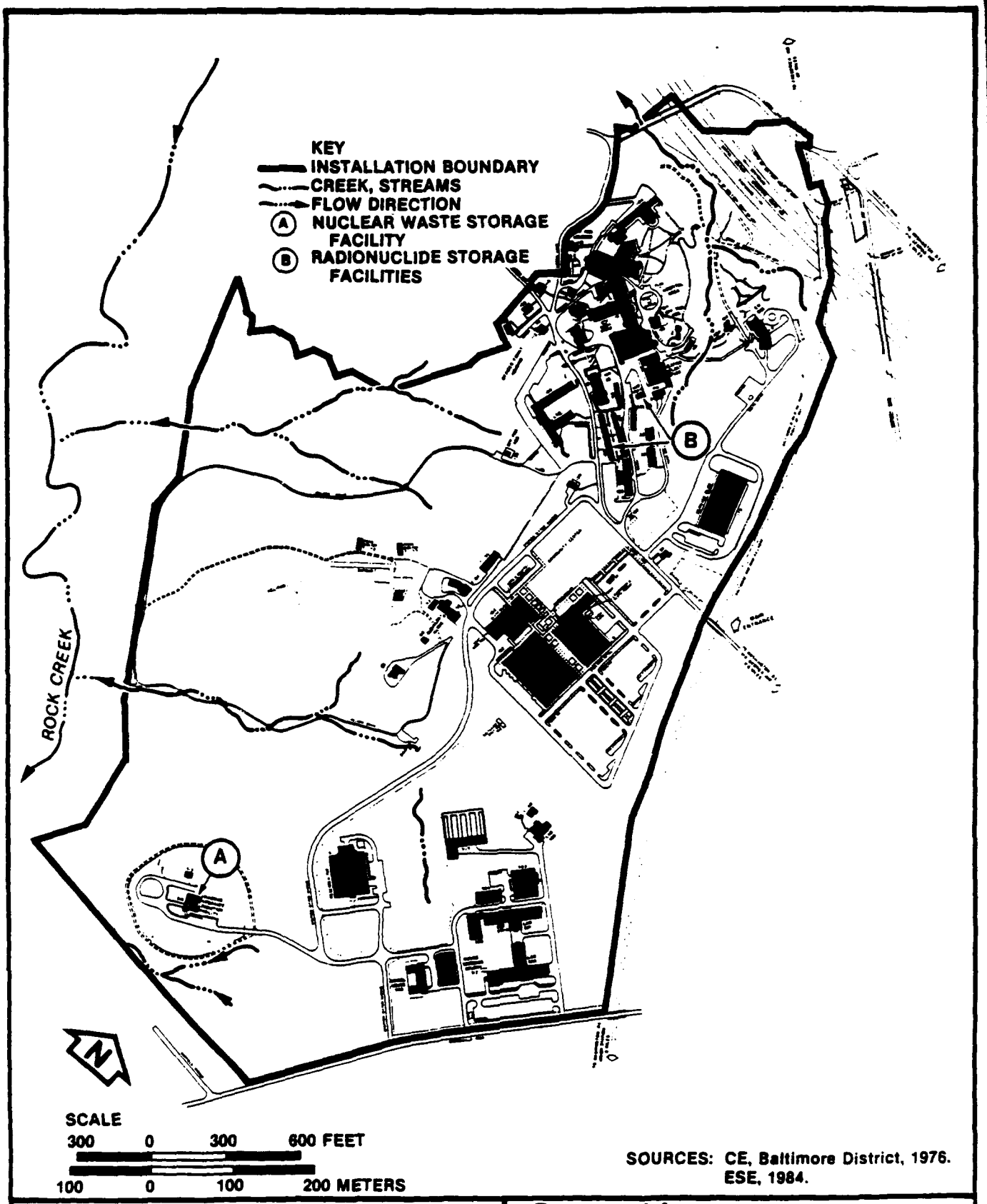
(B2) BLDG. 2, ROOM G-2

(C) FORMER RADIOISOTOPE LABORATORY, BLDG. 1, ROOM G-19

SOURCES: CE, Baltimore District, 1976. ESE, 1984.

Figure 2.1-1
LOCATION OF CURRENT AND FORMER RADIOLOGICAL WASTE STORAGE AREAS AND FORMER RESEARCH REACTOR—— MAIN SECTION, WALTER REED ARMY MEDICAL CENTER

Prepared for:
U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Ground, Maryland



SOURCES: CE, Baltimore District, 1976.
ESE, 1984.

Figure 2.1-2
LOCATION OF RADIOISOTOPE STORAGE FACILITIES——FOREST GLEN, WALTER REED ARMY MEDICAL CENTER

Prepared for:
U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Ground, Maryland

accidents resulting in environmental contamination by radioactive materials have occurred at Forest Glen.

During the period 1961 to 1977, DORF (shown on Fig. 2.1-2) was operated by the DA Harry Diamond Laboratories. The reactor, a TRIGA Mark F, was used primarily for studies of the effects of neutron and gamma radiation on electrical and electronic equipment and for biological effects studies by WRAIR and WRAMC after the decommissioning of the WRAIR reactor at the Main Section. The reactor was operated either at steady state (250 kW) or as a 2,000-kW pulse generator. During operation of the reactor, no environmental contamination reportedly occurred due to spills of radioactive materials. Emergency cooling water storage at DORF was in three underground storage tanks. These tanks were routinely checked for potential leaks. No leaks were reported. One radiation protection survey (USAEHA, 1972b) indicated that no releases which violated NRC regulations were occurring, and with minor exceptions, proper records were maintained.

In 1977, DORF was decommissioned. A detailed decommissioning plan (Harry Diamond Laboratories, DORF, 1977) and report (WRAMC DFAE, 1980b) prepared by Rockwell International, Inc., are available, as well as the detailed USAEHA residual radioactivity report (USAEHA, 1980), which indicated that the facility conformed to standards which allowed release for unrestricted use. In February 1980, the facility was transferred to WRAMC (Harry Diamond Laboratories, Nuclear Radiation Effects Laboratory, 1980). Since that time, the facility has been used for radioactive waste storage by the Health Physics Office.

The following disposal operations were completed during decommissioning (Harry Diamond Laboratories, Nuclear Radiation Effects Laboratory, 1980).

1. The fuel elements were transferred to four different facilities: 3 elements to the Armed Forces Radiobiology Research Institute, 18 elements to Penn State University,

46 elements to the University of Utah, and 25 elements to Hanford Engineering, Richland, Wash.

2. The reactor components were transferred to Hanford Engineering.
3. Radioactive waste and irradiated structural material were shipped to the radioactive burial site at Beatty, Nev.
4. The reactor pool was dismantled, and the reactor building was restored for unlimited use.

CB Agents

No record was found of the manufacture, storage, or use of lethal CB agents or munitions at WRAMC, Forest Glen, or Glen Haven.

2.1.7 PETROLEUM, OILS, AND LUBRICANTS (POL) HANDLING AND STORAGE

The POL products used at WRAMC are fuel oil, automotive gasoline, diesel fuel, kerosene, engine oil, and solvents. These POL products, with the exception of solvents, are stored in bulk quantities at storage facilities (see Table 2.1-5). Bulk storage tanks are of steel construction; underground tanks are coated, wrapped, and provided with cathodic protection to reduce the corrosion potential. The solvents used at WRAMC are primarily Varsol (a nonchlorinated petroleum distillate) with lesser amounts of carbon tetrachloride, TCE, and benzene. Solvents and engine oil are stored in either 55-gal or 5-gal drums. Volumes of solvents used, storage locations, and disposal of waste oils and solvents are discussed in Sec. 2.2.1.

The WRAMC Spill Prevention Control and Countermeasure/Installation Spill Contingency Plan (SPCC/ISCP) has been in effect since 1977 and was revised in February 1982 (HSC, 1982). The plan calls for daily inventory monitoring of all underground and aboveground tanks and daily visual inspection of the fuel tanks in the concrete vaults at Bldg. 15 (Main Section) and Bldg. 120 (Forest Glen Section). The storage tanks are pressure tested on an occasional basis.

Table 2.1-5. POL Storage Facilities at WRAMC

Location	Quantity Aboveground (gal)	Quantity Underground (gal)	Type of Fuel	Secondary Containment
		MAIN SECTION		
Bldg. 1				
2 tanks		825	Kerosene	Direct burial
Bldg. 15				
6 tanks		123,000	#6	Concrete vault
2 tanks		60,000	#6	Direct burial
2 tanks		800,000	#6	Direct burial
Bldg. 82				
3 tanks		15,000	MOGAS*	Direct burial
Bldg. 89				
1 tank		5,000	#2	Direct burial
		FOREST GLEN SECTION		
Bldg. 120				
4 tanks	43,000		#2	Concrete vault
Bldg. 156				
1 tank		1,000	#2	Direct burial
Bldg. 500				
3 tanks		112,000	#2	Direct burial
Bldg. 506				
1 tank		2,000	#2	Direct burial
Bldg. 508				
1 tank		10,000	#2	Direct burial
Bldg. 511				
2 tanks		32,000	#2	Direct burial
Bldg. 601				
1 tank		15,000	#2	Direct burial

Table 2.1-5. POL Storage Facilities at WRAMC (Continued, Page 2 of 2)

Location	Quantity Aboveground (gal)	Quantity Underground (gal)	Type of Fuel	Secondary Containment
Bldg. 605				
1 tank		5,000	#2	Direct burial
3 tanks		15,000	MOGAS/Diesel	Direct burial
Bldg. 606				
2 tanks		74,000	#2	Direct burial
Bldg. 133				
1 tank	275		#2	No protection
Bldg. 135				
1 tank	275		#2	No protection
		GLEN HAVEN SECTION		
McMahon Rd.				
1 tank		30,000	#2	Direct burial
Zones 1 and 2				
17 tanks	4,675		#2	No protection

* MOGAS = motor vehicle gasoline.

Sources: HSC, 1982.
ESE, 1984.

2.2 DISPOSAL OPERATIONS

2.2.1 INDUSTRIAL WASTE TREATMENT

The industrial wastes generated at WRAMC are associated with the vehicle maintenance and other support activities. The types of waste generated and methods of treatment and/or disposal are presented in the following sections.

Vehicle Maintenance Shops

Waste oil and brake, hydraulic, and transmission fluids generated at the DIO maintenance shop at Bldg. 605 are collected in a 500-gal underground storage tank. Prior to 1975, waste POL products were collected in 55-gal drums at Bldg. 41. The volume of waste POL generated has remained relatively constant at 750 to 950 l/month. Disposal is and has been through a waste oil contractor; the current contractor is Eastern Oil Service located in Alexandria, Va.

Cleaning solvents used since 1979 are Varsol (a nonchlorinated petroleum distillate) and carbon tetrachloride; approximately 200 l of each solvent are used per year. Both solvents are used in separate recirculating tanks, with spent solvent being drained to the waste oil tank. Prior to 1979, Varsol was used exclusively as the degreasing solvent at a rate of approximately 400 lpy. Varsol was disposed of in the waste oil tank.

Battery maintenance at the DIO shop includes charging and water addition only. Dead batteries are handled by a contractor (Best Battery in Forestville, Md.). Battery maintenance practices have been unchanged for at least the past 30 years.

Until 1983, waste antifreeze was disposed of in the waste oil drums (at Bldg. 41) or underground waste oil tank (at Bldg. 605). Since 1983, waste antifreeze has been discharged to the sanitary sewer system. The volume of waste antifreeze generated has remained at a relatively constant 750 lpy since the early 1950s.

The DIO maintenance shop does not have and has not had a spray paint booth; the only type of painting done is touchup work using spray-type cans. Empty cans are disposed of in the trash.

A single wash rack facility is located adjacent to Bldg. 605. From 1975 to 1979, the wastewater (containing detergent and wax) was discharged to the storm sewer. A wastewater recycle system employing a diatomaceous filter system has been installed; waste filter solids are disposed of through a local septic tank service on an annual basis. Prior to 1975, vehicle washing was conducted adjacent to Bldg. 41; it is not known if the wastewater was sent to the sanitary or storm sewer system.

Waste crankcase oil and brake, hydraulic, and transmission fluids generated at the DFAE shop are and have been collected in a 55-gal drum. Approximately 50 gal of waste oils are collected per month and are disposed of through a waste oil contractor.

Degreasing operations at Bldg. 601 are conducted primarily through a flow-through steam tank which discharges to the storm sewer system. A similar type steam cleaning operation which discharged to the storm sewer was used at Bldg. T-32 prior to 1972; since 1972, steam cleaning has not been conducted there. The discharge of oil-contaminated wastewater is not metered; however, the volume discharged is estimated to be approximately 40 l/month. This operation is not covered by a National Pollutant Discharge Elimination System (NPDES) permit.

In addition to the steam degreasing, spray can-type degreasing solvents (containing petroleum naphtha) are also used for small jobs. Waste solvent and grease are collected onto wipe rags which are disposed of in the trash.

Battery maintenance at the DFAE shop includes charging and water addition only. Dead batteries are traded in to various suppliers for replacement.

Waste antifreeze is and has been collected in a 55-gal drum and disposed of through the waste oil contractor; the volume of waste antifreeze disposed of is estimated to be less than 200 lpy. Waste antifreeze at the DFAE shop is segregated from the waste oil drum.

Painting activities at the DFAE shop are limited to touchup work using spray cans. No spray booth facilities are located at Bldg. T-32 or Bldg. 601.

No wash rack facilities are located at Bldg. 601; the wash rack at the DIO shop (Bldg. 605) is used by DFAE. Prior to 1972, DFAE vehicles were washed at a wash rack adjacent to Bldg. 82 which drains to a storm sewer. Reportedly, no detergents were used at that time.

Waste crankcase oil and brake and transmission fluids generated at the PX auto repair shop are drained to a 400-gal underground waste oil tank. Waste oil is disposed of monthly through a waste oil contractor. Degreasing operations use Varsol (a nonchlorinated petroleum distillate) as the solvent in a recycling degreasing tank. Degreasing solvent is drained at 3- to 4-week intervals to the waste oil tank; approximately 40 l of solvent are used per month.

Battery maintenance at the PX shop includes charging and water addition only; dead batteries are traded in to various suppliers for replacement.

Waste antifreeze at the PX shop is discharged to the sanitary sewer; the volume of antifreeze discharged is unknown.

There are no painting facilities at the PX auto shop.

Waste crankcase oil and brake and transmission fluid generated at the self-help shop are drained to a 500-gal underground waste oil tank. The waste oils are disposed of by a waste oil contractor approximately twice

per year. Degreasing operations use Varsol (a nonchlorinated petroleum distillate) as the solvent in a recycling degreasing tank. The waste solvent is drained at 6-month intervals to the waste oil tank; approximately 75 lpy of solvent are used.

Battery maintenance at the self-help shop is limited to charging and water addition only; dead batteries are not handled.

Waste antifreeze is discharged to the sanitary sewer; the volume of waste antifreeze discharged from the self-help shop is unknown. The wash rack located adjacent to Bldg. 82 drains to the storm sewer system. The discharge of wastewaters to a storm sewer system requires an NPDES permit. WRAMC has not applied for such a permit.

Boiler Plants

The wastewater generated from the boiler plants is boiler blowdown contaminated with sulfides, phosphates, and tannins. The blowdown is unmetered for flow; blowdown occurs for approximately 2 minutes per day, 7 days a week. The blowdown from all boilers is quenched with potable water prior to discharge to the sanitary sewer system.

Laundry Facility

Wastewater from the laundry operation is discharged directly to the sanitary sewer system. The wastewater contains removed soil and residuals of detergent and chlorine bleach. Approximately 261,000 l of wastewater are discharged per day from the laundry facility.

Print Shops

Waste materials generated at the AG print shop are rags contaminated with petroleum distillate and/or methylene chloride and ink wastes. Approximately 40 to 60 l of petroleum distillate and 10 l of methylene chloride are used per month. The waste rags are disposed of in the trash. The quantities and types of solvents used prior to 1977 are not known.

Waste materials generated at the AFIP print shop are wastewater contaminated with isopropyl alcohol and ink and wipe rags contaminated with petroleum distillate and/or isobutyl alcohol and ink wastes. The wastewater is discharged to the sanitary sewer system; wasted rags are disposed of in the trash. Approximately 150 l of isopropyl alcohol, 60 l of petroleum distillate, and 1 l of isobutyl alcohol are used per month. The types and quantities of solvents used at the AFIP print shop are reported to be unchanged since 1954.

In addition to the wastes associated with printing activities, photographic chemicals are also disposed of at the AFIP shop. Approximately 45 l of photographic wastes are discharged to the sanitary sewer system monthly. The AFIP shop is not currently participating in the WRAMC silver recovery program.

Office Machine Repair Shop

Approximately 15 l/month of perchloroethylene were estimated to have been used as the cleaning solvent prior to the early 1970s. The perchloroethylene was disposed of primarily through evaporation, with small amounts discarded in the trash on wipe rags. Perchloroethylene has been replaced by TCE as the "flushing" solvent since the early 1970s. The quantities used and method of disposal for TCE are the same as for perchloroethylene.

A recycling wash tank was added to the office machine repair shop in about 1977. The tank is filled with a solution of 20 l of benzene and 75 l of petroleum distillate, which is changed 1 to 2 times per month. The waste solvent is drained to a 55-gal drum and disposed of monthly through a waste oil contractor.

Arts and Crafts Shop

The arts and crafts shop has been located in Bldg. 163 at the Forest Glen Section since its inception in 1970. The shop provides facilities for woodworking, photography, and pottery and ceramics working for

active and retired military personnel and their dependents. Furniture refinishing and stained glass working are not permitted at the shop.

In the woodworking shop, cellosolve® (2-ethoxyethanol) is used as a paint thinner, and petroleum naphtha and methylene chloride are used for cleaning. Waste cleaning solvents are either evaporated or placed in empty paint cans and disposed of in the trash. The supply of thinner (4 l) and cleaning solvent (10 l of petroleum naphtha and 1 l of methylene chloride) in stock at the time of the survey reportedly will last for several months.

Approximately 10 l/month of photographic chemicals are discharged to the sanitary sewer system. The arts and craft shop currently does not participate in the WRAMC silver recovery program.

2.2.2 WASTEWATER TREATMENT

Most wastewater generated at the three WRAMC areas is discharged directly into sanitary sewers connected to municipal sewage treatment systems. The Main Section is connected to D.C. sewer mains; the Forest Glen Section is connected to a Washington Suburban Sanitary Commission (WSSC) sewer main which is in turn connected to the D.C. system. The Glen Haven Section is connected to WSSC sewer mains. WRAMC discharges to the D.C. and WSSC systems are not subject to NPDES regulations (USAEHA, 1976).

2.2.3 SOLID WASTE/LANDFILLS

WRAMC

Records searched did not indicate that any landfills or disposal areas had ever existed on the Main Section. Due to the urban setting and the scarcity of available land or land suitable for disposal-type operations, WRAMC has always disposed of solid wastes through landfills located in D.C., surrounding states, or, in some instances since 1942, at the Forest Glen Section. Reportedly, WRAMC had an onsite crew which collected solid waste on the Main Section until 1966. Since 1966, solid

waste disposal activities have been contracted. The current contractor in charge of solid waste collection and disposal is Browning-Ferris Industries of Baltimore, Md. Infectious, contaminated, and pathological waste disposal operations are discussed later in this section.

Forest Glen

Records searched indicated that several areas on Forest Glen had been used for landfill or disposal operations (see Fig. 2.2-1). These areas were shown by aerial photographs to be in use during the period 1951 to 1970 (EPA, Environmental Monitoring Systems Laboratory, 1983). A waste incinerator was also in use during the period 1957 to 1970. Items reportedly landfilled in these areas included: construction rubble (bricks, concrete, asphalt, wood, glass, etc.); roots, stumps, leaves; and incinerator ash (from classified papers, contaminated wastes, animal bodies, and some garbage). These residues were found and identified when building foundation borings were made in 1972 in the area where the main commissary is now located. No ground water was encountered when these borings were made at depths approximately 15 m below ground surface level. No leachate seeps were noted in these areas. Erosion has been a problem in the past at the site of the current helipad, located on the large former landfill on the western side of Forest Glen; however, terracing the area and planting grass had moderated the problem. Current sanitary waste disposal is by contract with Browning-Ferris Industries.

Glen Haven

Records searched did not indicate that any landfill or disposal areas had ever been located at Glen Haven. Current sanitary waste disposal is by contract with Browning-Ferris Industries.

Contaminated Wastes

As a result of research, clinical, and patient care activities, wastes potentially or actually contaminated by pathogenic organisms are generated at WRAMC, WRAIR, and AFIP on the Main Section, and from WRAIR

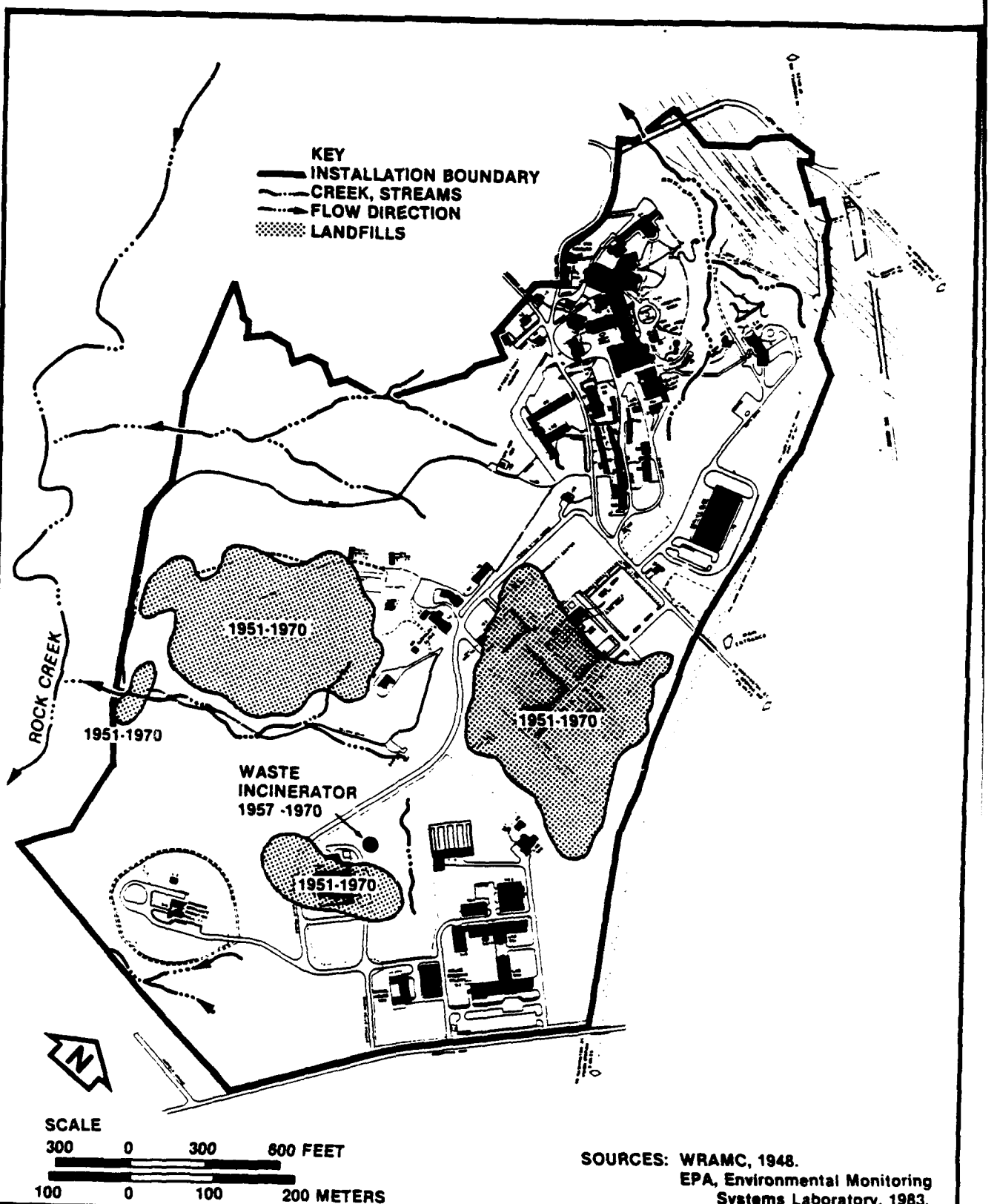


Figure 2.2-1
FORMER LANDFILLS ON FOREST GLEN, WALTER REED ARMY MEDICAL CENTER

Prepared for:
U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Ground, Maryland

research activities and Animal Resources facilities at Forest Glen. No activities which generate contaminated wastes occur at Glen Haven.

Currently, contaminated wastes are handled under the DFAE hazardous waste program. Contaminated wastes fall under the following categories.

Infectious Waste--Infectious waste includes disposable items such as needles, syringes, and other solid waste from experiments involving disease-producing organisms, as well as bedding, body fluids, exudates, and excretions from infectious disease research animals and from patient care. Examples of such material are used surgical gauze from human or infected animal sources, intravenous (I.V.) tubing with needle attached, contaminated gloves, and items from surgical procedures that come in contact with tissue, blood, body fluids, excretions, or secretions.

Pathological Waste--Pathological waste includes animal carcasses, anatomic parts, and tissues, as well as human body parts and operating room wastes and autopsy wastes.

Infectious wastes which can be autoclaved, such as bacteriological media and cultures, needles, etc., are sterilized and bagged, labeled as noninfectious, and discarded as general trash. Non-autoclavable infectious materials are bagged in yellow containers, boxed, and segregated from the general trash. This material is collected three times per week from containers located at each hazardous waste pickup site at Bldg. 2 on the Main Section and from Bldg. 511 on Forest Glen. This waste is hauled to the Montgomery County incinerator facility. Fifteen to 90 cubic yards (yd^3) of infectious waste are generated at WRAMC and Forest Glen weekly. Reportedly, no problems or complaints have been generated by the current infectious waste handling procedures.

Research animal wastes are handled as pathological wastes by the Animal Resources personnel of WRAIR. Currently, approximately 680 kilograms per week (kg/week) of bedding and other contaminated materials and animal carcasses are generated by WRAIR and AFIP research activities. These materials are burned in the incinerator located at Bldg. 511, Forest Glen.

Human pathological waste is segregated, frozen, and taken to the incinerator at Fort Detrick, Md., for burning. Reportedly, this waste amounts to approximately 600 kg/month.

The current handling practices for contaminated wastes are described in several publications (WRAMC, 1980, n.d.; WRAMC DFAE, n.d.). Prior to 1980, pathological waste and animal wastes were incinerated at Bldg. 54, AFIP. The quantities of animal wastes reported in the Environmental Impact Assessment (EIA) (USAEHA, 1976) are approximately two times the reported current amounts. Use of the AFIP incinerator was suspended in 1980 because of incinerator performance problems (see Sec. 2.4). Contaminated waste generation in the past is also reviewed in the EIA (USAEHA, 1976), which indicated that prior to 1977, infectious waste was not adequately segregated for disposal. Quantities of infectious waste generated could not be estimated because of inadequate segregation. Infectious wastes (mixed with noninfectious solid wastes) were taken offpost to the following disposal areas, according to the EIA (USAEHA, 1976):

Lorton, Va. Landfill (Washington, D.C., operated)
Bellaire, Md. Landfill (near Bowie, Md.)
Lowisdale, Va. Landfill
Montgomery County, Md. Landfill
Washington, D.C. Incinerator No. 5
Montgomery County, Md. Incinerator

During the period 1957 to 1970, an incinerator was located at Forest Glen (EPA, Environmental Monitoring Systems Laboratory, 1983) at the

site of the current Animal Resources incinerator, located in Bldg. 511. It is not known whether all pathological and infectious wastes generated by WRAMC were disposed of at the former incinerator.

2.2.4 DEMOLITION AND BURNING GROUND AREAS

Records searched did not indicate that any demolition activities or training exercises with explosives or munitions were ever conducted at WRAMC, Forest Glen, or Glen Haven. Records searched did not indicate that any burning ground areas for the destruction of dud munitions, out-of-date ammunition, explosives, powders, or propellants were ever located on any of the WRAMC areas.

2.2.5 DEMILITARIZATION

Records searched did not indicate that any demilitarization activities were ever conducted at WRAMC, Forest Glen, or Glen Haven.

2.2.6 RCRA STATUS

WRAMC is considered to be a generator and transporter only of hazardous waste material. On Aug. 18, 1980, WRAMC submitted a Notification of Hazardous Waste Activity to EPA and was assigned the EPA Identification No. DC4210021156 (see App. F). EPA has not requested that WRAMC submit either Part A or B of the RCRA permit application.

Hazardous wastes generated at WRAMC have been manifested and picked up for disposal on a monthly basis by a contractor (Environmental Cleaning Specialists of Kingston, Pa.). The types and quantities of hazardous wastes generated at WRAMC are as follows:

1. Xylene--11,355 lpy
2. Chloroform--454 lpy
3. Acids (corrosive)--454 lpy
4. Reactives (oxidizers)--454 lpy
5. Poisons--454 lpy
6. Flammable liquids--2,725 lpy
7. Non-radioactive toluene--34,065 lpy

Wastes are stored before disposal at the following locations:

Main Section:

1. Bldg. 54 loading dock (AFIP)
2. Bldg. 40 loading dock (WRAIR)
3. Bldg. T-2, Room 252 (pathology laboratory)

Forest Glen Section:

1. Bldg. 500
2. Bldg. 516

At the time of the site visit, WRAMC reportedly was experiencing a problem of nonperformance by the disposal contractor. Due to this situation, hazardous wastes had been stored at WRAMC for greater than 90 days, storage space at the various loading docks was becoming limited, and it was reported that several containers at the AFIP dock had been discarded in the trash. The legal office at WRAMC is currently working at resolving the contractor problem. After the current contract expires in February 1984, WRAMC reportedly will be contracting with Fort Belvoir, Va., for transport and disposal of hazardous waste.

The Government of D.C. performed a RCRA compliance survey at WRAMC on Sept. 29, 1983. This survey noted the following deficiencies:

1. Storage areas are not marked properly;
2. Two containers had been stored for greater than 90 days, and several containers were in poor condition and leaking;
3. There was no log for wastes in the storage areas nor an inspection schedule for the storage areas;
4. The SPCC Plan did not include hazardous waste emergencies; and
5. A record of job titles and position descriptions for personnel involved with hazardous waste management is not kept.

These deficiencies were brought to the attention of WRAMC during the September 1983 survey. At the time of the installation assessment, corrective actions reportedly were being taken.

2.3 WATER QUALITY

2.3.1 SURFACE

The Main Section and Forest Glen are located in the Rock Creek Drainage Basin. Rock Creek originates in Montgomery County, Md., and flows south through residential, urban, and industrial areas to discharge into the Potomac River below Georgetown in D.C. As described in the EIA (USAEHA, 1976), the majority of the watershed is developed, with the exception of the headwaters. The stream contains numerous pools and is heavily shaded through most of its length. Sand and gravel are the predominant bottom substrate.

No recent water quality data exist for Rock Creek; however, as described in the EIA, water quality is poor as a result of urban runoff. High levels of metals, especially lead, would be expected in the sediments as a result of roadway runoff and atmospheric deposition of lead from vehicle exhaust. This impact would be expected to have been greater in the past than currently. Salt washed from streets after ice removal operations would impact the creek. Organic materials, nutrients, and bacterial contamination from the runoff would result in high levels of coliform bacteria and episodes of low dissolved oxygen (DO) concentrations. These latter occurrences would be most prevalent in summer. Oil and grease and other hydrocarbons (HC) associated with urban environments would also be present. Episodes of high turbidity would be associated with rain events. A summary of water quality data from 1974 presented in the EIA (USAEHA, 1976) documents the high level of bacterial contamination, turbidity, and elevated oxygen demand.

Glen Haven is located between two channelized tributaries of Sligo Creek which flow into the Anacostia River. The Anacostia River also flows into the Potomac River. The Sligo Creek Drainage Basin is also nearly completely urbanized, similar to Rock Creek. Water quality in Sligo Creek would be expected to be similar to that in Rock Creek.

WRAMC

Rock Creek Park is immediately adjacent to the western boundary of the Main Section of WRAMC, which has no surface streams or drainageways. Runoff from lawns, streets, parking lots, and roofs enters the underground stormwater drainage system and is conveyed to Rock Creek via storm sewers, which also collect runoff from additional, more extensive areas. The contribution of storm water from the Main Section compared to the overall load of pollutants from the other portions of the drainage area of Rock Creek is insignificant.

Forest Glen

Rock Creek is also adjacent to the western boundary of Forest Glen. Storm runoff from Forest Glen is conveyed to Rock Creek via four small tributaries to the creek. No recent water quality data for Rock Creek in the area of Forest Glen or water quality for the spring or tributaries exist. The load of organic matter, oil and grease, HC, bacteria, and metals would be expected to be less than from other areas of similar size in the watershed because of the low intensity of development at Forest Glen compared to the surrounding area.

The steep slopes adjacent to Rock Creek Park, which in the past were modified by fill, have resulted in erosion and turbidity problems in Rock Creek (USAEHA, 1976). Retention basins have been built and slopes vegetated to mitigate this adverse impact. Reportedly, the system now provides adequate erosion control.

Glen Haven

Glen Haven consists of multifamily housing units, parking lots, and streets and lawns. Urban runoff from Glen Haven would be similar in quality to runoff from the areas adjacent to this section. The quality of this runoff would be expected to be typical of multifamily developments in the D.C. area.

2.3.2 SUBSURFACE

As a result of the geological characteristics described in Sec. 1.6.4, almost no ground water quality data exist for the northern portion of D.C. and Montgomery County, Md., in the area of WRAMC, Forest Glen, or Glen Haven. According to the EIA (USAEHA, 1976), public ground water supplies provide less than 3 percent of the water consumed on a regional basis. At WRAMC and the two noncontiguous sections, the nonporous bedrock yields little water, less than 76 lpm to residential wells. The water table exists at approximately the bedrock-sediment interface. No quantitative ground water quality data are available. No USGS observation wells are located in the intermediate area.

2.3.3 POTABLE WATER

WRAMC

WRAMC obtains its potable water supply via eight 8-inch (in) cast iron pipe mains from the Washington Aquaduct Division of the Baltimore District CE, which supplies D.C. According to the EIA (USAEHA, 1976) and the Master Plan, Vol. 1 (RTKL Associates, Inc., 1976), the supply for WRAMC comes from the Dalecarlia Reservoir Filtration Plant, located on the Potomac River above the Great Falls area. Treatment consists of flocculation, sedimentation, filtration, disinfection, and pH adjustment. In the past (USAEHA, 1969), water delivered to WRAMC in summer when water temperature was greater frequently contained no residual chlorine. No elevated coliform levels were reported, according to the 1969 USAEHA report (USAEHA, 1969). It was recommended that WRAMC either install its own disinfection apparatus or monitor and prompt the District to increase chlorine dosage to a level adequate to carry a residual to WRAMC.

A subsequent 1977 USAEHA study (USAEHA, 1977a) indicated that the chlorine residual problems had been overcome. At that time, the surveillance of the WRAMC system for coliform levels, as required by Army regulations (U.S. Army, 1976), was judged to be inadequate. The surveillance program was expanded to rectify the situation. PVNTMED Activity currently collects 14 to 16 samples per month and monitors them

for chlorine residual, coliform levels, fluoride, and total hardness. These data indicate no elevated levels of coliforms or fluorides and that residual chlorine content of the potable water at WRAMC is adequate. According to the 1977 USAEHA study (USAEHA, 1977a), the installation participates in the U.S. Army Drinking Water Surveillance Program (USADWSP) administered by USAEHA. Reportedly, no violations of primary or secondary drinking water maximum contaminant limits or trihalomethane concentrations greater than 100 micrograms per liter (ug/l) have been observed.

Forest Glen

Water is supplied to the Forest Glen Section from WSSC. This water is supplied to two reservoirs from the Patuxent River and is treated by flocculation, sedimentation, filtration, disinfection, and pH adjustment. In the past, Forest Glen had the same chlorine residual and surveillance problems as WRAMC (USAEHA, 1969, 1977a). Currently, 12 samples per month from Forest Glen are tested by the PVNTMED Activity, and samples are collected for the USAEHA drinking water surveillance program. The only potable water quality data published (USAEHA, 1978) for WRAMC are for the distribution system at Forest Glen (App. G). Reportedly, no violations of trihalomethanes or primary or secondary drinking water standards occur.

Glen Haven

The Glen Haven Section obtains water from the same source as Forest Glen. Three samples per month are routinely monitored by the PVNTMED Activity at WRAMC. No problems are reported currently for this section with regard to potable water quality.

2.4 AIR QUALITY

2.4.1 AMBIENT

WRAMC is located in the National Capital Interstate Air Quality Control Region (AQCR). An extensive ambient air quality surveillance network is operated in this region to monitor pollutant levels for which standards exist. Table 2.4-1 gives the national and Maryland Ambient Air Quality

Table 2.4-1. National and State of Maryland AAQS

	National		Maryland	
	Primary	Secondary	Serious	More Adverse
SO_x				
Annual arithmetic mean, ug/m^3	80		79	39
24-hour maximum,* ug/m^3	365		262	131
3-hour maximum,* ug/m^3		1,300		
1-hour maximum,† ug/m^3			525	262
Particulate Matter				
Suspended				
Annual arithmetic mean, ug/m^3	75**	60**	75	65
24-hour maximum,* ug/m^3	260	150	160	140
Settleable				
Annual arithmetic average, mg/cm^2/month			0.5	0.35
Monthly maximum			1.0	0.7
CO				
8-hour maximum,* mg/m^3	10	10	10	10
1-hour maximum,* mg/m^3	40	40	40	40
HC				
3-hour (6-9 AM) maximum,* ug/m^3	160	160	160	160
Nitrogen Dioxide (NO_2)				
Annual arithmetic mean, ug/m^3	100	100	100	100
Photochemical Oxidants				
1-hour maximum,* ug/m^3	160	180	160	160

* Not to be exceeded more than once per year.
† Not to be exceeded more than once per month.
** Annual geometric mean.

Abbreviations:
ug/m^3 = micrograms per cubic meter.
mg/cm^2/month = milligrams per square centimeter per month.
mg/m^3 = milligrams per cubic meter.
NO_2 = nitrogen dioxide.

Source: USAEHA, 1976.

Standards (AAQS). Table 2.4-2 gives the levels in tons/year of suspended particulates, sulfur oxides (SO_x), carbon monoxide (CO), HC, and nitrogen oxides (NO_x) from pollutant sources for Montgomery and Prince Georges Counties, which border D.C. to the north and to the east, respectively.

Air quality in the WRAMC area is marginal. Data furnished by the state of Maryland (USAEHA, 1976) indicate violations of the air quality standards for suspended particulates, CO, nonmethane HC, and photochemical oxidants. High levels of CO, nonmethane HC, and photochemical oxidants in the WRAMC area can be attributed to the extremely high number of motor vehicles in the area.

2.4.2 SOURCE EMISSIONS

WRAMC

Potential air emission sources at WRAMC include:

1. Stationary fuel combustion units,
2. Incinerators,
3. Vehicles,
4. Volatile fuel storage tanks, and
5. Small industrial operations.

Two boilers, each rated at 80,500 lb/hr steam, are currently located at the WRAMC central heating plant, Bldg. 15. These boilers have been in operation since 1980. WRAMC has an exemption from the Bureau of Air and Water Quality, Washington, D.C., to operate these boilers without a permit subject to specific conditions (Government of the District of Columbia, Department of Environmental Services, 1980). Plans exist to convert these boilers to natural gas. An air quality permit will be applied for at the time of conversion. Records indicate that the central heating plant was located at Bldg. 15 as early as 1918 and during the early years was coal fired (U.S. Constructing Quartermaster, 1918).

Table 2.4-2. Pollutant Sources for Montgomery and Prince Georges Counties, Md. (All units in tons/year)

Source	Particulates	SO_x	CO	HC	NO_x
Space Heating					
Residential	1,035	3,010	891	296	2,509
Commercial	237	989	223	78	1,387
Government/ Institutional	475	2,658	102	49	1,788
Industry	24	98	8	2	172
Total	1,771	6,755	1,224	425	5,856
Power Plants	5,610	122,390	1,447	372	28,130
Mobile Sources	5,324	2,101	414,815	56,859	45,180
Process					
Industry	441	76	13	356	157
Commercial	19	9	50	7,583	23
Total	460	85	63	7,939	180
Refuse					
Incinerator	898	421	296	84	452
Open Burning	38	0	158	33	5
Total	936	421	454	117	457
GRAND TOTAL	14,101	131,752	418,003	65,712	79,803

Source: USAEHA, 1976.

Although no longer in use, an incinerator is located in Bldg. 54 and was primarily used by AFIP until 1980. The incinerator is a Joseph Goder incinerator, Model Number 500-2, Type 40-IS. It is rated at 450 lb/hr for Type 4 waste and 300 lb/hr for Type 2 waste. In 1974, a total of 172,500 pounds (lb) of waste were incinerated. Table 2.4-3 provides a description of the characterization of this waste (USAEHA, 1976). Use of this incinerator was discontinued when it failed to meet the state of Maryland criteria for an operating permit.

Prior to 1960, an incinerator was operational at Bldg. 16, but is no longer in service.

In the early 1950s, approximately 200 vehicles were in use on WRAMC. By 1974, 166 vehicles, ranging from fire department trucks to sedans, were in use. At that time, the vehicles consumed 638,116 l of gasoline and 69,540 l of diesel fuel (USAEHA, 1976). The number of vehicles in use onpost has continued its slow decline, and currently 151 vehicles are used.

No significant industrial operations exist at WRAMC. Small operations include several woodworking shops, which are equipped with dust collectors that separate the conveying air from the wood sawdust and shavings. The air is vented to the atmosphere while the wood is collected in hoppers. No visible emissions occur from the dust collectors, and no complaints have been received (USAEHA, 1976).

WRAMC has 46 fuel storage tanks ranging in size from 275 to 30,000 gal. These tanks store either No. 2 or No. 6 fuel oil, diesel fuel, kerosene, or gasoline. All are vented to the atmosphere and present no air pollution problems (USAEHA, 1976).

Source emissions from WRAMC do not appear to adversely impact the ambient air quality in the National Capital Interstate AQCR. No record

Table 2.4-3. Characterization of Waste Burned in AFIP Incinerator on WRAMC

Waste	lb/yr*
Paper	100
Corncob bedding, hardwood chips, and cedar shavings	130,000
Animal carcass and infectious material	26,000
Body tissues and plushes	7,280
Pathology and autopsy	9,120
TOTAL	172,500

* lb/yr = pounds per year.

Source: USAEHA, 1976.

exists of air emissions from any operations at WRAMC exceeding standards of local, state, or Federal agencies.

Forest Glen

At Forest Glen, there are 16 boilers which have air quality permits. Table 2.4-4 lists these boilers.

An operating incinerator is located at Forest Glen in the new Bldg. 511 and is used by Animal Resources personnel for disposal of animal bodies and bedding. The incinerator is a Consumat Model C-125-P infectious waste incinerator and is rated at 350 lb/hr. Currently, 1,500 lb of waste per week are incinerated.

Prior to 1960, a different incinerator was operational at the old Bldg. 511 (which was torn down) on Forest Glen but is no longer in service.

No record exists of air emissions from any operations at Forest Glen exceeding standards of local, state, or Federal agencies.

Glen Haven

Because Glen Haven is a housing area and no central heating facility or incinerator exists on the area, no problems were noted with air emissions.

2.4.3 PERMITS

WRAMC

No air quality permits are required for the Main Section of WRAMC.

Forest Glen

Air quality permits issued to WRAMC by the state of Maryland Department of Health and Mental Hygiene include the following:

1. Operating permit for the infectious waste incinerator located at Bldg. 511, Forest Glen; and

Table 2.4-4. List of Boilers at Forest Glen, WRAMC

Building Number	Number of Boilers	Number of Stacks	Steam Rating (lb/hr)	Fuel Used
120	1	1	—	No. 2 oil
120	1	1	21,000	No. 2 oil
500	3	3	3,450 each	No. 2 oil
506	1	1	1,700	No. 2 oil
508	1	1	3,450	No. 2 oil
511	2	1	6,700 each	No. 2 oil
606	3	3	8,500 each	No. 2 oil
163	1	1 stack	5,116	Gasoline
163	2	for both	4,480	Gasoline
120	1	1	13,000	No. 2 oil

Source: ESE, 1984.

2. Operating permits for 16 boilers located at Forest Glen: Bldg. 120 (3 boilers), Bldg. 500 (3 boilers), Bldg. 506 (1 boiler), Bldg. 508 (1 boiler), Bldg. 511 (2 boilers), Bldg. 163 (3 boilers), and Bldg. 606 (3 boilers).

Copies of these permits are included in App. H. One boiler, located in Bldg. 120, has recently been replaced with a 700 HP Cleaver Brooks Model. The permit has been applied for but not yet received. Permit requirements are currently being met at Forest Glen, and no problems are associated with emission sources.

Glen Haven

No air quality permits are required for the Glen Haven Section.

2.4.4 NOISE

WRAMC has various noise sources associated with normal installation activity, some of which have the potential to contribute to the general ambient noise levels existing outside the boundaries of the installation. These sources include rotary-wing aircraft, vehicles, and fixed and portable generators (USAEHA, 1976).

Noise emission data on helicopters utilizing WRAMC are available from the noise data base at USAEHA. These data were obtained from previous studies specifically designed for use in assessment of rotary-wing aircraft noise impact on communities surrounding military installations (USAEHA, 1976). Table 2.4-5 summarizes the mean noise emission values for the aircraft under normal cruise, takeoff, and landing performance conditions.

WRAMC has some motor vehicles which could, under certain circumstances, produce objectionable noise levels in the community surrounding the installation. These vehicles include trucks, buses, tractors, and other maintenance equipment. Noise emission data available from the noise data base at USAEHA and from field measurements at WRAMC indicate that

Table 2.4-5. UH-1 Helicopter Noise Level Data

Condition	Altitude (AGL)*	dB(A)
Normal cruise	250	84
	500	78
	1,000	71
Takeoff	250	82
	500	75
	1,000	69
Landing	250	82
	500	76
	1,000	70

* AGL = above ground level.

Source: USAEHA, 1976.

these vehicles generate from 62 to 88 decibels (A-weighted) [dB(A)] measured 15 m from the source during both pass-by and stationary operation (USAEHA, 1976).

Stationary and portable generators may also be potentially significant noise sources at WRAMC. Noise emission data for stationary generators available from the USAEHA data base indicate that maximum levels of 55 dB(A) at 30 m could be expected. Noise emission data for portable generators also available from the USAEHA data base show a value of 75 dB(A) at a distance of 30 m from the source (USAEHA, 1976).

2.5 IMPACTS ON BIOTA

Ongoing and past installation activities on the Main Section, Forest Glen, and Glen Haven cause no adverse ecological impacts, such as reduction and adverse changes to species diversities, population levels, or species replacement. The absence of adverse effects is due to:

1. The lack of sensitive areas or habitats or threatened or endangered species on the three WRAMC sections;
2. The absence of ranges and training areas;
3. The prevalence of wildlife species adapted to urban environments and tolerant of installation activities, noise levels, etc.; and
4. The maintenance of the three sections as improved grounds; therefore, available land areas are not suitable for extensive wildlife management.

3.0 INSTALLATION ASSESSMENT

3.1 FINDINGS

3.1.1 METEOROLOGY

Meteorological conditions at WRAMC, Forest Glen, and Glen Haven are greatly influenced by the Chesapeake Bay, Atlantic Ocean, and Appalachian Mountains. The climate is considered mild, with average mean temperatures ranging from 1.7°C in January to 25.9°C in July. The annual precipitation of 90.83 cm is uniformly distributed throughout the year. Precipitation as snowfall averages approximately 50 cm annually.

3.1.2 GEOLOGY

WRAMC

The Main Section has two predominant soil complexes. Much of this area is covered by buildings, concrete, asphalt, and other impermeable materials, virtually eliminating infiltration of contaminants into the soil. The base rock under this section does not function as an aquifer. Nearby production aquifers are in the thick wedge of coastal sediments to the southeast.

Forest Glen

Three soil series predominate on Forest Glen. Permeability of all three series is considered low. The base rock under this section also does not function as an aquifer.

Glen Haven

The Glen Haven Section is covered with only one type of soil series, which experiences moderate erosion. Permeability for this soil series is considered low. The base rock under this section also does not function as an aquifer.

3.1.3 HYDROLOGY

WRAMC

The Main Section has no streams onpost. Surface drainage occurs through the onpost storm sewer system. Rock Creek flows adjacent to the installation's western boundary.

Forest Glen

No perennial surface streams exist onpost; however, four streambeds exist where surface waters flow off the installation during periods of precipitation.

Glen Haven

No perennial surface streams exist on Glen Haven. Storm waters are collected and reportedly exit the installation through a storm drainage system to the west or to the south through a ditch in the center of the installation.

3.1.4 BIOTA

The biota of WRAMC, Forest Glen, and Glen Haven is composed of common wildlife and plant species adapted to and characteristic of urban areas. No sensitive wildlife habitats, wetland, or Critical Habitats occur onpost, and no undisturbed tracts of vegetation communities remain. Ongoing installation activities have no adverse effects on the biota.

3.1.5 REAL ESTATE/LEASES AND PERMITS

WRAMC

The Main Section comprises approximately 46 ha owned in fee simple. No leases or permits for this section involve toxic or hazardous materials.

Forest Glen

Forest Glen has been involved in several small excessing actions since 1976, and currently consists of approximately 70 ha. This section holds one permit which may involve toxic/hazardous materials. This permit,

No. DACA-31-4-68-116, is with NIH for construction and maintenance of a tri-service incinerator. The permit was issued in 1968 and is for an indefinite period. However, the incinerator was decommissioned in February 1984. Although the outgrant is currently in effect, it is to be terminated some time in 1984.

Glen Haven

This section consists of approximately 8 ha and serves as a housing area. Narrow strips of land along the western and southwestern boundaries are under consideration for excessing. Glen Haven holds no permits or leases which involve toxic or hazardous materials.

3.1.6 LEGAL CLAIMS

Records searched did not indicate any legal claims against WRAMC, Forest Glen, or Glen Haven with respect to the migration of toxic or hazardous materials.

3.1.7 INDUSTRIAL OPERATIONS

Industrial operations at WRAMC include vehicle maintenance, boiler operations, printing activities, laundry operations, and office machine repair. Toxic and hazardous materials used and wastes generated by industrial operations include methylene chloride, carbon tetrachloride, and TCE.

The motor pool at DIO, Bldg. 605 Forest Glen, is currently using carbon tetrachloride in a parts degreasing system. Although the use of carbon tetrachloride is not forbidden, use has been severely curtailed by Government agencies since the 1950s when studies linked its use with high incidence of liver, kidney, lung, and skin disorders. Sludges generated in the degreasing system are removed and disposed of as hazardous waste approximately every 2 months. Any residual solvents are disposed of in the waste oil tank, which makes the contents of this tank a hazardous waste. The waste oil is currently removed by an oil reclaimer and is not disposed of as a hazardous waste.

Many Government agencies have switched to less hazardous solvents (e.g., petroleum naphthas) as substitutes for carbon tetrachloride. However, if a substitute cannot be used for the carbon tetrachloride, an air monitoring program should be instituted. This program should determine if atmospheric concentrations are within the exposure limits recommended by the National Institute for Occupational Safety and Health (NIOSH). In addition, any solvent remaining when the tank is cleaned should be segregated and disposed of as a hazardous waste in accordance with RCRA regulations.

The print shop and office machine repair facility, both located in Bldg. 1, generate wipe rags contaminated with methylene chloride and TCE. These items are disposed of with other solid wastes generated at WRAMC. This disposal practice is in violation of RCRA regulations. Rags contaminated with toxic and hazardous materials should be stored and disposed of with other hazardous wastes generated by the installation.

Waste oils, brake fluids, anti-freeze, and other solvents generated by operations at WRAMC and its sections are collected and disposed of in accordance with appropriate regulations and guidelines.

3.1.8 LABORATORY OPERATIONS

Numerous laboratory operations are associated with the medical, dental, and veterinary research activities at WRAMC and Forest Glen and the medical and dental clinical activities at WRAMC. No laboratories are located at Glen Haven, which serves as a housing area. The major biological, medical, and chemical laboratory complexes are associated with the following:

1. WRAIR;
2. AFIP;
3. USAIDR;
4. USARDA;
5. Veterinary Clinic Activity; and

6. WRAMC--Radiology and Nuclear Medicine, Department of Pathology, and Department of Clinical Investigations.

In addition, DPTSEC operates a centralized photographic laboratory at WRAMC, and a small recreation photographic laboratory is maintained by the recreation department at Forest Glen.

Currently, all laboratories participate in the Hazardous Waste Management Program, managed by DFAE through DPDO, for disposal of waste chemicals and pathological and infectious wastes. Radiological materials handling, storage, and disposal are managed by the Health Physics Office. No problems exist currently with regard to handling and disposal of radiological materials, or infectious or pathological wastes. As a result of a contract dispute, hazardous chemical disposal has temporarily been halted, and hazardous and flammable chemical waste is being stored at five locations in excess of 90 days, which is in violation of RCRA regulations (EPA, 1982b). The current generation rate is approximately 50,000 lpy. In addition, because of the overcrowding in the hazardous waste storage areas, some reagents which normally are collected for disposal are being flushed to the sanitary sewer. However, the rate of discharge of these materials to the sanitary sewer is not in excess of the amount permissible under RCRA regulations (EPA, 1982b).

Prior to 1980, no centralized hazardous waste management system existed. Reagents and some solvents were discharged to the sanitary sewer. The quantities did not exceed the amounts which now are permitted under RCRA regulations. Also prior to 1980, infectious waste was not adequately segregated from other solid waste, as described in Sec. 3.1.14.

Precious metal recovery was not instituted until 1982 for the photographic laboratory wastes. Prior to that time, photographic wastes were discharged to the sanitary sewer. Although the major generators of waste photographic solutions now participate in a silver recovery

program, during the site visit it was noted that silver recovery is not performed on solutions generated by the USAIDR X-ray unit, the AFIP photographic laboratory, or the Arts and Crafts Shop. WRAMC should consider collecting the solutions from these sources and including them in the silver recovery program.

3.1.9 TESTING

No materiel proof and surveillance testing activities have occurred at WRAMC, Forest Glen, or Glen Haven.

3.1.10 TRAINING AREAS AND RANGES

With the exception of the former indoor ballistic pistol range, which was demolished in 1980, no ranges have ever existed at WRAMC or its noncontiguous sections. No outdoor training activities have occurred at WRAMC or its noncontiguous sections. Training activities at WRAMC are limited to classroom and clinical instruction. Field training activities associated with WRAMC personnel are held at Fort Hill and Fort Pickett in Virginia.

3.1.11 TOXIC/HAZARDOUS MATERIALS--HANDLING AND STORAGE

Pesticides

Pesticides used at WRAMC are under the control of DFAE, Building and Grounds Section, and are stored at Bldg. 602, Forest Glen. This storage area conforms to the guidelines recommended by USAEHA and EPA.

PCBs

PCB-containing transformers are currently in use at WRAMC. Out-of-service transformers are drained at the service site, and the fluid is disposed of by a licensed hazardous waste contractor. The transformer carcass is taken to Fort Belvoir, Va., for disposal by DPDO. Items were last disposed of in 1982 under a contract with American Electric Co., located in Jacksonville, Fla. Transformers are not stored at WRAMC.

Chemicals

Waste reagents, overage chemicals and pharmaceuticals, and solvents are generated in quantities of approximately 50,000 lpy in the research and chemical activities of WRAMC and Forest Glen. These are disposed of by contract to a licensed hazardous waste transporter/disposer. As a result of a contract dispute, however, waste chemicals have been stored at WRAMC and Forest Glen for more than 90 days, which is in violation of RCRA.

In the past (prior to 1980), waste reagents were flushed to the sanitary sewer. Although the quantities were not in excess of the maximum allowable based on total sewage flow, it was recommended that waste reagents as well as overage chemicals be contract hauled to a hazardous waste landfill.

No problems were observed regarding the handling and storage of chemicals used in research and clinical activities.

Radiological Materials

Extensive use of radiological materials occurs at WRAMC and Forest Glen as a result of clinical and research activity by WRAMC, WRAIR, and AFIP. Isotope use and storage at WRAMC and Forest Glen are controlled by the Health Physics Office. Three NRC licenses and one DA Authorization are held by WRAMC. Isotope use appears to have been approximately the same for the past 10 years. Since 1978, isotopes were received and stored at two locations on Forest Glen. Prior to that time, materials were stored and handled at WRAIR (Bldg. 40) and the isotope laboratory (Bldg. 1) on the Main Section. WRAMC is licensed to possess over 50,000 Ci of isotopes, including sealed sources of cobalt-60 and cesium-137, 400 kg of uranium, and 5 kg of thorium. Generally, 10 to 40 percent of the allowable limits of radioisotopes are the maximum possessed by WRAMC. No possession in excess of limits has been reported. Radiological materials are used in 80 laboratories at WRAMC, Forest Glen, and at

offpost locations (USAIDR, Fort Meade, Md.; and USAMRIID, Fort Detrick, Md.). All are under surveillance of the Health Physics Office.

In the past, WRAMC has also been licensed to handle small amounts of plutonium. Two nuclear reactors have existed at WRAMC and Forest Glen for research purposes. The first was located in Bldg. 40, Main Section, in WRAIR and operated from 1961 to 1972. The second was located at Bldg. 516, Forest Glen. This facility (DORF) was operated from 1961 to 1977 by Harry Diamond Laboratories and time shared with WRAIR and WRAMC. Both reactors were decommissioned, and fuel, wastes, and irradiated components disposed of off the installation in accordance with NRC regulations.

Current handling, storage, and monitoring of radiological materials comply with NRC regulations. Radioactive waste is stored in Bldg. 516, Forest Glen. Reportedly, one-hundred ninety 55-gal drums of compacted solid and liquid waste are shipped to Hanford Engineering, Richland, Wash., for ultimate disposal. Limited quantities, less than 90 mCi/yr, of total radioactive materials are released by WRAMC activities. This is approximately 1 percent of the maximum allowable environmental releases.

No spills or releases of radiological materials have occurred as a result of reactor operation or isotope use at WRAMC, Forest Glen, or other WRAMC-related activities which would result in environmental contamination.

Agents

No record was found of the manufacture, storage, or use of lethal CB agents or munitions at WRAMC, Forest Glen, or Glen Haven.

3.1.12 POL HANDLING AND STORAGE

POL handling and storage at WRAMC are primarily through underground storage tanks and, to a lesser extent, either 55-gal drums or 275-gal

aboveground tanks. The WRAMC SPCC/ISCP Plan has been in effect since 1977; reportedly, no major spills have occurred at WRAMC. The underground tanks at WRAMC are pressure tested on an irregular basis.

3.1.13 INDUSTRIAL WASTEWATER TREATMENT

Industrial wastewaters are generated at the vehicle maintenance shops, boiler plants, laundry facilities, printing shops, and office machine repair shop at WRAMC. No toxic or hazardous wastewaters are generated at WRAMC. Most industrial wastewaters are discharged to either the D.C. or WSSC sanitary sewer systems. WRAMC is not required to have NPDES permits for its discharge to the sanitary sewer systems.

The degreasing operation at the DFAE vehicle maintenance shop (Bldg. 601 at Forest Glen) consists of steam cleaning with the wastewater discharge flowing to the storm sewer system. The discharge of an industrial wastewater to a storm sewer requires NPDES permits; WRAMC has no NPDES permits. It is recommended that this discharge be connected to the sanitary sewer system, thereby eliminating the need for an NPDES permit.

In addition, the wastewaters generated at the wash rack area at WRAMC (Bldg. 82) flow into the storm sewer system. This discharge is not in compliance with NPDES permit requirements. It is recommended that this discharge be connected to the sanitary sewer sytem, thereby eliminating the need for a permit.

3.1.14 CONTAMINATED WASTES

Contaminated wastes, consisting of human pathological wastes, animal carcasses and bedding, and infectious wastes are disposed of in accordance with the DFAE Hazardous Waste Management Program. Human pathological wastes are frozen and sent to Fort Detrick, Md., for incineration. Animal carcasses and wastes are incinerated at Bldg. 511, Forest Glen. Infectious wastes [approximately 90 cubic yards per week (yd^3/week)] are segregated from noninfectious solid wastes and

contract-hauled to the Montgomery County, Md. incinerator for disposal by a certified hazardous waste transporter.

Prior to 1976, infectious wastes were not adequately segregated from noninfectious waste. Infectious wastes from WRAMC and Forest Glen were disposed of in four municipal landfills and at two incinerators.

3.1.15 DEMOLITION AND BURNING GROUND AREAS

Records searched did not indicate the past or current existence of any demolition or burning ground areas on WRAMC, Forest Glen, or Glen Haven.

3.1.16 WATER QUALITY

With the exception of three small tributaries to Rock Creek which originate in the undeveloped areas of Forest Glen, no surface water occurs at WRAMC. At Forest Glen, stormwater discharges into these streams then flow to Rock Creek. All runoff is conveyed by means of storm sewers to Rock Creek from the Main Section. Glen Haven is located in the Sligo Creek Drainage Basin.

No recent water quality data exist for Sligo or Rock Creeks nor for the tributaries located on Forest Glen. No adverse impacts as a result of installation operations are expected except for those associated with stormwater discharge. At the Main Section and Glen Haven, the runoff water quality would be typical of the surrounding urban area, and the quantities of pollutants discharged would be insignificant compared to the loading from other sources. At Forest Glen, stormwater quality would be expected to be better than the surrounding area as a result of the low intensity of development at Forest Glen compared to the surrounding area. Impacts to surface water quality by WRAMC are insignificant; however, the general water quality of Rock Creek and Sligo Creek is degraded by urban runoff.

Ground water is scarce and not developed in the area of WRAMC. No ground water quality data exist. Operations at WRAMC, Forest Glen, and Glen Haven are not expected to impact ground water quality.

WRAMC, Forest Glen, and Glen Haven receive treated water from D.C. and WSSC. Currently, potable water meets all primary and secondary drinking water regulations.

3.1.17 AIR QUALITY AND NOISE

WRAMC is located in the National Capital Interstate AQCR. Air quality in the area is marginal due to high levels of CO, nonmethane HC, and photochemical oxidants. These high levels have been attributed to the high number of motor vehicles in the area surrounding WRAMC.

There are 17 emissions sources (1 incinerator and 16 boilers) which require permits. Permit requirements are currently being met at WRAMC and Forest Glen, and no problems are associated with emission sources.

Noise sources include rotary-wing aircraft, vehicles, and fixed and portable generators. These sources do not significantly impact the surrounding community.

3.1.18 LANDFILLS

WRAMC

Records searched did not indicate that any landfills or disposal areas had ever existed on the Main Section. Prior to 1966, WRAMC reportedly had an onsite crew to collect solid waste. Since 1966, solid waste disposal activities have been contracted, with Browning-Ferris Industries being the current contractor.

Forest Glen

During the period 1951-1970, four separate areas on Forest Glen were used for landfill or disposal operations. A waste incinerator was in use onpost between 1957 and 1970. Residues of construction rubble,

roots, stumps, leaves, and incinerator ash were discovered when building foundation borings were made in 1972 in the area where the main commissary is currently located. No major problems were noted with these landfill areas, however. Erosion at the site of the current helipad has been alleviated through terracing and planting grass. A private contractor, Browning-Ferris Industries, currently collects sanitary waste onpost.

Glen Haven

Records searched did not indicate that any landfill or disposal areas had ever been located at Glen Haven. A private contractor, Browning-Ferris Industries, currently collects sanitary waste onpost.

3.1.19 RCRA STATUS

WRAMC filed as a generator and transporter of hazardous materials in 1980 and received EPA Notification No. DC4210021156. As previously described, the installation also initiated a hazardous waste disposal program whereby wastes generated by the various activities (e.g., WRAIR, AFIP, and the hospital) are collected and stored at specified locations by these activities. These items are scheduled to be removed periodically by a certified hazardous waste contractor in order to comply with Federal regulations (EPA, 1982b). Currently, WRAMC and the hazardous waste contractor reportedly are involved in a contract dispute, and wastes have been stored for more than the allowable 90 days while awaiting disposal. In the interim period, some small quantities of hazardous wastes reportedly have been disposed of in dumpsters with other sanitary refuse. WRAMC needs to resolve the contract dispute or find some other acceptable mechanism for the disposal of toxic/hazardous materials.

In addition, a RCRA compliance inspection was performed by D.C. in September 1983. Several deficiencies, as described in Sec. 2.2.6, were noted. WRAMC reportedly is taking corrective actions concerning these deficiencies.

3.2 CONCLUSIONS

1. Available geologic evidence and information on contaminant sources do not indicate the offpost migration of contaminants via surface or subsurface waters at WRAMC, Forest Glen, or Glen Haven.

2. The following practices for handling materials or waste disposal are not in compliance/conformance with designated regulations/guidelines:
   a. Toxic/hazardous wastes are being stored in excess of the 90 days allowable under U.S. Environmental Protection Agency Regulations (EPA, 1982a).
   b. Wastewater discharges from the steam cleaning operation (Bldg. 601) and the wash rack (Bldg. 82) enter stormwater drainages and have not been permitted in accordance with NPDES.
   c. The disposal of wipe rags contaminated with toxic wastes along with nonhazardous solid waste is in violation of Resource Conservation and Recovery Act regulations.
   d. The mixing of carbon tetrachloride with waste oil makes the resulting mixture a hazardous waste (EPA, 1982b).

3. While the use of carbon tetrachloride as a degreasing agent by the Directorate of Industrial Operations motor pool is allowed by National Institute for Occupational Safety and Health/ Occupational Safety and Health Administration regulations, nonhazardous substitute solvents are available (NIOSH/OSHA, 1978).

3.3 RECOMMENDATIONS (KEYED TO CONCLUSIONS)

That the U.S. Army Toxic and Hazardous Materials Agency should:

1. Not conduct a survey at this time.

That WRAMC should:

2. a. Bring the hazardous waste program into compliance with U.S. Environmental Protection Agency regulations, and
   b. Consider eliminating the need for National Pollutant Discharge Elimination System permits by connecting these wastewater sources to the sanitary sewer system.
   c. Properly dispose of the wipe rags which are contaminated with toxic materials.
   d. Avoid contamination of waste oils with any substance which could cause them to be classified as hazardous wastes.

3. Consider replacing carbon tetrachloride with a less hazardous solvent or institute a monitoring program to ensure that atmospheric levels do not exceed concentrations allowed by occupational health regulations.

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APPENDIX A

OUTGRANTS FOR THE MAIN SECTION, FOREST GLEN, AND GLEN HAVEN, WRAMC

Source: WRAMC, Real Estate Office, 1983.

REPORT OF COMPLIANCE INSPECTION - OUTGRANTS	INSTALLATION OR PROJECT AND LOCATION: WALTER REED ARMY MEDICAL CENTER	DISTRICT: BALTIMORE	DATE OF INSPECTION: 17 March 1983

TYPE OF INSTRUMENT	CONTRACT NUMBER	GRANTEE	PURPOSE	TERM		RENTAL		CORRECTIVE ACTION RECOMMENDED	
				FROM	TO	AMOUNT	PER	YES	NO
Permit	DA-49-080-ENG-4478	District of Columbia	Construction of side-walks in connection w/Georgia Ave.	10 Feb 1977	Indefinite	NONE			X
Lease	DACA-31-1-79-351	Rigge National Bank	Rooms in Bldg. No. 1 for use as banking facilities w/rights of ingress & egress (2510 sq. ft)	1 Sept 1979	31 Aug 1984	$6524	A		X

REPORT OF COMPLIANCE INSPECTION - OUTGRANTS	INSTALLATION OR PROJECT AND LOCATION: WALTER REED ARMY MEDICAL CENTER (Forest Glen)	DISTRICT: BALTIMORE	DATE OF INSPECTION: 17 March 1983

TYPE OF INSTRUMENT	CONTRACT NUMBER	GRANTEE	PURPOSE	TERM		RENTAL		CORRECTIVE ACTION RECOMMENDED	
				FROM	TO	AMOUNT	PER	YES	NO
Easement	DA-18-020-ENG-3714	Washington Suburban Sanitary Commission	R/W for sanitary sewer line	3 June 1965	2 June 2015	None			X
Easement	DA-49-080-ENG-4806	Washington Suburban Sanitary Commission	R/W 12" sewer line	19 April 1960	18 April 2010	None			X
Easement	DACA-31-2-68-32	Washington Suburban Sanitary Commission	Outfall sewer in NW corner Forest Glen section	24 Nov 1967	23 Nov 2017	None			X
Permit	DACA-31-4-68-116	National Institute Health	To construct & maintain a tri-service incinerator for use by WRAMC National Health & National Naval Medical Centers	27 Mar 1968	Indefinite	None			X

REPORT OF COMPLIANCE INSPECTION - OUTGRANTS

INSTALLATION OR PROJECT AND LOCATION: WALTER REED ARMY MEDICAL CENTER (Forest Glen)

DISTRICT: BALTIMORE

DATE OF INSPECTION: 17 March 1983

TYPE OF INSTRUMENT	CONTRACT NUMBER	GRANTEE	PURPOSE	TERM		RENTAL		CORRECTIVE ACTION RECOMMENDED	
				FROM	TO	AMOUNT	PER	YES	NO
Lease	DACA-31-1-73-50 S/A #2	Peoples National Bank of Md.	1806 sq. ft. space in Bldg. 161	20 Mar 1972	14 Sept 1985	$11,739	A		X
Easement	DACA-31-2-76-250	Dept. Transportation Montgomery County, Md.	Widening Brookeville Road (Forest Glen)	16 Feb 1977	Indefinite	None			X
Easement	DACA-31-2-76-371	Washington Gas Light Company	Installation & maintenance of gas lines	12 Dec 1975	11 Dec 2005	None			X
Easement	DACA-31-2-78-296	Montgomery County DOT	R/W bike path	21 Nov 1978	20 Nov 1993	None			X
Easement	DACA-31-2-80-569	Potomac Electric Power Company	R/W constructions operation, maintenance of electric poles & overhead power lines	2 June 1980	2 June 2030	$640.00	T		X
License	DACA-31-3-82-178	Teletronic Industrial Systems, Inc.	To remove & replace 40 feet chain link fence	1 Sept 1982	6 Sept 1983	None			X

REPORT OF COMPLIANCE INSPECTION - OUTGRANTS

INSTALLATION OR PROJECT AND LOCATION: WALTER REED ARMY MEDICAL CENTER (Glen Haven)

DISTRICT: BALTIMORE

DATE OF INSPECTION: 17 March 1983

TYPE OF INSTRUMENT	CONTRACT NUMBER	GRANTEE	PURPOSE	TERM		RENTAL		CORRECTIVE ACTION RECOMMENDED	
				FROM	TO	AMOUNT	PER	YES	NO
Easement	DA-49-080-ENG-4481	Washington Suburban Sanitary Commission	R/W sanitary sewer line	17 Dec 1952	16 Dec 2002	None			X
Easement/ Consent	DA-18-020-ENG-1914	Washington Suburban Sanitary Commission	R/W water pipeline 225 ft., sewer line install/ operation maintenance, repair, replacement or removal	14 June 1963	Indefinite	None			X

The outgrants listed above have been visually inspected and noted particularly as to maintenance, repair, condition of property, utilization, additions or alterations, and for any unauthorized use, transfer or assignment of interest. The grantees are complying with the terms of the respective instruments in all cases which show no corrective action recommended (cases shown as recommending corrective action, indicate noncompliance in some respects, and a separate report on ENG Form 3131 is attached).

REPORT APPROVED (Signature of Chief, Real Estate Division)

David J. Caruso

DAVID J. CARUSO, Chief, M&D Branch

SIGNATURE OF INSPECTOR

Ruth M Cropf

Ruth M Cropf

INSPECTED WITH (If Applicable)

NAME	TITLE	TELEPHONE NO.
Wm. Blivens	Real Property Officer	202-576-2643

ENG FORM 3560
1 MAY 62

011848

SHEET 4 OF 4

A-4

APPENDIX B

ITEMS STORED IN WRAIR HAZARDOUS WASTE BUNKERS, WRAMC

Source: WRAMC, 1983a.

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO.

WRAIR

REFERENCE OR OFFICE SYMBOL	SUBJECT
SGRD-UWM-A	Hazardous Waste Disposal at Forest Glen

TO Helen Settles | FROM SP4 Irv Rollman | DATE 5 Sep 83 | CMT 1

1. Two cases, each containing the following items, have been entered into the bunker.

2. The first case contains:
   5 bottles (25ml, 200ml, 300ml, 400ml, 2L-values approximate) unknowns.
   1 bottle(500ml) Boron triflouride ethyl ether (95%)
   1 bottle(500ml solid) m-Chloroperbenzoic acid (95%)
   1 lecture bottle Ethylaluminum dichloride
   2 lecture bottles Hydrogen chloride
   1 lecture bottle Hydrogen sulfide
   2 lecture bottles unknowns

3. The second case contains:
   1 bottle(appx. 3 qt.) n-Amyl alcohol (95%)
   1 bottle(1 gal.) Ethylene glycol monobutyl ether (95%)
   1 bottle(appx. 2kg) 1,2-Dimethoxane (95%)
   1 bottle(1 kg) Bis(2-methoxyethyl) ether (95%)

4. In addition, there is a 5 gallon drum containing approx. 3 gal. of Ethylene chloride (95%).

5. These items are from the Department of Medicinal Chemistry, Division of Experimental Theraputics, WRAIR (Bldg. 500).

	SP4 Irvin J. Rollman	2 SEP 83

DISPOSITION FORM

For use of this form, see AR 340-15, the proponent agency is TAGO.

REFERENCE OR OFFICE SYMBOL	SUBJECT
SGRD UWC D	CHEMICAL WASTE MANIFEST FOR PICK UP.

TO: Facilities Engineers
Attn. Mr. Armand Thomas

FROM: C. Services Department
Ruth V. Ault

DATE: 10 Nov. 1983

CMT 1

Settles/hs/65029

1. Attached in an addition to the previous manifests I have forwarded to you for waste pick-up.

2. Chemical waste pick-up per our fonecone was to to have been every two weeks. We have not had a pick up since Sept. 12, 1983.

3. Request a definite date for chemical waste pick up be arranged with the contractor.

Helen Settles for
Ruth V. Ault
C. Services Department

Enclosures (2)

11/17/83- copy to Mr Thomas says never got

10 Nov. 1983

manifest of waste chemicals, Building 40, WRAIR

1 pound Mercury, metal, 1 lb bottle
1 pint Acetone, 1 pint size bottle
200 ml toluene, 200 ml size bottle
4 gallons waste, 75% toluene, 5% acetone, 5% xylene, 1 gallon size bottles
2 quarts waste, 75% toluene, 5% acetone, 5%xylene, quart size bottles
350 ml Hematoxylin, 500 ml size bottle
48 oz May-Gruenwald Stain, 16 oz bottles
350 ml superoxal, 500 ml size bottle
100 ml wright's stain, 100 ml size bottle
1 pt benzidine, 1pt size bottle
75 ml phenylmethanol sulfonyfluoride, 250 ml size bottle

Items to be picked up from Building 189, FG POC Jacob Karen, 427 5521

Potassium Chloride, 3N	2 liter bottle	1 liter
Xylene	2 liter bottle	1 liter
toluene	1 gal bottle	1 gallon
methanol	1 pt bottle	1 pint
xylene	1 pt. bottle	22 pints
chloroform	1 pint bottle	15 pints
hydrochloric acid	1 pint bottle	2 pints
phenol	1 pint bottle	1 pint
acetic acid	1 pint bottle	1 pint
sodium dichromate	1 pint bottle	1 pint
ammonium hydroxide	1 pint bottle	1 pint
acetone	1 pint bottle	1 pint
formalin, buffered	300 ml bottle	300 ml
sodium carbonate	1 lb "	1 lb
sodium dichromate	1 lb "	2 lbs.
polyvinylpyrolidone	2 lb "	2 lb
cupric sulfate, crystals	1 lb bottle	7 lb
saponin	1 lb	2 lbs
propyl P Hydroxylbenzoate	1 lb	1 lb
methyl P Hydroxybenzoate	1 lb	100 gms
calcium chloride, injectable	cc	8
epinephrine injectiable	cc	9 boxes
polyethylmethaexylate	5 gal	5 gal.
Unknowns to be evaluated		
unknown waste	1 pt bottle	1 pint
CARR-PRICE Reagent	4 oz	4 oz.
Unknown	2 oz	2 oz

Items to be submitted for pick up from Building 40, WRAMC

Sulfuric Acid	liter bottle	5 liters
Mercury, metal	lb	1 lb
sodium fluroide,	5 lb bottle	5 lbs.
waste oil	gal bottle	3 gal
xylene waste c̄ 25% EtOH	5 gal can	5 gal
potassium dichromate	9 lb bottles	4 bottles
potassium dichromate	9 lb bottles	1 bottle
sulfuric acid	9 lb bottle	1 bottle
potassium dichromate	gal bottle	2 gallons
Aquasol (xylene, 75 %)	pint bottle	1 pint
hydromix (xylene, 75 %)	gal bottle	1 gal

waste to sampled, unknown

scintiverse,	gallon bottle	6 gallons
PCS Solublizer	pint bottle	1 pint
PBS, 10X	pint bottle	200 ml

DISPOSITION FORM

For use of this form, see AR 340 15, the proponent agency is TAGO

REFERENCE OR OFFICE SYMBOL	SUBJECT
SGRD UWC D	Transmittal of Documentation

TO: DFE
Attn: Mr. Armand Thomas

FROM: WRAIR
Logistics Division
Chief, Services Dept.

DATE: 21 NOV 1983
Settles/ 6 5029

CMT 1

The attached manifest for hazardous chemical waste needs to be picked up per the hazardous waste contract with WRAMC.

Ruth V. Ault
Chief, Services, Department

CMT 2

TO: Logistics Division
Services Department

Receipt of the attached manifest documentation is acknowledged.

(signature)

DA FORM AUG 80 2496 PREVIOUS EDITIONS WILL BE USED U.S. GOVERNMENT PRINTING OFFICE 1982-372-711

DISPOSITION FORM

For use of this form, see AR 340-15, the proponent agency is TAGO.

REFERENCE OR OFFICE SYMBOL	SUBJECT
SGRD UWC D	Transmittal of Documentation

TO DFE
ATTN: Mr. Armand Thomas

FROM WRAIR
Logistics Division

DATE 17 Nov. 1983
Settles/HS?6 5029

CMT 1

The attached manifest for hazardous chemical waste is in reply to your fonecone of 11/16/83. These are duplicates of previously submitted manifests which you state you did not receive.

Ruth V. Ault
Chief, Services Department

TO: Logistics Division
Services Department

FROM

Date

CMT 2

Receipt of the above/attached items documentation is acknowledged.

(signature)

DA FORM AUG 80 2496

PREVIOUS EDITIONS WILL BE USED

U.S. GOVERNMENT PRINTING OFFICE 1982-372-711

WRAIR, BUILDING40 MANIFEST 21 Nov. 1983

unit of issue	quantity	chemical/concentration
liter.	5 liters	sulfuric acid
lb	1 lb	mercury
5 lb	5 lb	sodium fluoride
1 gal	1 gal	waste oil

WRAIR, Building 40 hazardous chemical manifest 21 Nov. 1983

Unit of Issue	Quantity	Chemical /concentration
gal. can	2½ gal	methyl methacrylate, 35 pp. BHT
pint	6 pints	benzene
pound	1 pound	phenol, USP
4 oz	118 ml	hydrazine hydrate, 85%
pint	104 gm	N,N.-Dimethyl-P-toluidine, 5% araomatic amine
pint	258 gm	methyl methacrylate
kg.	3/4 full	styrene
kg.	1/2 bottle	vinyl acetate, stabilized
½ lb	½ lb	potassium iodate, 80%
gal	1 gal	methyl 45%, formaldhyde 55%
oz	3 oz,22gm	thymol iodine, pure
oz	1 oz	dimethyl glyoxine
lb	1 lb	potassium ferricyanide, 81%
lb	1/2 jar	sodium dichromate, technical grade
grm	50 gm	stannous fluoride
grm	10 gm	dithizone, 85%
lb	1/4 bottle	manganese dioxide 99.79%
2 lb	1 bottle	silane
lb	1 lb	nichel chloride, 66%
lb	1 lb	sodium chromate 86%
lb	1 lb	sodium dichromate, technical
lb	1 lb	animal charcoal
4 oz	4 oz	potassium chromate 78%
4 oz	1/4 bottle	lead dioxide 96.1%
4 oz	8 oz	benzoyl peroxide
lb	1 lb	potassium bisulfate, 36%
pint	pint	2 butyne 1, 4 diol
lb	1 lb	sodium bisulfate 35.7%
pint	500 gm	toluene sulfonic acid

liquid

powder

pint	5 pints	methyl salicylate, synthetic
pint	300 cc	methyl salicylate, synthetic
pint	4 pints	sodium hydrosulfite anhydrous, 88%
lb	1 lb	sodium peroxide 96.9%
lb	1 lb	phosphorus penytoxide, 99.3%
lb	3 lbs	butyl alcohol
pt	170 gm	cupric sulfate
oz	4 oz	phorphorus pentoxide
lb	1 lb	barium nitrate
lb	1 lb	stannic oxide
lb	2 lb	lemon oil
oz	2 oz	phenolphthalen, 0.02%, 95% methanol
lb	½ lb	lanthanum nitrate
oz	1 oz	mercurous nitrate
4 oz	4 oz	cuperic oxide
lb	½ lb	potassium biphthalate, 99.9%
oz	4 oz	cobalt oxide
lb	1 lb	lead oxide
oz	4 oz	zirconium oxide

SYMBOL OR OFFICE	SUBJECT
) UNC	Chemical waste pick up

TO	FROM	DATE	CMT 1
D[illegible]	WRAIR	3 Oct 1983	
Attn: Mr. Armand Thomas	Safety Office		

1. Request that the items on the attached list be submitted to the contractor for pick up under the chemical waste contract.

2. Point of contact for these items is Helen Settles, WRAIR, Safety Office, 6 5029

Helen Settles
WRAIR
Safety Office

, Copy sent 11/19/83 / Mr. Thomas request says never got this one.

DA FORM AUG 80 2496 PREVIOUS EDITIONS WILL BE USED

3 October 1983

WRAIR- BUILDING 40 Main post

Hazardous waste to be picked up

Unit of Issue	Amount/concentration	chemical
1 pt	6 pts	Methonol, 66%, Chloroform, 33%
100 gm	100 gm	Piperidine, 98%
gallon	9 gallons	Potassium dichromate (3½ gallons relabeled from last manifest)
5 gallon	10 gallons	formalin, 10%
4 oz	1 oz	Mercury metal, 100%
5 gal	5 gal drum	xylene, 100%
4 liters	4 liters	toluene, 100%
4 liter	2½ liters	acetone, 100%
½ gal	½ gal	Nitric acid, 100%
pint	pint	Nitric acid, 100%
pint	pint	trichloracetic acid, 100%
½ gal	700 ml	nitric acid, 100%
1 gal	1 gal	sulfuric acid, 100%
pint	400 ml	sulfuric acid, fuming, 100%
pint	400 ml	sulfuric acid, 100%
pint	250 ml	phosphoric acid, 100%
pint	400 ml	acetic acid, 100%
pint	250 ml	hydrochloric acid, 100%
½ gal	400 ml	hydrochloric acid, 100%
pint	1 pint	formic acid, 100%
100 ml	75ml	Potassium hydroxice, 100%
pint	1 pt	xylene, 100%
pint	3/4 pint	xylene, 100%
quart	1 quart	CH_3OH 66%, MeOH, 33%
quart	1 pint	tetramethylene diazo, 100%
½ lb.	½ lb	butylalcohol, 100%
liter	250 ml	trichloracetic acid, 100%
gms, 100	100 gm	2 mercaptoehtanol, 100%
1 pint	1 pint	phenol reagent, 100% contains, Lithium sulfate, soldium tungstate, sodium molybdate, phosphoric acid, HCL, bromine
1 pint	1 pint	DMSO Dimethyl sulfoxide
500 ml	100 ml	xylene, 100%
250 ml	250 mol	Fryite, from previous manifest

Building 40 WRAIR 3 October 1983

Hazardous waste for incineration

unit of issue	amount	chemical/concentration
5 gal	10 gallons	formalin, 10%
5 gal drum	2 drums (15 Gal)	xylene, 100 %
lb bottle	2 lbs	parloidin

3 October 1983

HAZARDOUS WASTE PICK UP AT FOREST GLEN

Unit of issue	Amount	Chemical/concentration
500 ml	500 ml	boron trifluoride ethyl ehter, 95%
500 ml	500 ml (solid)	m chloroperbenzoic acid, 95 %
quart	3 quarts	n amyl alcohol, 95%
gallon	1 gallon	ethylene glycol monobutyl ether, 95%
2 kg	2 kg	1,2, dimethoxane, 95%
1 kg	1 kg	Bis(2-methoxyethyl) ether, 95%
5 gal drum	3 gal	Ethylene Chloride, 95%
gallon	20 gallons	waste containing: Methanol 25-43% acetonitrile15-30% water 25-43%

3 October 1983

Hazardous Waste, Forest Glen

UNKNOWNS, Please sample or pick up for incineration as applicable.

Unit of issue	amount	chemical concentration
gallon	5 gallons	unknown
gallon	3 gallons	unknown (may be isoamyl alcohol)
2000 ml	2000 ml	unknown
500 ml	3 bottles	unknown
300 ml	1 bottle	unknown
200 ml	1 bottle	unknown
25 ml	1 bottle	unknown
400 ml	1 bottle	unknown
1000 ml	1 bottle	unknown
400 ml	1 bottle	unknown
500 ml	1 ml	unknown (acid?)
200 ml	3 bottles	unknown

10 Nov. 1983

Manifest of chemicals at Forest Glen, WRAIR to be picked up as waste.

2 gallons chloroform, 95%, 1 gallon size bottle
1 gallon dichloromethane, 95%, 1 gallon size bottle
1 gallon petroleum ether, 95%, 1 gallon size bottle

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO.

REFERENCE OR OFFICE SYMBOL	SUBJECT
SGRD-UWM-A	Hazardous Waste Disposal at Forest Glen

TO	FROM	DATE	CMT 1
H.P. Settles Log Div, WRAIR	Dept Med Chem, B.T. Poon	12 Sep 83	

1. One box of 4 1-gallon bottles is ready for pick-up. Top of box is dated 9 Sep 83.

2. Liquor contains mainly methanol (range 25-43%), water (25-43%) and acetonitrile (15-50%); small amounts of 1-heptanesulfonic acid, butylamine and phosphoric acids; and traces of other components.

3. These four bottles, in one box, are from the Dept of Medicinal Chemistry, Div. of Experimental Therapeutics.

BT Poon 12 Sep 83

BING T. POON, Ph.D.
Dept of Medicinal Chemistry
Div. of Experimental Therapeutics

DA FORM AUG 80 2496 PREVIOUS EDITIONS WILL BE USED U.S. GOVERNMENT PRINTING OFFICE: 1982-372-711

APPENDIX C

TYPICAL DISPOSITION FORMS AND WASTE MANIFEST FOR WASTE CHEMICAL DISPOSAL, WRAMC

Source: WRAMC DIO, 1981.

MANIFEST DOCUMENT NO. A 82124

0 0 09 5 0 1

ARMY MEDICAL

MD

WPL

Acid

Inorganic Solid

Organic Solid

(OEP USE ONLY) L02 WASTE PACKED LAB CHEMICALS

WASTE DESCRIPTION

23 81

9 2 3 5 9 2

8 1 A 0 5 3 5

4 9 2 3 3 4 2

(OEP USE ONLY)

L LIQUID
S SOLID

GALLONS

ENTER APPLICABLE CODE
P % BY WEIGHT
M MILLIGRAMS/LITER

POISON B SOLID UN2810 KCF DR T NONE

Generator's EPA I.D. No.: M D D 0 7 4 9 2 3 3 9 2

Certification Number: 8 1 4 0 5 3 5

Facility EPA I.D. No.: M D D 0 7 4 9 2 3 3 9 2

G-GAS, L-LIQUID, S-SOLID

T-TONS, G-GALLONS, Y-YARDS, P-POUNDS

Shipping Name			Quantity	Unit		Container		
SEE ATTACHED LISTING		S	2400	P	40	DR		
Flammable Liq NOS (Soil containing of Waste Trichloro solvents)	UN 1993	L	4600	P	117	OT	I	0031
TOTAL			7180		157	DR		

Date: 5-19-84

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION AND THE EPA AND STATE ENVIRONMENTAL PROGRAMS.

Area Code: 301

REQUEST FOR ISSUE OR TURN-IN
(AR 710-2)

ISSUE	TURN-IN	SHEET NO	NO SHEETS
	XX	1	2

3. REQUEST NO
4. VOUCHER NO

1. SEND TO: D I O, WRAMC, F.GLEN
5. DATE MATERIEL REQUIRED
6. DODAAC
7. PRIORITY
8. ACCOUNTING/FUNDING DATA

2. REQUEST FROM: LOGISTIC DIV AFIP
9. END ITEM IDENT
9a. NAME/MANUFACTURER
9b. MODEL
9c. SERIAL NO

* CODE — ISSUE: I—Initial; R Replacement — TURN-IN: FWT-Fair Wear And Tear; RS—Report of Survey; EX—Excess; SC—Stmt of Charges
10. PUBLICATION
11. JOB ORDER NO

	12. ITEM NO a	STOCK NO b	ITEM DESCRIPTION c	UNIT OF ISSUE d	QUANTITY e	CODE* f	SUPPLY ACTION g	UNIT PRICE h	TOTAL COST i	POSTED DATE	POSTED BY
X-1	1	#	Acetone	Pt	½						
	2		N-Butanol	Pt	3/4						
	3		Etny Acetate	Pt	½						
	4		Butyl Acetate	Pt	1						
	5		Methyl Methacrylate	Pt	3/4						
	6		Methyl Propaionate	Pt	½						
	7		Ethyl Propionate	Pt	1						
	8		Toluene	Pt	3/4						
	9		Tetrahydrofurfuryl Alcohol	Pt	½						
	10		Hyamine Hydroxide	Pt	2						
	11		NCS-Reagent	Pt	1						
	12		Ethylene Diamine	Bt	1						
	13		Acetaldehyde	Bt	1						
	14	6505-113-9000	Chloroform	Bt	2						
	15	6505-753-4775	Chloroform	Bt	2						
IX#2	16		SEC-Buthyl Alcohol	Bt	2						
	17		Buthyl Alcohol ISO	Bt	1						
	18		Buthyl Alcohol Normal	Bt	1						
IX3	19		CHLOROFORM ANALYZED REAGENT	Bt	1						
	20		2-Propanol	Bt	2						
	21		Butyl Alcohol	Bt	2						
	22		Ethyl Butyrate	Bt	1						
	23		Ethylbenzine	Bt	1						
IX4	24		Phenol Liquefied	Bt	2						
	25		Acetic Acid	Bt	1						
IX5	26		Dimethy Formamide	Bt	2						
	27		Diethylamine	Bt	1						
	28		Triton-X100	Bt	1						
	29		Propanediamine	Bt	1						

SHEET TOTAL — GRAND TOTAL

13. ISSUE/TURN-IN "QUANTITY" COLM IS REQUISITED — DATE 2-5-81 — BY [signature]
14. ISSUE QTY IN "SUPPLY ACTION" COLUMN — DATE 1/1410 — BY [signature]
15. REC. QTY IN "SUPPLY ACTION" COLUMN — DATE — BY

(AR 710-2) | XX TURN-IN | NO 2 1 | SHEETS 2

1. SEND TO:	5. DATE MATERIEL REQUIRED	6. DODAAC	7. PRIORITY	8. ACCOUNTING/FUNDING DATA
DIO, WRAMC, F. GLEN				

2. REQUEST FROM:	9. END ITEM IDENT	9a. NAME/MANUFACTURER	9b. MODEL	9c. SERIAL NO
LOGISTIC DIV AFIP				

* CODE ISSUE: I—Initial, R—Replacement
TURN-IN: FWT-Fair Wear And Tear, RS—Report of Survey, EX—Excess, SC—Stmt of Charges

10. PUBLICATION

11. JOB ORDER NO

	12 ITEM NO a	STOCK NO b	ITEM DESCRIPTION c	UNIT OF ISSUE d	QUANTITY e	CODE* f	SUPPLY ACTION g	UNIT PRICE h	TOTAL COST i	POSTED DATE	POSTED BY
BX-6	1		Tolune	Bt	3						
	2		Ethyl Acetate	Bt	1						
BX-7	3		Methyl Ethyl Ketone	Bt	1						
	4		Ligrion	Bt	1						
	5		Ethylene Chloride	Bt	1						
	6		Diethylene Dioxide	Bt	1						
BX-8	7		Propanol	Bt	1						
	8		Ethyl Acetate	Bt	1						
	9		Transformer oil	Bt	1						
	10		Ethylene Glycol Monomethyl Ether	Bt	1						
Bx-9	11		# Asbestos	Bt	1						
BX-10	12		Detergent (unknown)	Bt	1						
	13		Urea	Bt	3						
	14		Silica Gel H	Bt	8						
	15		Ammonium, Sulfate	Dr	1 (10 lbs)						
	16		Sodium Bisulfite	Dr	2 (10 lbs)						
	17		Acetaldehyde	Bt	1						

SHEET TOTAL | GRAND TOTAL

13. ISSUE/TURN-IN "QUANTITY" COLM IS REQUESTED	DATE	BY	14. ISSUE QTY IN "SUPPLY ACTION" COLUMN	DATE	BY	15. REC. QTY IN "SUPPLY ACTION" COLUMN	DATE	BY
	2-5-81			10 FEB				

DA FORM 3161
1 JUN 73

REPLACES DA FORM 3161, 1 JUL 66 WHICH IS OBSOLETE.

GPO: 1974 — 529 - 113

REQUEST FOR ISSUE OR TURN-IN (AR 710-2)

ISSUE: XX | TURN-IN: | SHEET NO 1 | NO SHEETS 2 | 3. REQUEST NO | 4. VOUCHER NO

1. SEND TO: DIO, WRAMC F, GLEN | 5. DATE MATERIEL REQUIRED | 6. DODAAC | 7. PRIORITY | 8. ACCOUNTING/FUNDING DATA

2. REQUEST FROM: LOGISTIC DIV AFIP | 9. END ITEM IDENT | 9a. NAME/MANUFACTURER | 9b. MODEL | 9c. SERIAL NO

* CODE — ISSUE: I—Initial, R—Replacement; TURN-IN: FWT-Fair Wear And Tear, RS—Report of Survey, EX—Excess, SC—Stmt of Charges | 10. PUBLICATION | 11. JOB ORDER NO

12. ITEM NO a	STOCK NO b		ITEM DESCRIPTION c	UNIT OF ISSUE d	QUANTITY e	CODE* f	SUPPLY ACTION g	UNIT PRICE h	TOTAL COST i	J POSTED DATE	J POSTED BY
1		4 ✓	Hydrochloric acid	Bt	5 liters						
2			Sulfuric acid	Bt	4 liter						
3			Propionic acid	Bt	4 liters						
4		2 ✓	Benzene	Bt	4 liters						
5			Formaldehyde (40%)	Bt	4 liters						
6			Dioxane	Bt	4 liters						
7			2-~~Mercapto~~ Mercaptoethanol	Bt	1 liter#						
8			Thimerosal Tincture	Bt	1 liter#						
9			Dimethyldihlorosilane	Bt	100ml						
10			Ethyl acrylate	Bt	500ml						
11			Ethylene diamine	Bt	500ml						
12		1 ✓	Ammonium sulfide	Bt	500ml						
13			Hydrogen peroxide	Bt	500ml						
14			Benzoylperoxide	Bt	1 lb						
15			Mercuric sulfide	Bt	¼ lb						
16			Hydrogen sulfide talblets	Bt	25 grams						
17			Thixotropic gel powder	bt	275 grams						
18			Ether (5 gal Dr)	Dr	½ gal						

SHEET TOTAL | GRAND TOTAL

13. ISSUE/TURN-IN "QUANTITY" COLM IS REQUESTED	DATE	BY	14. ISSUE QTY IN "SUPPLY ACTION" COLUMN	DATE	BY	15. REC. QTY IN "SUPPLY ACTION" COLUMN	DATE	BY
	2/12/81	J Lewis		2/23/81	C Brown			

DA FORM 3161, 1 JUN 73

REPLACES DA FORM 3161, 1 JUL 68 WHICH IS OBSOLETE.

☆GPO: 1974 — 529 - 113

REQUEST FOR ISSUE OR TURN—IN
(AR 710–2)

	ISSUE	SHEET NO	NO SHEETS	3. REQUEST NO	4. VOUCHER NO
	XX ISSUE / TURN-IN	1 1	1		

1 SEND TO	5. DATE MATERIEL REQUIRED	6. DODAAC	7. PRIORITY	8. ACCOUNTING/FUNDING DATA
DIO WRAMC F. Glen				

2 REQUEST FROM	9. END ITEM IDENT	9a. NAME/MANUFACTURER	9b. MODEL	9c. SERIAL NO
LOGISTICS DIV AFIP				

* CODE ISSUE: I—Initial; R—Replacement. TURN—IN: FWT—Fair Wear And Tear; RS—Report of Survey; EX—Excess; SC—Stmt of Charges

10. PUBLICATION	11. JOB ORDER NO

12. ITEM NO a	STOCK NO b	ITEM DESCRIPTION c	UNIT OF ISSUE d	QUANTITY e	CODE* f	SUPPLY ACTION g*	UNIT PRICE h	TOTAL COST i	POSTED j DATE	POSTED j BY
1.	Pick up 2/23/01	Picric Acid, Saturated Soln.,	gal.	1		~~ft Attend~~				
2.	ft mcNair	Iso-Amyl Alcohol, approx.	gal.	1		L. M C Nair				
3.		Methylene chloride, approx.	gal.	1						
4.		Zinc sulfate 5%	(fl)oz	16						
5.		Butyl Acetate, Approx.	Pts.	2½						
6.		Phenol Reagent, 2N	PT	1						
7.		Phenol Crystals(approx. 1½)	BTls.	2						
8.		Iso-Amyl Acetate(approx. ½qt)	BTls.	2						
9.		Butanol(approx. 3½ qts.)	BTls.	5						
10.		Diethyleme Glycol, Monoethyl Monoethyl Ether	OZ.	2						
11.		Ethylene Dichloride	QT.	1						
12.		Ethyl Acetate(approx. 2pt)	BTls.	2						
13.		Ethylene Glycol (approx.8pts)	Btls.	5						
14.		Aniline	(FL.)oz	8						
15.		Arsenomolybdate solution	ml	200						
16.		Benzene (approx. 2 pints)	Btls.	3						
17.		Dimethylformamide	qt	1						
18.		N,N, Dimethylformamide,	qt	1						
19.		Dioxane,	qt	1						
20.		Methyl benzoate	qt	½						
21.		Iso-propyl Alcohol(approx)	qt	½						
22.		Ethylene Glycol monomethyl ether	qt	1						
23.		Diethylene glycol (approx.)	PT	1						
24.		Thiolacetic Acid,	BTl.	1						
25		" "	BTL.	12						
							SHEET TOTAL	GRAND TOTAL		

13 ISSUE/TURN-IN QUANTITY COLM IS REQUESTED	DATE	BY	14. ISSUE QTY IN SUPPLY ACTION COLUMN	DATE	BY	15. REC QTY IN SUPPLY ACTION COLUMN	DATE	BY
	2/12/01			2/23/01				

...E OR TURN—IN
...(710-2)

	ISSUE	SHEET NO	NO SHEETS	3. REQUEST NO	4. VOUCHER NO
XX	TURN-IN	2 1	2		

TO: WRAMC F. GLEN

5. DATE MATERIEL REQUIRED | 6. DODAAC | 7. PRIORITY | 8. ACCOUNTING/FUNDING DATA

REQUEST FROM: LOGISTICS DIV. AFIP

9. END ITEM IDENT | 9a. NAME/MANUFACTURER | 9b. MODEL | 9c. SERIAL NO

* CODE — ISSUE: I–Initial, R–Replacement; TURN-IN: FWT–Fair Wear And Tear, RS–Report of Survey, EX–Excess, SC–Stmt of Charges

10. PUBLICATION | 11. JOB ORDER NO

12. ITEM NO a	STOCK NO b	ITEM DESCRIPTION c	UNIT OF ISSUE d	QUANTITY e	CODE* f	SUPPLY ACTION g	UNIT PRICE h	TOTAL COST i	POSTED DATE	POSTED BY
	CONTINUED--------									
26.		Nitroethane 2X1/2 pints	PTs.	2½						
27.		Propy Alcohol	PT.	1						
28.		Nonyl Alcohol	PT.	1						
29.		Iso amyl alcohol	PT.	1						
30.		Epon resin								
31.		Acetic anhydride	PT.	1						
32.		Nadic methyl anhydride	PT.	1 1/10						
33.		1,2, Dimethoxy ethane	lb.	1/3						
34.		Masco cement adhesive	PT.	1						
35.		2-Nitropropane	PT.	2X1/2						
36.		N,N,N, Tetramethy-ethylenedi amine	ml	100						
37.		1-Nitropropane	PTS.	2X1/2						
38.		Iso-amyl ether	ml	100						
39.		2,4,6-Trimethypyridine	g	100						
40.		Phenol	lb	2X1						
	Pick up 2/25/81 Ft McNair	PLEASE DISBOSE OF THE FOLLOWING CHEMICAL: STOCK NUMER JAN 1-488-782 ACID PICRIC MERCK-(TRINITROPHENOL)	ounce	1		~~[illegible]~~ → McNair				

SHEET TOTAL | GRAND TOTAL

13. ISSUE/TURN-IN QUANTITY COLM IS REQUESTED	DATE 2/12/81	BY [signature]	14. ISSUE QTY IN "SUPPLY ACTION" COLUMN	DATE 2/23/81	BY C Ben[signature]	15. REC QTY IN "SUPPLY ACTION" COLUMN	DATE	BY

REQUEST FOR ISSUE OR TURN-IN (AR 710-2)		ISSUE [X] TURN-IN	SHEET NO 1	NO SHEETS 3	3. REQUEST NO	4. VOUCHER NO
1. SEND TO: DIO, WRAMC		5. DATE MATERIEL REQUIRED	6. DODAAC	7. PRIORITY	8. ACCOUNTING/FUNDING DATA	
2. REQUEST FROM: Logistic Div. AFIP		9. END ITEM IDENT	9a. NAME/MANUFACTURER	9b. MODEL	9c. SERIAL NO	
* CODE ISSUE: I–Initial, R–Replacement; TURN-IN: FWT-Fair Wear And Tear, RS–Report of Survey, EX–Excess, SC–Stmt of Charges			10. PUBLICATION		11. JOB ORDER NO	

12 ITEM NO a	STOCK NO b	ITEM DESCRIPTION c	UNIT OF ISSUE d	QUANTITY e	CODE* f	SUPPLY ACTION* g	UNIT PRICE h	TOTAL COST i	POSTED DATE	POSTED BY
1		Potassium Dichromate	Bt	2lb.						
2	(strong oxidant)	Sodium Nitrite	Bt	8oz						
3	(Strong oxidant)	Sodium Nitrate	Bt	4oz						
4	Poison	Sodium Azide	Bt	4oz						
5		UREA	Bt	1/4lb						
6		Potassium Chloride	Bt	1/4lb						
7		Manganese Chloride	Bt	4oz						
8		Sodium metaborate	Bt	3/4lb						
9		Potassium Dichromate solution 0.1N		1Qt						
10		Sodium Sulfite	Bt	50gm.						
							SHEET TOTAL		GRAND TOTAL	

13. ISSUE/TURN-IN "QUANTITY" COLUMN	DATE	BY	14. ISSUE QTY IN "SUPPLY ACTION" COLUMN	DATE	BY	15. REC. QTY IN "SUPPLY ACTION"	DATE	BY
	2/13/81	[signature]		2/23/81	DIO [illegible]			

C-8

REQUEST FOR ISSUE OR TURN-IN (AR 710-2)				3. REQUEST NO	4. VOUCHER NO
	ISSUE [ ] TURN-IN [X]	SHEET NO 1	NO SHEETS		
1 SEND TO: DIO, WRAMC F. GLEN	5. DATE MATERIEL REQUIRED	6. DODAAC	7. PRIORITY	8. ACCOUNTING/FUNDING DATA	
2 REQUEST FROM: Logistics Div. AFIP	9. END ITEM IDENT	9a. NAME/MANUFACTURER	9b. MODEL	9c. SERIAL NO	
* CODE ISSUE: I—Initial, R—Replacement; TURN-IN: FWT-Fair Wear And Tear, RS—Report of Survey, EX—Excess, SC—Stmt of Charges		10. PUBLICATION		11. JOB ORDER NO	

12 ITEM NO a	STOCK NO b	ITEM DESCRIPTION c	UNIT OF ISSUE d	QUANTITY e	CODE* f	SUPPLY ACTION g	UNIT PRICE h	TOTAL COST i	j POSTED DATE	j POSTED BY
1		Acid Phosphoric	Pt.	6						
2		Acid Hydrochloric	Pt.	1						
3		Hydrogen Peroxide	Pt.	1						
4		Trichloroethylene	Oz.	4						
							SHEET TOTAL		GRAND TOTAL	

Jerry L. Badders
Printing Officer, MIS

13. ISSUE/TURN-IN "QUANTITY" COLM IS REQUESTED	DATE 3/13/81	BY	14. ISSUE QTY IN "SUPPLY ACTION" COLUMN	DATE 3/13/81	BY	15. REC. QTY IN "SUPPLY ACTION" COLUMN	DATE	BY

REQUEST FOR ISSUE OR TURN-IN
(AR 710-2)

ISSUE	TURN-IN	SHEET NO	NO SHEETS	3. REQUEST NO	4. VOUCHER NO
	X	1			

1. SEND TO:	5. DATE MATERIEL REQUIRED	6. DODAAC	7. PRIORITY	8. ACCOUNTING/FUNDING DATA
DIO, WRAMC E. GLEN				

2. REQUEST FROM:	9. END ITEM IDENT	9a. NAME/MANUFACTURER	9b. MODEL	9c. SERIAL NO
LOGISTICS DIV. AFIP				

* CODE ISSUE TURN-IN

I—Initial FWT-Fair Wear And Tear EX—Excess
R—Replacement RS—Report of Survey SC—Stmt of Charges

10. PUBLICATION	11. JOB ORDER NO

12. ITEM NO a	STOCK NO b	ITEM DESCRIPTION c	UNIT OF ISSUE d	QUANTITY e	CODE* f	SUPPLY ACTION g	UNIT PRICE h	TOTAL COST i	j POSTED DATE	j POSTED BY
1	6810-753-4785	SULFURIC ACID	pt	6						
2	6810-753-4779	NITRIC ACID	pt	37						
							SHEET TOTAL		GRAND TOTAL	

13. ISSUE/TURN-IN "QUANTITY" COLM IS REQUESTED	DATE	BY	14. ISSUE QTY IN "SUPPLY ACTION" COLUMN	DATE	BY	15. REC. QTY IN "SUPPLY ACTION" COLUMN	DATE	BY
	3 APR 81			1084				

DA FORM 3161
1 JUN 73

REPLACES DA FORM 3161, 1 JUL 66 WHICH IS OBSOLETE.

☆GPO: 1974—828-113

REQUEST FOR ISSUE OR TURN-IN
(AR 710-2)

ISSUE	TURN-IN	SHEET NO	NO SHEETS
	X	1	

3. REQUEST NO

4. VOUCHER NO

1 SEND TO: DIO, WRAMC

5. DATE MATERIEL REQUIRED

6. DODAAC

7. PRIORITY

8. ACCOUNTING/FUNDING DATA

2 REQUEST FROM: LOGISTICS DIV AFIP

9. END ITEM IDENT

9a. NAME/MANUFACTURER

9b. MODEL

9c. SERIAL NO

3 CODE ISSUE: *I– Initial; R– Replacement* — TURN-IN: *FWT-Fair Wear And Tear; RS–Report of Survey; EX–Excess; SC–Stmt of Charges*

10. PUBLICATION

11. JOB ORDER NO

12 ITEM NO a	STOCK NO b	ITEM DESCRIPTION c	UNIT OF ISSUE d	QUANTITY e	CODE f	SUPPLY ACTION g	UNIT PRICE h	TOTAL COST i	J POSTED DATE	J POSTED BY
1		ETHER ½ ~~5~~gal CN	CN	~~3~~ 2						
							SHEET TOTAL		GRAND TOTAL	

13 ISSUE/TURN IN "QUANTITY" COLM IS REQUESTED	DATE	BY	14. ISSUE QTY IN "SUPPLY ACTION" COLUMN	DATE	BY	15. REC. QTY IN "SUPPLY ACTION" COLUMN	DATE	BY
	4/13/81			4/24/81				

REQUEST FOR ISSUE OR TURN—IN
(AR 710–2)

	ISSUE	SHEET NO	NO SHEETS	3. REQUEST NO	4. VOUCHER NO
	X TURN-IN	1			

1. SEND TO:	5. DATE MATERIEL REQUIRED	6. DODAAC	7. PRIORITY	8. ACCOUNTING/FUNDING DATA
DIO, WRAIR				UPIC

2. REQUEST FROM:	9. END ITEM IDENT	9a. NAME/MANUFACTURER	9b. MODEL	9c. SERIAL NO
AFIP Immunogenetics RM 3046				

* CODE ISSUE	TURN–IN	10. PUBLICATION	11. JOB ORDER NO
I– Inuial R– Replacement	FWT– Fair Wear And Tear RS– Report of Survey	EX– Excess SC– Stmt of Charges	

12. ITEM NO a	STOCK NO b	ITEM DESCRIPTION c	UNIT OF ISSUE d	QUANTITY e	CODE* f	SUPPLY ACTION g	UNIT PRICE h	TOTAL COST i	POSTED DATE	POSTED BY
1	(Flammable)	Histoclad Microscopic mounting medium		10Z						
2		Lanthanum Nitrate		10g						
3		Hexamethylene tetramine		100g						
4	Acid	Periodic Acid		100g.						
5		Para formaldehyde		50g.						
							SHEET TOTAL	GRAND TOTAL		

13. ISSUE/TURN-IN "QUANTITY" COLM IS REQUESTED FOR**	DATE	BY	14. ISSUE QTY IN "SUPPLY ACTION" COLUMN	DATE	BY	15. REC QTY IN "SUPPLY ACTION" COLUMN	DATE	BY
	2/12/81	[signature]		2/23/81	[signature]			

REPLACES DA FORM 3161, 1 JUL 68 WHICH IS OBSOLETE

REQUEST FOR ISSUE OR TURN-IN
(AR 710-2)

ISSUE: EX | TURN-IN | SHEET NO 1 | NO SHEETS

1. SEND TO: DIO, WRAMC
2. REQUEST FROM: AFIP Immunopath, Room 3046
3. REQUEST NO
4. VOUCHER NO
5. DATE MATERIEL REQUIRED
6. DODAAC
7. PRIORITY
8. ACCOUNTING/FUNDING DATA: PZi
9. END ITEM IDENT
9a. NAME/MANUFACTURER
9b. MODEL
9c. SERIAL NO
10. PUBLICATION
11. JOB ORDER NO

* CODE — ISSUE: I—Initial, R—Replacement; TURN-IN: FWT—Fair Wear And Tear, RS—Report of Survey, EX—Excess, SC—Slmt of Charges

12. ITEM NO a	STOCK NO b	ITEM DESCRIPTION c	UNIT OF ISSUE d	QUANTITY e	CODE* f	SUPPLY ACTION g	UNIT PRICE h	TOTAL COST i	J POSTED DATE	J POSTED BY
	(Poison)	Zinc oxide	B	3/4 lb						
	(Flammable)	1-Butanol		4 pts						
	(Flammable solid)	Phosphorus Pentoxide		½ lb						
	(Strong oxidant)	Chromium Trioxide		¼ lb						
	(Poison)(Acid)	Acid Pyrogallic		¼ lb						
		Potassium Chloride		4 oz						
	stain	Elastic Fiber Stain-Paragon		250 cc						
	stain	Basic Fuchsin		10 g						
	stain	Paragon Multiple stain		150 cc						
	stain	Methylene Blue quik stain		3 gm						
	stain	WRIGHTS Stain		40 gm						
	stain	Giemsa Stain		5 gm						
	(poison-stain)	Giemsa's Staining solution		50 cc						
	(Sulfur)	- Thiocarbohydrazide		25 g						

SHEET TOTAL | GRAND TOTAL

13. ISSUE/TURN-IN "QUANTITY" COLM IS REQUESTED	DATE	BY	14. ISSUE QTY IN "SUPPLY ACTION" COLUMN	DATE	BY	15. REC. QTY IN "SUPPLY ACTION" COLUMN	DATE	BY
	4/12/81	[signature]		2/25/81	[signature]			

DA FORM 3161, 1 JUN 73

REPLACES DA FORM 3161, 1 JUL 66 WHICH IS OBSOLETE.

GPO: 1974 — 529 · 113

REQUEST FOR ISSUE OR TURN—IN
(AR 710–2)

EX | ISSUE [X] | TURN-IN [ ] | SHEET NO 1 | NO SHEETS | 3. REQUEST NO | 4. VOUCHER NO

1. SEND TO: DIO WRAMC F. GLEN

5. DATE MATERIEL REQUIRED | 6. DODAAC | 7. PRIORITY | 8. ACCOUNTING/FUNDING DATA

2. REQUEST FROM: AFIP Immunopath 3046

9. END ITEM IDENT | 9a. NAME/MANUFACTURER | 9b. MODEL | 9c. SERIAL NO

* CODE ISSUE: I—Initial, R—Replacement | TURN—IN: FWT—Fair Wear And Tear, RS—Report of Survey | EX—Excess, SC—Sink of Charges

10. PUBLICATION | 11. JOB ORDER NO

12. ITEM NO a	STOCK NO b	ITEM DESCRIPTION c	UNIT OF ISSUE d	QUANTITY e	CODE* f	SUPPLY ACTION g*	UNIT PRICE h	TOTAL COST i	POSTED j DATE	POSTED j BY
	Caustic	Phenol 2N Reagent Solution	Bt	5-QT.						

SHEET TOTAL | GRAND TOTAL

13. ISSUE/TURN-IN "QUANTITY" COLM IS REQUESTED FROM: DATE 3/13/81 BY

14. ISSUE QTY IN "SUPPLY ACTION" COLUMN: DATE 3/13/81 BY

15. REC QTY IN "SUPPLY ACTION": DATE BY

JR ISSUE OR TURN—IN (AR 710–2) | ISSUE: XXX | TURN-IN: | SHEET NO: 1 | NO SHEETS: 5 | 3. REQUEST NO | 4. VOUCHER NO

Barnes
dg 178, Forest Glen
Medicinal Chemistry
Div of Exp Therp, WRAIR

5. DATE MATERIEL REQUIRED	6. DODAAC	7. PRIORITY	8. ACCOUNTING/FUNDING DATA

9. END ITEM IDENT	9a. NAME/MANUFACTURER	9b. MODEL	9c. SERIAL NO

ISSUE / TURN–IN

I– Initial
R–Replacement
FWT– Fair Wear And Tear
RS– Report of Survey
EX Excess
SC–Stmt of Charges

10. PUBLICATION | 11. JOB ORDER NO

ITEM NO a	STOCK NO b	ITEM DESCRIPTION c	UNIT OF ISSUE d	QUANTITY e	CODE* f	SUPPLY ACTION g	UNIT PRICE h	TOTAL COST i	POSTED DATE	POSTED BY
1	AM 37752	N-phenyl-4-chlorobenzylimine	Milligrams	50						
2	AM 37761	1-nitro-1,2-diphenylenylethene	"	50						
3	AM 37770	2,2,8,8-tetranitro-4,6-oxonouane	"	550						
4	AM 37789	2,4,6-trinitrobenzaldehyde	"	50						
5	AM 37805	2,4,6-trinitromesitylene	"	550						
6	AM 37814	3,5-dinitrotoluene	"	50						
7	AM 37823	2,8-dimethyl-2,8-dinitro-4,6-oxononane	"	50						
8	AM 37832	2,4,6-trinitrobenzoyl chloride	"	550						
9	AM 37850	N,N'-diphenyl-4,5-(4-anisole)-imidazol-2-oue	"	50						
10	AM 37949	1,3,-dichloro-2,4,6-trinitrobenzene	"	50						
11	AM 38099	N-(2,2-dinitrilethene)-hydrazine	"	200						
12	AM 38124	2,6-dinitro-benzylbromide	"	500						
13	AM 38133	2,4,6-trinitrobenzylbromide		150						
14	AM 38142	2,4,6-trinitrobenzylalcohol		500						
15	AM 38151	2,4,6-trinitrobenzoyliodide		500						
16	AM 38160	1-(2,4,6-trinitrophenyl)ethanol		500						
17	AM 38179	2,4,6-trinitro-1,3-dimeth oxy benzene	"	350						
18	AM 38188	2,4,6-trinitro-3,5-dimeth oxyaniline	"	25						

SHEET TOTAL | GRAND TOTAL

13. ISSUE/TURN-IN "QUANTITY" COLM IS REQUESTED	DATE	BY	14. ISSUE QTY IN "SUPPLY ACTION" COLUMN	DATE	BY	15. REC QTY IN "SUPPLY ACTION" COLUMN	DATE	BY
	27/1/81	William E Ellis		2/2/81	C Barnes			

DA FORM 3161 JUN 75

REPLACES DA FORM 3161, 1 JUL 68 WHICH IS OBSOLETE

C-15

REQUEST FOR ISSUE

(CONTINUATION SHEET) XXX TURN-IN

12. ITEM NO a	STOCK NO b	ITEM DESCRIPTION c	UNIT OF ISSUE d	QUANTITY e	CODE f	SUPPLY ACTION g	UNIT PRICE h	TOTAL COST i	DATE j
19	AM 38213	2,4,6-trinitro-3-methoxy aniline	"	100					
20	AM 38222	2,4,6-trinitro-3-methoxy anitine	"	50					
21	AM 38240	2,4,6-trinitro-2',6'-dimitro -4'-cyano-diphenylmethoxy	"	100					
22	AM 38268	2-(2,4,6-trinitrophenyl) -2,4,6-trinitroaceto-	"	50					
23	AM 38277	1-(4-amino-2,6-dinitrophenyl) -2-(3-hydroxy-2,4,6-trinitro) phenonethene	"	175					
24	AM 38295	1,2-(2,4,6-trinitrophenyl) ethane	"	500					
25	AM 38302	2,2',4,4',6-pentanitrotilbene		500					
26	AM 38311	2,2',4,4'-tetranitrostilbene		350					
27	AM 38320	2,2',6,6'-tetranitrostilbene		25					
28	AM 38339	2,4,4',6-tetranitrostilbene		50					
29	AM 38357	1-(2,4,6-trinitrophenyl)-2- (2,6-dinitrophenyl)ethane	"	50					
30	AM 38366	2,4,6-trinitro-3'-hydroxy- stilbene	"	175					
31	AM 38375	2,4,3'-trinitrostilbene	"	25					
32	AM 38384	-2,4,4'-trinitrostilbene	"	500					
33	AM 38393	2,4,6-trinitrostilbene	"	500					
34	AM 38400	2,2',4,4',6,6'hexanitro benzophenone	"	500					
35	AM 38419	2,2',4,4',6,6'-hexanitro-3'- bromo-diphenylmethane	"	500					
36	AM 38428	2,2',4,4',6,6'-pentanitro- diphenylmethane	"	500					
37	AM 38437	2,2',4,6,6'-penranitro- diphenylmethane	"	500					
38	AM 38446	2,2',4,4',6,6'-hexanitro-3- chloro-stilbene	"	25					
39	AM 38455	2,2',4,4',6,6'-hexanitro-3- chloro-stilbene	"	50					
40	AM 38464	2,2',4,4',6-pentanitro- benzophenone	"	50					

SHEET TOTAL

DA FORM 3161-1 REPLACES DA FORM 3161-1, 1 APR 68 WHICH IS OBSOLETE ☆ U.S. GOVERNMENT PRINTING OFFICE: 1975-577-198

REQUEST FOR ISSUE OR TURN–IN (CONTINUATION SHEET)		ISSUE	SHEET NO	NO SHEETS	6. DODAAC		3. REQUEST NO		4. VOUCHER NO		
		XXX TURN-IN	3	5							

12. ITEM NO a	STOCK NO b	ITEM DESCRIPTION c	UNIT OF ISSUE d	QUANTITY e	CODE* f	SUPPLY ACTION g	UNIT PRICE h	TOTAL COST i	POSTED DATE j	POSTED BY j
41	AM 38473	2,2',4,4',6-pentanitro-benzophenone	"	50						
42	AM 38482	nitromalonie acid-diethyl ester	"	1550						
43	AM 38491	nitromalonie acid-diethyl ester	"	3550						
44	AM 38508	N-phenyl-(4-nitro)benzylimine		2000						
45	AM 38517	N-phenyl-(4-chloro)benzylimine		200						
46	AM 38526	3-bromo-3,3-dinitro propanoic acid	"	550						
47	AM 38535	diethylmalonate	"	1550						
48	AM 38544	4-nitroaniline	"	550						
49	AM 38553	3-phenyl-benzoic acid	"	50						
50	AM 38562	4,4-dinitropimelic acid, dimethyl ester	"	50						
51	AM 38571	4,4-dinitropimelic acid-(period)	"	200						
52	AM 38580	2-hydroximine acetic acid ethylester	"	50						
53	AM 38599	5-nitropthalimide	"	550						
54	AM 38606	5-nitropthalimide	"	550						
55	AM 38615	2,2',4,4'-biphenyl	"	50						
56	AM 38624	4-(2-nitroethene)-N,N-dimethyllaniline	"	50						
57	AM 38633	2-cyano-2-hydroximido acetamide		50						
58	AM 38651	6-cycloheptatriene carboxylic acid	"	550						
59	AM 38660	5,5-dimethyl-1,3,6-cyclohepta triene carboxylic acid	"	200						
60	AM 38679	2-phenyl-N-(-4 methoxyphenyl) acetimide	"	450						
61	AM 38697	2,2',4,4',6,6'-hexanitro-3,3'-(2,4,6-trinitrophenyl) biphenyl		200						
62	AM 38704	2,2,4,6,6-pentanitro-heptane		100						
63	AM 38713	2,2,8,8-tetranitro-4,6-oxo-nonane-1,9-diol	"	100						
64	AM 38722	1,3-dichloro-2,4,6-trinitro-benzene	"	25						
							SHEET TOTAL			

REQUEST FOR ISSUE OR TURN–IN
(CONTINUATION SHEET)

ISSUE	XXX
TURN-IN	

SHEET NO	NO SHEETS	6. DODAAC	3. REQUEST NO	4. VOUCHER NO
4	5			

12. ITEM NO	STOCK NO	ITEM DESCRIPTION	UNIT OF ISSUE	QUANTITY	CODE*	SUPPLY ACTION	UNIT PRICE	TOTAL COST	POSTED DATE	POSTED BY
a	b	c	d	e	f	g	h	i		
65	AM 38731	1,3-dibromo-2,4,6-trinitro-benzene	"	100						
66	AM 38740	1,3-dibromo-4,6-dinitro bezene	350							
67	AM 38768	3,3-dinitro propionic,2,2-dinitroethylester	"	25						
68	AM 38777	4,4-dinitro-4-fluoro-butanoic acid, 2,2-dinitro ethyl ester	100							
69	AM 38795	2,2',4,4',6-pentanitro-5'-(2,4,6-trinitrophenyl)biphenyl	25							
70	AM 38802	2,2',4,4',6,6'-pentanitro-3'-(2,4,6-trinitrophenyl) biphenyl	150							
71	AM 38820	3,3-dinitro-3-fluoro propionic acid, N-phenylamide	"	175						
72	AM 38839	tetra-(2,2,2-trinitro ethoxy) methane	"	25						
73	AM 38848	3,3,3-trinitropropyl phenone	100							
74	AM 38857	3,310,10-tetranitro-undecane-1,11-dioic acid	"	200						
75	AM 38866	1,4,5,8-tetranitro napthalene	500							
76	AM 38875	2,4-dinitro cumane	"	2500						
77	AM 38884	1,3,5-tri-(2,2dinitro-2-fluoro ethyl)-5-triazine	"	200						
78	AM 38893	3,3,9,9-tetranitro-5,7-dioxo-undecane-1,11-dioic acid, diethyl ester	"	250						
79	AM 38919	2,2',4,4',6,6'-hexanitro biphenyl	"	150						
80	AM 38928	2,2',4,4',6,6'-hexanitro -3-chloro-biphenyl	"	450						
81	AM 38937	2,2',4,6-tetranitro biphenyl	100							
82	AM 38955	4-(2,4,6-trinitrophenyl) phenol	100							
83	AM 38964	3-methyl-5-neopentyl-2,4,6-trinitro-benzoic acid	"	200						
84	AM 38973	2,2-dinitro-2-fluoro-N-(2,4,6-trinitrophenyl carbamate	"	25						
85	AM 38982	1,1,3-trinitro-2-phenyl-propane	50							
86	AM 38991	3-isopropylpicrate	"	25						

REQUEST FOR ISSUE OR TURN–IN
(CONTINUATION SHEET)

ISSUE		SHEET NO	NO SHEETS	6. DODAAC	3. REQUEST NO	4. VOUCHER NO
	XXX TURN-IN	5	5			

12. ITEM NO a	STOCK NO b	ITEM DESCRIPTION c	UNIT OF ISSUE d	QUANTITY e	CODE* f	SUPPLY ACTION g	UNIT PRICE h	TOTAL COST i	POSTED DATE	POSTED BY
87	AM 39005	3,3-dinitro-5-oxo-hexane-1,6-dioic acid, dimethylester	"	500						
88	AM 39014	2-methyl-2-nitro propane	"	1500						
89	AM 39041	1,1,1-trinitroethane	"	500						
90	AM 39050	4-chloro-4,4-dinitro butanoic acid	"	500						
91	AM 39069	4-flouro-4,4-dinitro butanoic acid	"	100						
92	AM 39078	2-flouro-2,2-dinitro acetic acid ethyl ester	"	2500						
93	AM 39087	methyl(3,3,3-trinitro)propyl sulfanate	"	500						
94	AM 39096	4,4,4-trinitro butanoic acid		100						
95	AM 39103	Poyassium-3,3-dinitro-1-cyano-propane	"	500						
96	AM 39112	4-fluoro-4,4-dinitro butanoic acid methyl ester	"	2500						
97	AM 39130	4-potassium-4,4-dinitro butanoic acid, methyl ester		50						
98	AM 39158	1,7-difluoro-1,1,7,7-tetranitro-3,8-dioxo-heptane	"	2500						
99	AM 39167	4-potassium-4,4-dinitro-2-propenoic acid, methyl ester		100						
100	AM 39176	carbonic acid, di-(2-fluoro-2,2-dinitro) ethylester	"	1500						
101	AM 39185	dinitro methyl(2,2-dinitro) ethyl carbonate	"	500						
							SHEET TOTAL			

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO.

REFERENCE OR OFFICE SYMBOL	SUBJECT
AFIP CPW	Excess Chemicals for disposal

FROM	DATE	CMT 1
Logistics Division	Histopathology Laboratory Neuro, Eye and H&H Branches	17 April 81

1. Below listed chemicals and reagents are submitted for proper disposal:

BOX # 1

NAME	QTY
ALUM POT SULFATE	2 BT
SODIUM BORATE	1
BORAX	1
CHROMIUM POT SULFATE	1
SOD ACETATE TRIHYDRATE	1
ALUM AMMONIUM SULFATE	1

BOX # 2

NAME	QTY
Diastase Malt	2 BT

BOX # 3

NAME	QTY
Pot Ferricyanide	4 BT
Pot Iodide	1 1/5 BT
Silver Nitrate	2
SOD BIsulfite	2 BT
Sod Hydroxide	2 bt
Citric Acid	2 bt
Calcium Chloride	1½ BT
Sod Sulfate	2½ BT
Sod Bicarbonate	1 BT
Pot Hydroxide	1 bt
Pot Phospate	1 BT
Pot Chloride	1 BT
Sod Chloride	½
Ammonium Oxalate	1 BT
Pot Bisulfate	2 BT

BOX # 4

Carbolic Acid	2 BT

BOX # 5

NAME	QTY
Hexamethylamine	1 BT
Alum Hydroxide	1 BT
Alum Chloride	1 ¼ BT
Ferric Ammon Sulfate	½ BT
Lithium Carbamate	½ BT
Uranyl Nitrate	5 BT with 3 BT ¼ full
Uranyl Acetate	¼

BOX # 6

NAME	QTY
Charcoal	1/2 BT
Ferric Chloride	½, ½, ½ BT EA
Tannic acid	¼, 2/5, BT EA

BOX # 7

NAME	QTY
Tannic Acid	3/4 BT
Citric Acid	1/4 BT
Carminic Acid	2 BT
Oxalic Acid	1 BT
Phospomolybdic Acid	3 BT

BOX #8

NAME	QTY
Canada Balsam	1/8 BT
Alum Pot Sulfate	1, ¼ BT EA
Diaminophenol Dihydrochloride	½ BT
Pot Chloride	¼ BT
Sod Hydroxide	1 BT
Pot Phospate	1, 1/8 BT EA
Ferric Chloride	½, ¼ BT EA
Pot Hydroxide	1/8 BT
Pot Permanganate	3/4 BT
Calcium Chloride	1 BT
Manganese Sulfate	1 BT
Ferric Ammon Sulfate	¼ BT
Canada Turpentine	1 BT
Napthaquinone	½ BT
Sod Carbamate	1 BT
Gelatin	½ BT
Resorcinol	¼ BT
Bromphenol Blue	¼ BT
Pot Dichromate	½ BT
Chineal	2 BT
Methyl Green	1 BT
Sod Bisulfite	1 BT

PREPARED BY: [signature]
M.C. DAVID HMS
570-84-2933

APPROVED:
[signature]
Lee G. DUNA, Chief, HistoLabs

DA FORM 4AUG 80 2496 PREVIOUS EDITIONS WILL BE USED

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO.

REFERENCE OR OFFICE SYMBOL	SUBJECT
AFIP CPW	Excess chemicals for disposal

TO: Logistics Division

FROM: Histopathology Lab Division, Orthopedic Branch

DATE: 17 April 81

CMT 1

1. Below listed chemcals and reagents are submitted for proper disposal:

NAME	QTY DISPOSED	NAME	QTY DISPOSED
Giemsa Stain	1 bt	Safran	1/5 bt
Chromium Trioxide	3/4 bt	Safranin O	2/7
Chromium Trioxide	3/4 bt	Tartrazine	1/5
Thionin	1/4 bt	Citric hydrous	3/4 bt
Buffer salts	3/4 bt	Ethylediaminetetraacetic acie	1/3 bt
Chromium Trioxide	1 bt + 3/4	Chromium Trioxide	1/4 , 1/4 ea
Quinoline Yellow	½ bt	Ferric ammonium sulfate	3/4, 3/4, 3/4 bt ea
Buffer salts	1 bt	Oxalic acid	1
Carmin	3/4 bt	Sod bisulfite	½
Azocarmine B	½ bt	Pot Permanganate	½
Mercuric oxide	½ bt	Sulfosalicylic acid	½ bt
Sod Metabisulfite	½ bt	Sod chloride	1 bt
Buffer salts	3/4	Borax granular	3/4
Thymol	½	Sod sulfite anhydrous	½
Ruthenium Red	1 bt	Sod Pot Tartrate	1 bt
Light green SF Yellowish	1/5	Sod Phospate Dibasic	½
Chromium Trioxide	1 bt	Sod Phospate monobasic	3/4, 1/2 ea
Buffer salts	½	Sod Sulfate	1/4
Toluidine Blue O	½	Sod Borate	1/2
Chromium Trioxide	1	Sod Bicarbonate	1/4
Sodium Nitrite	½	Uranyl Nitrate	1/2
Castile soap	1	Alum Sulfate	1/5
Crystal violet	1/5	Sod Phospate dibasic	1/2
Azocarmine G	½ , ¼	Sod Phospate monobasic	1 bt
Azure II	¼		
Acid Fuchsin	1/3		
Acridine Orange	3/4		
Acid Fuchsin	4/6		
Azur B	1/5		
Scharlach stain	½		
Basic Fuchsin	3/4		
Carmine succum best	1/10		
Crystal violet	½		
Eosin Y	½		
Eosin methylene blue	½		
Giemsa stain	1 bt		
Buffer salts	3/4		
Fast Green	½		
Fuchsin Ponceau	3/4		
Kernechtrot	½		
Light Green	3/4		
Methyl violet	½		
Metanil Yellow	1 bt		
Oil Red O	½ , 1/5		
Orange	1/5		
Oil Red EGN	½		
Phloxine B	½		
Phloxinrot	1/4		
Sudan Black	½		

Submitted by:

M.C. DAVID KIM
570-84-2932

Approved by:

Lee G. LUNA
Chief, HistoLabs Div

FORM AUG 80

FORM AUG 80 2496

PREVIOUS EDITIONS WILL BE USED

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO.

REFERENCE OR OFFICE SYMBOL	SUBJECT
AFIP CPW	EXCESS CHEMICALS

TO	FROM	DATE	CMT 1
~~LOGISTICS DIVISION~~	~~HISTOPATHOLOGY DIVISION~~	~~21 APR 91~~	

1. BELOW LISTED CHEMICALS ARE TRURNED IN FOR PROPER DISPOSAL:

BOX # 1

NAME	QTY DISPOSED
SODIUM HYPOCHLORITE	4 BT GT
TRYPSIN	8 BT
SODIUM FORMATE	4 BT

BOX # 2

NAME	QTY
POTASSIUM ACETATE	5 BT
PYROGALLOL	3 BT
LITHIUM OXALATE	2 BT
MAGNESIUM CHLORIDE	1 BT
LANTHANUM NITRATE	1 BT

BOX # 3

NAME	QTY
WYDASE (HYALURONIDASE)	175 VIALS
MAGNESIUM CHLORIDE	1 BT

SUBMITTED BY:

M.C. DAVID HM1
570-84-2932
ROOM NO. 2093
HISTOLABS DIV.
EXT. 6-2917

A FORM AUG 80 2496 PREVIOUS EDITIONS WILL BE USED

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO.

REFERENCE OR OFFICE SYMBOL	SUBJECT
AFIP CPW	EXCESS CHEMICALS

TO: LOGISTICS DIVISION
FROM: HISTOPATHOLOGY DIVISION
DATE: 21 APR 81
CMT 1

1. BELOW LISTED CHEMICALS ARE TURNED IN FOR PROPER DISPOSAL:

BOX # 1

NAME	QTY DISPOSED
SODIUM HYPOCHLORITE	4 BT QT
TRYPSIN	8 BT
SODIUM FORMATE	4 BT

BOX # 2

NAME	QTY
POTASSIUM ACETATE	6 BT
PYROGALLOL	3 BT
LITHIUM OXALATE	2 BT
MAGNESIUM CHLORIDE	1 BT
LANTHANUM NITRATE	1 BT

BOX # 3

NAME	QTY
WYDASE (HYALURONIDASE)	175 VIALS
MAGNESIUM CHLORIDE	1 BT

SUBMITTED BY:

M.C. DAVID HM1
570-84-2932

ROOM NO. 2093
HISTOLABS DIV.
EXT. 6-2917

DA FORM AUG 80 2496 PREVIOUS EDITIONS WILL BE USED

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO.

REFERENCE OR OFFICE SYMBOL	SUBJECT
AFIP CPW	EXCESS CHEMICALS

TO	FROM	DATE	CMT 1
LOGISTICS DIVISION	HISTOPATHOLOGY DIVISION	21 APR 81	

1. BELOW LISTED CHEMICALS ARE TURNED IN FOR PROPER DISPOSAL:

BOX # 1

NAME	QTY DISPOSED
SODIUM HYPOCHLORITE	4 BT QT
TRYPSIN	8 BT
SODIUM FORMATE	4 BT

BOX # 2

NAME	QTY
POTASSIUM ACETATE	6 BT
PYROGALLOL	3 BT
LITHIUM OXALATE	2 BT
MAGNESIUM CHLORIDE	1 BT
LANTHANUM NITRATE	1 BT

BOX # 3

NAME	QTY
WYDASE (HYALURONIDASE)	175 VIALS
MAGNESIUM CHLORIDE	1 BT

SUBMITTED BY:

M.C. DAVID HM1
570-84-2932

ROOM NO. 2093
HISTOLABS DIV.
EXT. 6-2917

Rec 12 May 81 [illegible]

DA FORM AUG 80 2496 PREVIOUS EDITIONS WILL BE USED

REQUEST FOR ISSUE OR TURN—IN

(AR 710–2)

	ISSUE	TURN-IN	SHEET NO	NO SHEETS	3. REQUEST NO	4. VOUCHER NO.
	XXX		1	5		

1. SEND TO:	5. DATE MATERIEL REQUIRED	6. DODAAC	7. PRIORITY	8. ACCOUNTING/FUNDING DATA
Mr Barnes Bldg 178, Forest Glen				

2. REQUEST FROM:	9. END ITEM IDENT	9a. NAME/MANUFACTURER	9b. MODEL	9c. SERIAL NO
Medicinal Chemistry Div of Exp Therp, WRAIR				

* CODE	ISSUE	TURN-IN		10. PUBLICATION	11. JOB ORDER NO
	I–Initial R–Replacement	FWT–Fair Wear And Tear RS–Report of Survey	EX–Excess SC–Simt of Charges		

12. ITEM NO a	STOCK NO b	ITEM DESCRIPTION c	UNIT OF ISSUE d	QUANTITY e	CODE* f	SUPPLY ACTION g	UNIT PRICE h	TOTAL COST i	POSTED j DATE	POSTED j BY
1	AM 37752	N-phenyl-4-chlorobenzylimine	Milligrams	50						
2	AM 37761	1-nitro-1,2-diphenylenylethene	"	50						
3	AM 37770	2,2,8,8-tetranitro-4,6-oxonouane	"	550						
4	AM 37789	2,4,6-trinitrobenzaldehyde	"	50						
5	AM 37805	2,4,6-trinitromesitylene	"	550						
6	AM 37814	3,5-dinitrotoluene	"	50						
7	AM 37823	2,8-dimethyl-2,8-dinitro-4,6-oxonohane	"	50						
8	AM 37832	2,4,6-trinitrobenzoyl chloride	"	550						
9	AM 37850	N,N'-diphenyl-4,5-(4-anisole)-imidazol-2-oue	"	50						
10	AM 37949	1,3,-dichlord-2,4,6-trinitrobenzene	"	50						
11	AM 38099	N-(2,2-dinitrilethene)-hydrazine	"	200						
12	AM 38124	2,6-dinitro-benzylbromide	"	500						
13	AM 38133	2,4,6-trinitrobenzylbromide		150						
14	AM 38142	2,4,6-trinitrobenzylalcohol		500						
15	AM 38151	2,4,6-trinitrobenzoyliodide		500						
16	AM 38160	1-(2,4,6-trinitrophenyl)ethanol		500						
17	AM 38179	2,4,6-trinitro-1,3-dimethoxy benzene	"	350						
18	AM 38188	2,4,6-trinitro-3,5-dimethoxyaniline	"	25						
							SHEET TOTAL	GRAND TOTAL		

13. ISSUE/TURN-IN "QUANTITY" COLM IS REQUESTED	DATE	BY	14. ISSUE QTY IN "SUPPLY ACTION" COLUMN	DATE	BY	15. REC QTY IN "SUPPLY ACTION" COLUMN	DATE	BY
	27/1/81	William E Ellis		2/2/81	C Barnes			

FORM DA 1 JUN 79 3161

REPLACES DA FORM 3161, 1 JUL 66 WHICH IS OBSOLETE

☆ U.S. GOVERNMENT

DA FORM 3161-1

APPENDIX D

PESTICIDE INVENTORIES AND USAGE ON WRAMC

Sources: WRAMC DFAE, 1980b.
USAEHA, 1976.

DIRECTORATE OF THE FACILITIES ENGINEERING

AUTHORITY TO RETAIN SUPPLIES FOR THE MONTHS Oct, Nov, Dec FY 80

Shop [illegible]

SHOP STOCK

SHOP: ENTOMOLOGY UNIT

FOREMAN: MELVIN NEWMAN

Name(s) of personnel authorized to order/receive supplies;

MELVIN NEWMAN

[illegible]

APPROVED: [illegible] C, ERMD

TEMS No.	NOMENCLATURE OF ITEMS	MAX QUANTITY TO BE RETAINED
1	3740-252-2384-Mousetrap, spring	12 doz.
2	3740-260-1398-Rat trap, spring	6 doz.
3	~~6840-753-4973-Rodent bait Anticoagulant ready mix 5 lb can~~	~~6 cn~~
4	6840-584-3129-Liq. pine oil disinfectant	6 gal
5	~~6840-753-4972-Rodenticide universal conc 1lb can~~	~~6 cn~~
6	~~6840-285-7091 " zinc phosphide 1 oz bottle~~	~~[illegible]~~
7	6840-823-7849-Insect. aerosol pyrethrin	24 cn
8	6840-149-0106-Insect Resmethrin 12 oz can	24 cn
9	6840-782-3925-Diazinon 47.5% EC	6 gal
0	6840-180-6069-Insect, Baygon 1% sol.	6 gal
1	Non Stand. Bayon 2% roach bait 5 lb BT	5 lbs
2	6840-685-5438-Malathion 57% EC 5 gal can	4 cn
3	6840-270-8262-Chlordane 72% EC gal cn	5 cn
4	6840-753-5038-Diazinon 2% dust 25 lb	2 pails
5	Non Stand Bird repeltent cartridges	24 tube
5	6840-542-7825-Chloridine 5% dust 5 lbs pail	2 pails
7	Non Stand Sevin, flowable 41.8%	6 gal
3	~~" " Cygon 2E~~	~~2 gal~~
	" " Sevin 5% dust	9 lbs
	" " Sugar	5 lbs
	" " Peanut Butter	2 Jars
	" " Cooking oil	2 pints

23.	" " Corn Meal	5 lbs
24.	" " Dursban 2 E	2 gal
25.	6840-402-5411-Dursban 4 E	5 gal
26.	Non Stand Dormat oil (60 surerior oil)	12 gal
27.	" " Residex ULV pyrethrum Core	1 gal
28.	Clorox (or equal)	4 gal
29.	7930-282-9699-Detergent, general purpose	4 gal
30.	Non Stand spreader sticker	1 gal
31.	" " Live traps hava hart size #1	12 ea
32.	" " Live trap hava hart size #2A	2 ea
33.	" " Metal bait boxes	36 ea
34.	6505-664-0441-Mineral oil, light	4 pints
35.	~~Non Stand; Rodenticide; Eaton's Bait Blocks~~	~~2 cases~~
36.	~~Non Stand Korlan-24E~~	~~2 gal~~
37.	Non Stand; Bolt, Roach Bait	1 case
38.	~~Non Stand Rozol~~	~~80 lbs~~
39.	Non Stand Fican W	2 boxes
40	Non Stand, Talon.	40 Lbs
41	Non Stand Mr Sticky	2 Boxes

Table D-1. Inventory of Pesticides at WRAMC, 1975

Pesticide	Formulation	Quantity
Tersan®	50 percent WP	0.5 lb
Karathane®	25 percent WP	3 lb
Banrot®	40 percent WP	2.5 lb
Benlate®	50 percent WP	1.5 lb
DDT	50 percent WP	1 lb
Tedion®	25 percent WP	5 lb
Slug-Kill®	15 percent WP	1 lb
Malathion	57 percent EML	5 gal
Dimethoate	23.4 percent EML	2 gal
Malathion-Lindane	10 percent/5 percent	1 gal
Dichlorvos	9.3 percent solution	1 gal
Pentac®	80 percent solution	3 gal
Dexon®	70 percent WP	4 lb
Dexon	35 percent WP	5 lb
Noculate®	13.5 percent EML	5 qts
Kelthane®	18.5 percent EML	6 oz
B-Nine®	5 percent EML	1 qt
Zectran®	25 percent WP	1 lb
Orthocide®	50 percent WP	40 lb
Fermate®	76 percent WP	3 lb
Zineb®	75 percent WP	6 lb
Terrachlor®	75 percent WP	15 lb
Chlordane	72 percent EML	8 gal
Malathion	95 percent solution	4 gal
Pyrethrins	0.4 percent solution	110 gal
Resmethrin	0.6 percent Aerosol	30 12-oz cans
Diazinon	47.5 percent EML	8 gal
Malathion	3 percent solution	55 gal
Propoxur	1 percent solution	2 gal
Propoxur	2 percent bait	2 5-lb cans
Amino 2,4-D	49 percent EML	5 gal
Metham-Sodium	33 percent solution	1 gal
Carbaryl	41.5 percent flowable	2 lb
Pival	0.025 percent	30 lb
Pival	Ready-Mix	20 lb
DDT	10 percent dust	10 lb
Roost-No-More	96 percent paste	12 8-oz tubes
For-the-Birds	80 percent past	12 8-oz tubes

Source: USAEHA, 1976.

TABLE 1
SUMMARY OF PESTICIDE USE AT WRAMC FROM
DECEMBER 1974 THROUGH JULY 1975 AS REPORTED ON DD1532

Pest	Land Use/Bldg Treated	Area Treated	Pesticide	Formulation	Gal/lbs Actual Formulation
Cockroaches	Hospital/Laboratory	1,643,000 ft^2	Diazinon	47.5 percent EML	34.6 gal
	Office	156,000			2.4
	Food Handling Areas	449,000			7.2
	Residential	70,000			1.4
	Recreation	32,000			0.6
	Barracks/BOQ's	193,000			3.4
	Warehouse	76,000			1.4
	Utility	31,000			0.7
	Industrial	15,000			0.4
	Exchanges	37,000			0.7
	Kennels	116,000			2.0
Rats/Mice	Hospital/Laboratory	14,000 ft^2	Pival®	Bait, 0.025 percent	7.0 lbs
	Offices	8,000			4.5
	Residential	6,000			3.5
	Recreation	4,000			1.0
	Food Handling Areas	10,000			2.0
	Exchanges	10,000			2.0
	Kennels	10,000			6.0
	Hospital	5,000	Trapping	—	—
	Residential	3,000			
	Warehouse	25,000			
	Barracks/BOQ's	4,000			
	Exchanges	1,000			
	Office	26,000			
	Food Handling Areas	6,000			
Birds	Industrial	4,000 ft^2	For-the-Birds®	80 percent Paste	9 lbs
	Hospital/Laboratory	5,000			8
	Warehouse	6,000			15
	Warehouse	2,000	Roost-No-More®	96 percent Paste	2
Ants	Barracks/BOQ's	7,000 ft^2	Diazinon	47.5 percent EML	0.2 gal
	Hospital/Laboratory	6,000			0.2
	Residential	3,000			0.2
	Office	2,000			0.1
Sucking Insects	Open Brush	7 Acres	Malathion	57 percent EML	1.7 gal
		2	Dimethoate	23.4	0.5
	Sparse Woods	5	Malathion	57	1.6
Weeds	Grass, Brush	2 Acres	2,4-D	49 percent EML	4.2 gal
	Grass	1	Dalapon	85 Sol'n	6.9
	Sparse Woods	1	Silvex	60 percent EML	0.3
Filth Flies	Office	1,000 ft^2	Diazinon	47.5 percent EML	0.1 gal
	Kennels	50,000 ft^3	Pyrethrins	0.025 percent Sol'n	1 gal
Ticks	Open Brush	4 Acres	Diazinon	47.5 percent EML	1.1 gal
Lice	Hospital	9,000 ft^2	Diazinon	47.5 percent EML	0.3 gal
Wasps	Residential	2,000 ft^2	Carbaryl	80 percent Dust	0.21 lbs
Plant Disease	Open Brush	1 Acre	Captan®	7 percent Dust	3 lbs
Bedbugs	Residential	2,000 ft^2	Malathion	95 percent Sol'n	0.03 gal

® Pival is a registered trademark of Motomco, Inc., 89 Terminal Ave., Clark, NJ 07066.
® For-the-Birds® is a registered trademark of A. Z. Bogert Comp., Philadelphia, PA 19118.
® Roost-No-More® is a registered trademark of National Bird Control Laboratories, 7323 N. Monticello Ave., Skokie, IL 60076.
® Captan® is a registered trademark of FMC Corp., Middleport, NY 14105.

APPENDIX E

LABORATORY ACTIVITIES AT WRAMC WHICH USE RADIOACTIVE MATERIALS

Source: WRAMC, Health Physics Office, 1984.

NOTE: WRAIR room numbers are Bldg. 40 unless otherwise specified, Bldg. Nos. 500 and 508 are located at Forest Glen.

AFIP room numbers are Bldg. 54 unless otherwise specified.

WRAMC room numbers are Bldg. 2 unless otherwise specified.

USAMRIID is at Fort Detrick, Md.

USAIDR is at both Bldg. 40 Main Section and at Bldg. 2805 Fort Meade, Md.

ISOTOPE DELIVERY LIST BY AUTH

AUTH #	PRINCIPAL USER	ACTIVITY	PHONE #	LOCATION	ROOM #	
215	Mr PENNINGTON, Lee L. (CIV)	Neuropsych	576-3029	WRAIR		3065
221	Mr STAFFORD, James E. (CIV)	Health Physics	427-5161	WRAMC		11
398	Dr BATTISTONE, Gino C. (CIV)(PhD)	USAIDR(Oral Bio)	576-2987/3484	WRAIR		2026
398A	MAJ BURNETT, Paul (DC)	USAIDR(Oral Bio)	576-3080	WRAIR		2026
416	Dr McCORMICK, Gerald J. (CIV)(PhD)	Exper.Therapeutics	427-5029	WRAIR		68
430	Dr BASS, Billy G. (CIV)(ENG)	Director, Instru Div	576-3428	WRAIR		B101
440	Mr KAZYAK, Leo	Biochemistry	576-2594	WRAIR		LRL
443	CPT BAKER, James R.,MC	Organ Transplant	576-1463/1699	WRAMC		6Z60
443A	SFC HAYES, Robert	Organ Transplant	576-3817/1462	WRAMC		Bldg 7
454	Dr CHUNG, Ho (CIV)(PhD)	Exper Therapeutics	427-5295	WRAIR		35
499	Dr KANT, Gloria Jean (CIV)(PhD)	Neuropsych	576-3302	WRAIR		3057
503	Dr BRANDT, Walter E. (CIV)(PhD)	Virus Diseases	576-3626	WRAIR		2047
503	CPT HENCHAL, Erik A.,MSC	Virus Diseases	576-3012	WRAIR		2047
507	Mr McNEIL, James S. (CIV)	Nephrology	576-3472	WRAIR		3074
511	Dr BRUTON, Joseph (CIV)	Endo-Metabolism	576-3857/3852	WRAMC		4742
515	MAJ WELTON, Richard C., MC	Rhematology	576-1734/1797	WRAMC		7211
518	Mr MOUGEY, Edward H. (CIV)	Neuropsych	576-3025	WRAIR		3061
525	Dr WOHLHIETER, John A. (CIV)(PhD)	Bacterial Immunology	576-3745	WRAIR		1019

541	Dr JAHRLING, Peter B. (CIV)(PhD)	USAMRIID(Irradiators)	393-7655	USAMRIID	AA413
557	COL WRAY, Harvey L., MC	Endo-Metabolism	576-1793	WRAMC	4760
559	Mr WILLIAMS, Joseph S. (CIV)	Immunology	576-3063	WRAIR	1033
566	LT ANDREWS, Gerard, MSC	Gastroenterology	576-3694	WRAIR	2078
569	Dr WHITING, John D. (CIV)(PhD)	DoD Drug Detactment	576-2953	AFIP	4010
571	LTC OHASI, Robert, MSC	Pathology & Lab Svcs	576-1210/1237	WRAMC	2B62
572	Mr HEATH, James R. (CIV)	USAIDR	576-3092	WRAIR	Bldg 91
574	COL DIGGS, Carter L. MC	Immunology	576-2110	WRAIR	1017
576	Mrs D'ACOSTA, Eugenia (CIV)	Div of Surgery	576-3794/4137	WRAIR	3019
577	Dr FISHBEIN, William N. (CIV)(MD)	Biochemistry	576-2855	AFIP	3001
583	Dr ECKELS, Kenneth H. (CIV)(PhD)	Haz Microorganisms	427-5109/5208	WRAIR	Bldg 506
585	MAJ RICE, Robert M., MC	Rickettsial Diseases	576-3658	WRAIR	B058
586	Dr OLENICK, John G. (CIV)(PhD)	Biochemistry	576-3017	WRAIR	B036
593	CPT BAYLOR, Howard, MSC	Medical Lab, Ft Meade	923-4090/6075	WRAMC	Bldg 2405
596	Dr WOLFE, Alan D. (CIV)(PhD)	Biochemistry	576-2312	WRAIR	B061
600	LTC SMALLRIDGE, Robert C.,MC	Clinical Physiology	576-3014/3687	WRAIR	3117
601	Mr WILLIAMS, Harold L. (CIV)	Hematology	576-3040	WRAIR	1040
601A		Hematology	576-3040	WRAIR	B097
601B		Hematology	576-3305	WRAIR	B097
601C		Hematology	576-2208	WRAIR	1038

601D		Hematology	576-3060	WRAIR	1039
603	Mr MILLER, Robert A. (CIV)	USAIDR(Oral Bio)	576-3393	Ft Meade	Bldg 2805
604	CPT VERMA, Pritam S.,MSC	Clinical Physiology	576-2629	WRAIR	3119A
605	Mr RICHARDSON, Earl C. (CIV)	Biochemistry	576-3388	WRAIR	W02
606	Mr FANNING, George R. (CIV)	Biochemistry	576-4235	WRAIR	1026
607	Mrs SODD, Mary Ann (CIV)	Biochemistry	576-3527	WRAIR	1042
608	Mrs BURGESS, Doris (CIV)	Clin Investigation	576-1599	WRAMC	5268
610	Dr TAI, Yuan-Heng (CIV)(PhD)	Gastroenterology	576-3694	WRAIR	2078
611	LTC REID, Robert H., MC	Gastroenterology	576-3485	WRAIR	2121
613	MAJ BERGER, Melvin, MC	Allergy Clinic	576-1847	WRAMC	1J29
614	Dr DOBEK, Arthur S. (CIV)(PhD)	Clin Investigation	576-1259/1260	WRAMC	2B26
615	LTC BURMAN, Kenneth D., MC	Endo-Metabolism	576-1793	WRAMC	4743
617	Dr ZOLLINGER, Wendell D.(CIV)(PhD)	Bacteriology	576-3651	WRAIR	2060
618	Dr WANNEMACHER, Robert W.(CIV)(PhD)	Phys Sci Div,USAMRIID	393-7181	USAMRIID	Bldg 1425
619	Dr WANNEMACHER, Robert W.(CIV)(PhD)	Phys Sci Div,USAMRIID	393-7181	USAMRIID	Bldg 1425
620	Dr WANNEMACHER, Robert W.(CIV)(PhD)	Phys Sci Div,USAMRIID	393-7181	USAMRIID	Bldg 1425
621	Dr WANNEMACHER, Robert W.(CIV)(PhD)	Phys Sci Div,USAMRIID	393-7181	USAMRIID	Bldg 1425
623	Dr JACKSON, Joan E.(CIV)(PhD)	Exper Therapeutics	427-5438/5122	WRAIR	Bldg 500
624	MAJ WILLIAMS, James E.,MSC	Haz Microorganisms	427-5110	WRAIR	Bldg 508
625	Dr TANG, Lily C.(CIV)(PhD)	Exper Therapeutics	427-5295	WRAIR	Bldg 500

626	MAJ WRIGHT, Daniel G.,MC	Hematology	576-3040	WRAIR	1036
628	Dr TSENG, Jeenan, (CIV)(PhD)	Exper Pathology	576-3053	WRAIR	1004
629	CPT HADFIELD, Ted L.,BSC	Microbiology Div.	576-2993/2954	AFIP	4019
630	MAJ FEIN, Henry G.,MC	Hematology	576-3687	WRAIR	3119
631	MAJ ALVING, Barbara M.,MSC	Hematology	576-3385	WRAIR	1063
632	MAJ HOOVER, David L.,MSC	Immunology	576-2570	WRAIR	B025
633	Dr BEDNAREK, Jana, (CIV)(PhD)	Clin Investigation	576-1798/1751	WRAMC	7260
635	Dr ESSER, Klaus M.,(CIV)(PhD)	Immunology	576-4206	WRAIR	1014
636	Dr JETT, Marti, (CIV)(PhD)	Biochemistry	576-1361	WRAIR	1030
637	Dr CHIANG, Peter B.,(CIV)(PhD)	Biochemistry	576-1361	WRAIR	1032
638	LCDR FOX, Cecil H.,USN	Quant Histopath	576-2807	AFIP	3112
639	Dr LYON, Jeffrey A.,(CIV)(PhD)	Immunology	576-3331	WRAIR	1017
640	CPT YOUNG, Patricia M.,MSC	Clin Investigation	576-1389/1589	WRAMC	5260
641	Dr NAGARAJAM, Krishnaswamy,(CIV)(PhD)	Envir & Drug Div	576-2434	AFIP	3014
642	LTC WONG, Roy, MC	Clin Investigation	576-3177/1765	WRAMC	Bldg T-2
643	CPT WEBER, James L.,MC	Immunology	576-3685	WRAIR	1012
644	MAJ FINKLOOM, David S.,MC	Immunology	576-2570	WRAIR	1020
645	Dr HOLADAY, John, (CIV)(PhD)	Neuropsych	576-3028	WRAIR	3061
646	Dr TSENG, Yuan-Chen,(CIV)(PhD)	Clin Investigation	576-1697	WRAMC	6270

274	LTC VAN NOSTRAND, Douglas, MC	Nuclear Medicine	576-5140	WRAMC	7th floor
427	MAJ BAUMANN, John, MC	Radiation Therapy	576-1180	WRAMC	1H23
533	COL WARTOFSKY, Leonard, MC	Endo-Metabolism	576-1793	WRAMC	4720

APPENDIX F

NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

Source: WRAMC DFAE, 1980a.

IWRAMC-126/TX42

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

INSTALLATION'S EPA I.D. NO.

NAME OF INSTALLATION

INSTALLATION MAILING ADDRESS

LOCATION OF INSTALLATION

Walter Reed Army Medical Center
ATTN: HSWS-E
WASH DC 20012
PLEASE PLACE LABEL IN THIS SPACE

WASH DC

INSTRUCTIONS: If you received a preprinted label, affix it in the space at left. If any of the information on the label is incorrect, draw a line through it and supply the correct information in the appropriate section below. If the label is complete and correct, leave Items I, II, and III below blank. If you did not receive a preprinted label, complete all items. "Installation" means a single site where hazardous waste is generated, treated, stored and/or disposed of, or a transporter's principal place of business. Please refer to the INSTRUCTIONS FOR FILING NOTIFICATION before completing this form. The information requested herein is required by law (Section 3010 of the Resource Conservation and Recovery Act).

OFFICIAL USE ONLY

COMMENTS

INSTALLATION'S EPA I.D. NUMBER	APPROVED	DATE RECEIVED (yr., mo., & day)

NAME OF INSTALLATION

WALTER REED ARMY MEDICAL CENTER

INSTALLATION MAILING ADDRESS

STREET OR P.O. BOX

CITY OR TOWN	ST.	ZIP CODE
WASHINGTON DC		20012

LOCATION OF INSTALLATION

STREET OR ROUTE NUMBER

ME

CITY OR TOWN	ST.	ZIP CODE
ME		

INSTALLATION CONTACT

NAME AND TITLE (last, first, & job title)	PHONE NO. (area code & no.)
L SMITH DIR FACILITY ENGR	202-576-3434

OWNERSHIP

A. NAME OF INSTALLATION'S LEGAL OWNER

FEDERAL GOVT DOD DEPT OF ARMY

B. TYPE OF OWNERSHIP (enter appropriate letter into box)

FEDERAL
NON-FEDERAL F

V. TYPE OF HAZARDOUS WASTE ACTIVITY (enter "X" in the appropriate box(es))

- [X] A. GENERATION
- [X] B. TRANSPORTATION (complete item VII)
- [X] C. TREAT/STORE/DISPOSE
- [ ] D. UNDERGROUND INJECTION

MODE OF TRANSPORTATION (transporters only – enter "X" in the appropriate box(es))

- [ ] A. AIR
- [ ] B. RAIL
- [X] C. HIGHWAY
- [ ] D. WATER
- [ ] E. OTHER (specify):

FIRST OR SUBSEQUENT NOTIFICATION

Enter the appropriate box to indicate whether this is your installation's first notification of hazardous waste activity or a subsequent notification. If this is your first notification, enter your installation's EPA I.D. Number in the space provided below.

- [ ] A. FIRST NOTIFICATION
- [ ] B. SUBSEQUENT NOTIFICATION (complete item C)

C. INSTALLATION'S EPA I.D. NO.

DESCRIPTION OF HAZARDOUS WASTES

Read the reverse of this form and provide the requested information.

EPA Form 8700-12 (5-80) Page 1 of 4

I.C. – FOR OFFICIAL USE ONLY

W

C. DESCRIPTION OF HAZARDOUS WASTES *(continued from front)*

HAZARDOUS WASTES FROM NON–SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.31 for each listed hazardous waste from non–specific sources your installation handles. Use additional sheets if necessary.

1	2	3	4	5	6
7	**8**	**9**	**10**	**11**	**12**

ADDITIONAL

HAZARDOUS WASTES FROM SPECIFIC SOURCES. Enter the four–digit number from 40 CFR Part 261.32 for each listed hazardous waste from specific industrial sources your installation handles. Use additional sheets if necessary.

13	14	15	16	17	18
19	**20**	**21**	**22**	**23**	**24**
25	**26**	**27**	**28**	**29**	**30**

COMMERCIAL CHEMICAL PRODUCT HAZARDOUS WASTES. Enter the four–digit number from 40 CFR Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31	32	33	34	35	36
P 0 0 3	P 0 0 4	P 0 0 5	P 0 0 8	P 0 1 0	P 0 1 1
37	**38**	**39**	**40**	**41**	**42**
P 0 1 2	P 0 1 4	P 0 1 7	P 0 2 2	P 0 3 0	P 0 3 1
43	**44**	**45**	**46**	**47**	**48**
P 0 3 2	P 0 3 5	P 0 3 7	P 0 4 4	P 0 4 8	P 0 4 9

LISTED INFECTIOUS WASTES. Enter the four–digit number from 40 CFR Part 261.34 for each listed hazardous waste from hospitals, veterinary hospitals, medical and research laboratories your installation handles. Use additional sheets if necessary.

49	50	51	52	53	54

CHARACTERISTICS OF NON–LISTED HAZARDOUS WASTES. Mark "X" in the boxes corresponding to the characteristics of non–listed hazardous wastes your installation handles. *(See 40 CFR Parts 261.21 – 261.24.)*

☐ 1. IGNITABLE (D001) ☐ 2. CORROSIVE (D002) ☐ 3. REACTIVE (D003) ☐ 4. TOXIC (D004)

ADDITIONAL

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

SIGNATURE	NAME & OFFICIAL TITLE (Type or print)	DATE SIGNED
Gerald D. Allgood	GERALD D. ALLGOOD, COL, MSC Chief of Staff	18 Aug 80

EPA Form 8700-12 (6-60) REVERSE

X. DESCRIPTION OF HAZARDOUS WASTES (Cont.)

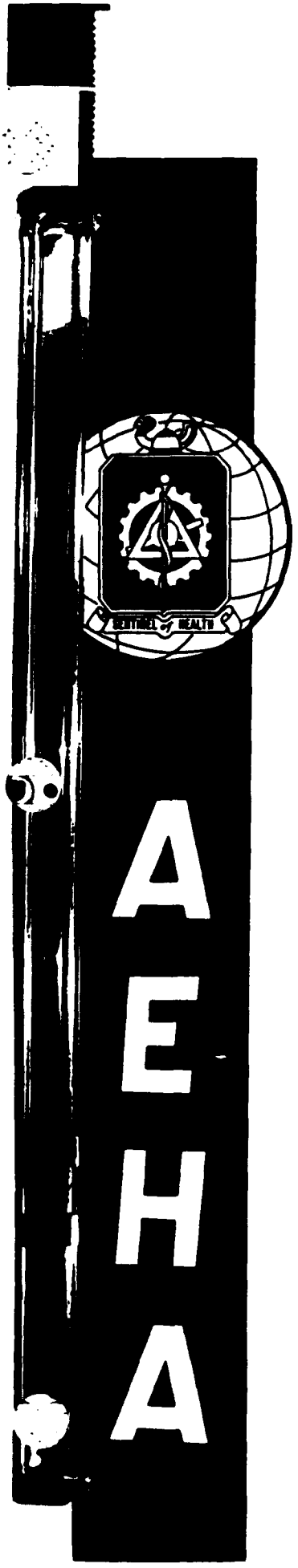
C. Commercial Products (Cont.)

P050	U001	U142
P051	U002	U144
P053	U003	U146
P054	U004	U147
P056	U006	U149
P059	U012	U151
P067	U013	U154
P068	U019	U159
P071	U028	U161
P075	U031	U165
P077	U034	U167
P087	U036	U168
P089	U043	U169
P093	U044	U170
P098	U052	U182
P100	U056	U185
P103	U057	U187
P105	U059	U188
P106	U060	U191
P108	U061	U194
P117	U067	U196
P115	U077	U197
	U080	U200
	U081	U201
	U082	U204
	U088	U209
	U104 = P048	U211
	U107	U219
	U108	U220
	U110	U224
	U112	U235
	U115	U236
	U117	U238
	U122	U239
	U123	U132
	U125	
	U133	
	U135	
	U138	
	U139	
	U140	

APPENDIX G

USAEHA POTABLE WATER QUALITY DATA FOR WRAMC

Source: USAEHA, 1978.



UNITED STATES ARMY ENVIRONMENTAL HYGIENE AGENCY

ABERDEEN PROVING GROUND, MD 21010

SUMMARY OF US ARMY DRINKING WATER
SURVEILLANCE PROGRAM DATA BASE
1972-1977

Approved for public release; distribution unlimited.

111933 WALTER REED ARMY MED CENTER

SOURCE TS01

	AS	BA	CD	CR	F	PB	HG	NO3	SE	AG	NA
MIN	< .020	< .30	< .005	< .025	1.0	< .005	< .0002	1.5	< .010	< .025	4.5
MEAN	.020	.30	.005	.025	1.0	.005	.0002	1.8	.010	.025	7.9
MAX	< .020	< .30	< .005	< .025	1.0	< .005	< .0002	2.2	< .010	< .025	11.3
NR OBS	2	2	2	2	2	2	2	2	1	2	2

	ALPHA	BETA	TRITIUM	90SR	226RA	B	CU	FE	MG	MN	ZN
MIN	< .5	2.3	.0004	.00	.00	.09	< .025	< .1	4.9	< .03	< .015
MEAN	.5	2.5	.0502	.00	.00	.09	.025	.1	6.4	.03	.044
MAX	< .6	2.7	< .1000	.00	.00	< .10	< .025	< .2	8.0	< .03	.073
NR OBS	2	2	2	0	0	2	2	2	2	2	2

	COLOR	ALK	PH	HARD	SP C	CA	K	SI	TDS	CL	SO4
MIN	.0	59.8	7.6	108.0	234.	29.3	1.30	3.2	156.8	11.3	29.9
MEAN	.0	74.7	8.1	132.9	304.	36.4	1.56	4.2	199.4	16.1	34.4
MAX	.0	89.6	8.5	157.8	375.	43.6	1.82	5.2	242.0	20.9	39.0
NR OBS	2	2	2	2	2	2	2	2	2	2	2

APPENDIX H

AIR QUALITY PERMITS ISSUED TO WRAMC
BY THE STATE OF MARYLAND

Sources: WRAMC, 1978.
Maryland Department of Health and Mental Hygiene, 1983.

POST IN CONSPICUOUS PLACE

State of Maryland

DEPARTMENT OF HEALTH AND MENTAL HYGIENE
OFFICE OF ENVIRONMENTAL PROGRAMS
201 W. PRESTON STREET
BALTIMORE, MARYLAND 21201

Charles R. Buck, Jr., Sc.D.
Secretary

William M. Eichbaum
Assistant Secretary for
Environmental Programs

[ ] Construction Permit [XX] Operating Permit [ ] DHS Facility Permit

AIR MANAGEMENT ADMINISTRATION

PERMIT NO. 0-00983-00126 Date Issued March 1, 1983

PERMIT FEE None Expiration Date February 29, 1984

LEGAL OWNER & ADDRESS	SITE
Walter Reed Army Institute of Research Department of Animal Resources Forest Glen, Maryland 20012 Attn: William C. Cole, LTC	Building 511 Kelser Section Montgomery County

INSTALLATION DESCRIPTION

Consumat model C-125-P infectious waste incinerator rated at 350 lbs./hour.

Donald P. Chelius
Administrator, Engineering and Enforcement Program

George P. Ferreri
Director, Air Management Administration

(NOT TRANSFERABLE)

AMA-1 (Rev. 2-1-79) OHMH 1589

Replaced with Cleaver Brooks 700 HP applied for license

STATE OF MARYLAND - DEPARTMENT OF HEALTH AND MENTAL HYGIENE

Environmental Health Administration

Bureau of Air Quality & Noise Control
O'Conor Building
201 W. Preston Street
Baltimore, Maryland 21201

C 80 **APPLICATION FOR FUEL BURNING EQUIPMENT:** Registration [X] Permit to Construct [ ]

1. OWNER OF INSTALLATION: Walter Reed Army Medical
DATE OF APPLICATION: May 9, 1978
MAILING ADDRESS: 6825 16th St. N.W.
TELEPHONE: 427-5309
CITY: Washington STATE: D.C ZIP CODE: 20012

2. LOCATION OF FUEL BURNING EQUIPMENT (If different from above): Bldg 120 Forest Glen Section

3. STARTING DATE (New Construction) COMPLETION DATE

DATE EXISTING INSTALLATION PLACED IN OPERATION 1951 (23 - 24)

4. SIGNATURE OF OWNER OR AUTHORIZED COMPANY OFFICIAL [signature]

PRINT OR TYPE NAME: William R. Bradley TITLE: Boiler Plant Foreman

DO NOT WRITE IN THIS SPACE

DATE REC. LOCAL | DATE REC. STATE
ACKNOWLEDGEMENT SENT: DATE BY
REVIEWED: NAME DATE
LOCAL
STATE
RETURNED TO LOCAL JURISDICTION: DATE BY
APPLICATION RET'D TO APPLICANT: DATE BY
REGISTRATION NUMBER (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
STATE GRID COORDINATES 11 12 13 14 15 16 17
PREMISE NUMBER 18 19 20 21 22

5. TYPE OF APPLICATION:
EXISTING INSTALLATION (INITIAL REG.) [X] 25-1
NEW INSTALLATION (TO BE CONSTRUCTED) [ ] 25-2
REPLACEMENT [ ] 25-3

6. MAJOR ACTIVITY AT THIS LOCATION (Check One)
MANUFACTURING [ ] 26-1
RETAIL OR WHOLESALE STORE [ ] 26-2
OFFICE (ALL TYPES) [ ] 26-3
SCHOOL OR CHURCH [ ] 26-4
HOTEL OR MOTEL [ ] 26-5
WAREHOUSE [ ] 26-7
HOSPITAL OR LABORATORY [X] 26-6
RESIDENTIAL OR APARTMENTS [ ] 26-8
OTHER ______ SPECIFY [ ] 26-9

7. IDENTICAL INSTALLATIONS
NUMBER OF UNITS 01 (27 - 28)
RR1756 #1 OWNERS IDENTIFICATION NUMBER(S)

8. STACK HEIGHT ABOVE GROUND LEVEL (FEET): NUMBER OF STACKS ______
30 OR LESS [ ] 29-1
31-50 [ ] 29-2
51-100 [ ] 29-3
101-150 [X] 29-4
151-200 [ ] 29-5
201-250 [ ] 29-6
OVER 250 [ ] 29-7 ______ SPECIFY

9. CHECK ALL FUELS BURNED IN THIS EQUIPMENT:
COAL [ ] OIL [X] WOOD [ ] NATURAL GAS [ ] OTHER [ ] ______ SPECIFY

10. IF OIL IS USED, CHECK ALL GRADES APPLICABLE:
NO. 1 [ ] 30-1
NO. 2 [X] 30-2
NO. 4 [ ] 30-3
NO. 5 [ ] 30-4
NO. 6 [ ] 30-5
OTHER [ ] 30-6 ______ SPECIFY

11. EQUIPMENT MANUFACTURER: Keeler BOILER MODEL NUMBER: 46756

BOILER TYPE: FIRE TUBE [ ] WATER TUBE [X] 1953

MAJOR USE OF FUEL BURNING EQUIPMENT:
HEATING USE ONLY [ ] PROCESS USE ONLY [ ]
COMBINED USE [ ] ______ % Process

HEATING SURFACE AREA (SQ. FT.) ______
STEAM (LBS./HR. PSIG.) 23,000 °F ______

TYPE OF OIL BURNER:
PRESSURE OR GUN TYPE [ ] 31-1
ROTARY CUP [ ] 31-2
STEAM ATOMIZER [X] 31-3
AIR ATOMIZER [ ] 31-4
OTHER [ ] 31-5 ______ SPECIFY

STATE OF MARYLAND - DEPARTMENT OF HEALTH AND MENTAL HYGIENE
Environmental Health Administration
Bureau of Air Quality & Noise Control
O'Conor Building
201 W. Preston Street
Baltimore, Maryland 21201

C APPLICATION FOR FUEL BURNING EQUIPMENT: Registration ☒ Permit to Construct ☐

80

DO NOT WRITE IN THIS SPACE

DATE REC. LOCAL | DATE REC. STATE

ACKNOWLEDGEMENT SENT
DATE BY

REVIEWED
NAME DA
LOCAL
STATE

RETURNED TO LOCAL JURISDICTION
DATE BY

APPLICATION RET'D TO APPLICANT
DATE BY

REGISTRATION NUMBER
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

STATE GRID COORDINATES
11 12 13 14 15 16 17

PREMISE NUMBER
18 19 20 21 22

1. OWNER OF INSTALLATION: Walter Reed Army Medical Center
DATE OF APPLICATION: May 9, 1978

MAILING ADDRESS: 6825 16th St. N.W.
TELEPHONE: 427-5309

CITY: Washington
STATE: D.C.
ZIP CODE: 20012

2. LOCATION OF FUEL BURNING EQUIPMENT (If different from above): Bldg 120 Forest Glen Section

3. STARTING DATE (New Construction)
COMPLETION DATE

DATE EXISTING INSTALLATION PLACED IN OPERATION: 1969
23 - 24

4. SIGNATURE OF OWNER OR AUTHORIZED COMPANY OFFICIAL

PRINT OR TYPE NAME: William L. Bradley
TITLE: Boiler Plant Foreman

5. TYPE OF APPLICATION:

EXISTING INSTALLATION (INITIAL REG.) ☒ 25-1
NEW INSTALLATION (TO BE CONSTRUCTED) ☐ 25-2
REPLACEMENT ☐ 25-3

6. MAJOR ACTIVITY AT THIS LOCATION (Check One)

MANUFACTURING ☐ 26-1
RETAIL OR WHOLESALE STORE ☐ 26-2
OFFICE (ALL TYPES) ☐ 26-3
SCHOOL OR CHURCH ☐ 26-4
HOTEL OR MOTEL ☐ 26-5
WAREHOUSE ☐ 26-7
HOSPITAL OR LABORATORY ☒ 26-6
RESIDENTIAL OR APARTMENTS ☐ 26-8
OTHER ☐ 26-9 SPECIFY

7. IDENTICAL INSTALLATIONS

NUMBER OF UNITS: 01
27 - 28

OWNERS IDENTIFICATION NUMBER(S): [illegible] #3

8. STACK HEIGHT ABOVE GROUND LEVEL (FEET): NUMBER OF STACKS

30 OR LESS ☐ 29-1
31-50 ☐ 29-2
51-100 ☐ 29-3
101-150 ☒ 29-4
151-200 ☐ 29-5
201-250 ☐ 29-6
OVER 250 ☐ 29-7
Not in operation SPECIFY

9. CHECK ALL FUELS BURNED IN THIS EQUIPMENT:

COAL ☐ OIL ☐ WOOD ☐ NATURAL GAS ☐ OTHER ☐ Not in Operation SPECIFY

10. IF OIL IS USED, CHECK ALL GRADES APPLICABLE:

NO. 1 ☐ 30-1
NO. 2 ☐ 30-2
NO. 4 ☐ 30-3
NO. 5 ☐ 30-4
NO. 6 ☐ 30-5
OTHER ☐ 30-6 SPECIFY

11. EQUIPMENT MANUFACTURER: [illegible]
BOILER MODEL NUMBER:

BOILER TYPE: FIRE TUBE ☒ WATER TUBE ☐
HEATING SURFACE AREA (SQ. FT.) 2,500
STEAM (LBS./HR. PSIG.) 12,000 °F

MAJOR USE OF FUEL BURNING EQUIPMENT:
HEATING USE ONLY ☐ PROCESS USE ONLY ☐
COMBINED USE ☐ % Process

TYPE OF OIL BURNER:

PRESSURE OR GUN TYPE ☐ 31-1
ROTARY CUP ☐ 31-2
STEAM ATOMIZER ☐ 31-3
AIR ATOMIZER ☐ 31-4
OTHER ☐ 31-5 SPECIFY

STATE OF MARYLAND - DEPARTMENT OF HEALTH AND MENTAL HYGIENE
Environmental Health Administration
Bureau of Air Quality & Noise Control
O'Conor Building
201 W. Preston Street
Baltimore, Maryland 21201

C APPLICATION FOR FUEL BURNING EQUIPMENT: Registration ☒ Permit to Construct ☐

80

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ACKNOWLEDGEMENT SENT
DATE BY
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DATE BY
REGISTRATION NUMBER (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
STATE GRID COORDINATES 11 12 13 14 15 16 17
PREMISE NUMBER 18 19 20 21 22

1. OWNER OF INSTALLATION: Walter Reed Army Medical Center
DATE OF APPLICATION: May 9, 1978
MAILING ADDRESS: 6825 16th St. N.W.
TELEPHONE: 427-5309
CITY: Washington STATE: D.C. ZIP CODE: 20012

2. LOCATION OF FUEL BURNING EQUIPMENT (If different from above): Bldg 120 Forrest Glen Section

3. STARTING DATE (New Construction) COMPLETION DATE

DATE EXISTING INSTALLATION PLACED IN OPERATION: 1938 (23-24)

4. SIGNATURE OF OWNER OR AUTHORIZED COMPANY OFFICIAL

PRINT OR TYPE NAME: William E. Bradley TITLE: Boiler Plant Foreman

5. TYPE OF APPLICATION:
EXISTING INSTALLATION (INITIAL REG.) ☒ 25-1 NEW INSTALLATION (TO BE CONSTRUCTED) ☐ 25-2 REPLACEMENT ☐ 25-3

6. MAJOR ACTIVITY AT THIS LOCATION (Check One)
MANUFACTURING ☐ 26-1 RETAIL OR WHOLESALE STORE ☐ 26-2 OFFICE (ALL TYPES) ☐ 26-3 SCHOOL OR CHURCH ☐ 26-4 HOTEL OR MOTEL ☐ 26-5
WAREHOUSE ☐ 26-7 HOSPITAL OR LABORATORY ☒ 26-6 RESIDENTIAL OR APARTMENTS ☐ 26-8 OTHER ☐ 26-9 SPECIFY

7. IDENTICAL INSTALLATIONS
NUMBER OF UNITS: 01 (27-28)
OWNERS IDENTIFICATION NUMBER(S): MR1918 A

8. STACK HEIGHT ABOVE GROUND LEVEL (FEET): NUMBER OF STACKS
30 OR LESS ☐ 29-1 31-50 ☐ 29-2 51-100 ☐ 29-3 101-150 ☒ 29-4 151-200 ☐ 29-5 201-250 ☐ 29-6 OVER 250 ☐ 29-7 SPECIFY

9. CHECK ALL FUELS BURNED IN THIS EQUIPMENT:
COAL ☐ OIL ☒ WOOD ☐ NATURAL GAS ☐ OTHER ☐ SPECIFY

10. IF OIL IS USED, CHECK ALL GRADES APPLICABLE:
NO. 1 ☐ 30-1 NO. 2 ☒ 30-2 NO. 4 ☐ 30-3 NO. 5 ☐ 30-4 NO. 6 ☐ 30-5 OTHER ☐ 30-6 SPECIFY

11. EQUIPMENT MANUFACTURER: Union BOILER MODEL NUMBER: [illegible]
BOILER TYPE. FIRE TUBE ☐ WATER TUBE ☒
HEATING SURFACE AREA (SQ. FT.): 5,000
STEAM (LBS./HR. PSIG.): 21,000 °F
MAJOR USE OF FUEL BURNING EQUIPMENT:
HEATING USE ONLY ☐ PROCESS USE ONLY ☐
COMBINED USE ☐ % Process

TYPE OF OIL BURNER:
PRESSURE OR GUN TYPE ☐ 31-1 ROTARY CUP ☐ 31-2 STEAM ATOMIZER ☒ 31-3 AIR ATOMIZER ☐ 31-4 OTHER ☐ 31-5 SPECIFY

STATE OF MARYLAND - DEPARTMENT OF HEALTH AND MENTAL HYGIENE
Environmental Health Administration
Bureau of Air Quality & Noise Control
O'Conor Building
201 W. Preston Street
Baltimore, Maryland 21201

C APPLICATION FOR FUEL BURNING EQUIPMENT: Registration ☒ Permit to Construct ☐

80

1. OWNER OF INSTALLATION: Walter Reed Army Medical Center — DATE OF APPLICATION: May 9,1978
MAILING ADDRESS: [illegible] 16th St. N.W. — TELEPHONE: 427-5309
CITY: Washington — STATE: D.C. — ZIP CODE: 20012
2. LOCATION OF FUEL BURNING EQUIPMENT (If different from above): Bldg. 500 Power Plant Section
3. STARTING DATE (New Construction) — COMPLETION DATE
DATE EXISTING INSTALLATION PLACED IN OPERATION: 1971 (23-24)
4. SIGNATURE OF OWNER OR AUTHORIZED COMPANY OFFICIAL
PRINT OR TYPE NAME: William E. Bradley — TITLE: Boiler Plant Foreman
5. TYPE OF APPLICATION:
EXISTING INSTALLATION (INITIAL REG.) ☒ 25-1 — NEW INSTALLATION (TO BE CONSTRUCTED) ☐ 25-2 — REPLACEMENT ☐ 25-3
6. MAJOR ACTIVITY AT THIS LOCATION (Check One)
MANUFACTURING ☐ 26-1 — RETAIL OR WHOLESALE STORE ☐ 26-2 — OFFICE (ALL TYPES) ☐ 26-3 — SCHOOL OR CHURCH ☐ 26-4 — HOTEL OR MOTEL ☐ 26-5
WAREHOUSE ☐ 26-7 — HOSPITAL OR LABORATORY ☒ 26-8 — RESIDENTIAL OR APARTMENTS ☐ 26-8 — OTHER ____ SPECIFY ☐ 26-9
7. IDENTICAL INSTALLATIONS
NUMBER OF UNITS: 03 (27-28) — OWNERS IDENTIFICATION NUMBER(S): [illegible]
8. STACK HEIGHT ABOVE GROUND LEVEL (FEET): NUMBER OF STACKS ____
30 OR LESS ☐ 29-1 — 51-100 ☐ 29-3 — 151-200 ☐ 29-5
31-50 ☒ 29-2 — 101-150 ☐ 29-4 — 201-250 ☐ 29-6 — OVER 250 ☐ 29-7 — SPECIFY ____
9. CHECK ALL FUELS BURNED IN THIS EQUIPMENT:
COAL ☐ — OIL ☒ — WOOD ☐ — NATURAL GAS ☐ — OTHER ☐ SPECIFY ____
10. IF OIL IS USED, CHECK ALL GRADES APPLICABLE:
NO. 1 ☐ 30-1 — NO. 2 ☒ 30-2 — NO. 4 ☐ 30-3 — NO. 5 ☐ 30-4 — NO. 6 ☐ 30-5 — OTHER ☐ 30-6 SPECIFY ____
11. EQUIPMENT MANUFACTURER: [illegible] — BOILER MODEL NUMBER: [illegible]
BOILER TYPE: FIRE TUBE ☒ — WATER TUBE ☐ — MAJOR USE OF FUEL BURNING EQUIPMENT: [illegible]
HEATING SURFACE AREA (SQ. FT.): 900 — HEATING USE ONLY ☒ — PROCESS USE ONLY ☐
STEAM (LBS./HR. PSIG.): 3,500 °F ____ — COMBINED USE ☐ ____ % Process
TYPE OF OIL BURNER:
PRESSURE OR GUN TYPE ☒ 31-1 — ROTARY CUP ☐ 31-2 — STEAM ATOMIZER ☐ 31-3 — AIR ATOMIZER ☐ 31-4 — OTHER ☐ 31-5 SPECIFY ____

DO NOT WRITE IN THIS SPACE
DATE REC. LOCAL | DATE REC. STATE
ACKNOWLEDGEMENT SENT
DATE BY
REVIEWED
NAME DATE
LOCAL
STATE
RETURNED TO LOCAL JURISDICTION
DATE BY
APPLICATION RET'D TO APPLICANT
DATE BY
REGISTRATION NUMBER (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
STATE GRID COORDINATES 11 12 13 14 15 16 17
PREMISE NUMBER 18 19 20 21 22

STATE OF MARYLAND - DEPARTMENT OF HEALTH AND MENTAL HYGIENE
Environmental Health Administration
Bureau of Air Quality & Noise Control
O'Conor Building
201 W. Preston Street
Baltimore, Maryland 21201

[C] APPLICATION FOR FUEL BURNING EQUIPMENT: Registration [X] Permit to Construct [ ]

80

1. OWNER OF INSTALLATION: Walter Reed Army Medical Center — DATE OF APPLICATION: May 9, 1978

MAILING ADDRESS: 6825 16th St. N.W. — TELEPHONE: 427-5309

CITY: Washington — STATE: D.C. — ZIP CODE: 20012

2. LOCATION OF FUEL BURNING EQUIPMENT (If different from above): Bldg 50 Power Plant Section

3. STARTING DATE (New Construction) — COMPLETION DATE

DATE EXISTING INSTALLATION PLACED IN OPERATION: 1977 (23-24)

4. SIGNATURE OF OWNER OR AUTHORIZED COMPANY OFFICIAL

5. PRINT OR TYPE NAME: William M. Bradley — TITLE: Boiler Plant Foreman

5. TYPE OF APPLICATION:

EXISTING INSTALLATION (INITIAL REG.): [X] 25-1 — NEW INSTALLATION (TO BE CONSTRUCTED) [ ] 25-2 — REPLACEMENT [ ] 25-3

6. MAJOR ACTIVITY AT THIS LOCATION (Check One)

MANUFACTURING [ ] 26-1 — RETAIL OR WHOLESALE STORE [ ] 26-2 — OFFICE (ALL TYPES) [ ] 26-3 — SCHOOL OR CHURCH [ ] 26-4 — HOTEL OR MOTEL [ ] 26-5

WAREHOUSE [ ] 26-7 — HOSPITAL OR LABORATORY [X] 26-6 — RESIDENTIAL OR APARTMENTS [ ] 26-8 — OTHER [ ] SPECIFY _____ 26-9

7. IDENTICAL INSTALLATIONS

NUMBER OF UNITS: 02 (27-28) — OWNERS IDENTIFICATION NUMBER(S): MR7168

8. STACK HEIGHT ABOVE GROUND LEVEL (FEET): NUMBER OF STACKS _____

30 OR LESS [ ] 29-1 — 51-100 [ ] 29-3 — 151-200 [ ] 29-5

31-50 [X] 29-2 — 101-150 [ ] 29-4 — 201-250 [ ] 29-6 — OVER 250 [ ] 29-7 — SPECIFY _____

9. CHECK ALL FUELS BURNED IN THIS EQUIPMENT:

COAL [ ] — OIL [X] — WOOD [ ] — NATURAL GAS [ ] — OTHER [ ] SPECIFY _____

10. IF OIL IS USED, CHECK ALL GRADES APPLICABLE:

NO. 1 [ ] 30-1 — NO. 2 [X] 30-2 — NO. 4 [ ] 30-3 — NO. 5 [ ] 30-4 — NO. 6 [ ] 30-5 — OTHER [ ] 30-6 — SPECIFY _____

11. EQUIPMENT MANUFACTURER: Kewanee — BOILER MODEL NUMBER: [illegible]

BOILER TYPE: FIRE TUBE [X] — WATER TUBE [ ] — MAJOR USE OF FUEL BURNING EQUIPMENT:

HEATING SURFACE AREA (SQ. FT.) _____ — HEATING USE ONLY [ ] — PROCESS USE ONLY [ ]

STEAM (LBS./HR. PSIG.) 1702 °F _____ — COMBINED USE [ ] _____ % Process

TYPE OF OIL BURNER:

PRESSURE OR GUN TYPE [X] 31-1 — ROTARY CUP [ ] 31-2 — STEAM ATOMIZER [ ] 31-3 — AIR ATOMIZER [ ] 31-4 — OTHER [ ] 31-5 — SPECIFY _____

DO NOT WRITE IN THIS SPACE

DATE REC. LOCAL | DATE REC. STATE

ACKNOWLEDGEMENT SENT
DATE BY

REVIEWED
NAME DATE
LOCAL
STATE

RETURNED TO LOCAL JURISDICTION
DATE BY

APPLICATION RET'D TO APPLICANT
DATE BY

REGISTRATION NUMBER (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

STATE GRID COORDINATES 11 12 13 14 15 16 17

PREMISE NUMBER 18 19 20 21 22

STATE OF MARYLAND - DEPARTMENT OF HEALTH AND MENTAL HYGIENE
Environmental Health Administration
Bureau of Air Quality & Noise Control
O'Conor Building
201 W. Preston Street
Baltimore, Maryland 21201

[C] APPLICATION FOR FUEL BURNING EQUIPMENT: Registration [X] Permit to Construct [ ]

80

DO NOT WRITE IN THIS SPACE
DATE REC. LOCAL | DATE REC. STATE
ACKNOWLEDGEMENT SENT
DATE BY
REVIEWED
NAME DATE
LOCAL
STATE
RETURNED TO LOCAL JURISDICTION
DATE BY
APPLICATION RET'D TO APPLICANT
DATE BY
REGISTRATION NUMBER
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
STATE GRID COORDINATES
11 12 13 14 15 16 17
PREMISE NUMBER
18 19 20 21 22

1. OWNER OF INSTALLATION: Walter Reed Army Medical Center
DATE OF APPLICATION: May 9, 1978
[illegible] 16th St. N.W.
[illegible]
CITY: Washington STATE: D.C. ZIP CODE: [illegible]

2. LOCATION OF FUEL BURNING EQUIPMENT (If different from above)
Bldg. 508 Forest Glen Section

3. STARTING DATE (New Construction) COMPLETION DATE

DATE EXISTING INSTALLATION PLACED IN OPERATION: 1967
23 - 24

4. SIGNATURE OF OWNER OR AUTHORIZED COMPANY OFFICIAL

PRINT OR TYPE NAME: William E. Dudley TITLE: Boiler plant Foreman

5. TYPE OF APPLICATION:
EXISTING INSTALLATION (INITIAL REG.) [X] 25-1
NEW INSTALLATION (TO BE CONSTRUCTED) [ ] 25-2
REPLACEMENT [ ] 25-3

6. MAJOR ACTIVITY AT THIS LOCATION (Check One)
MANUFACTURING [ ] 26-1
RETAIL OR WHOLESALE STORE [ ] 26-2
OFFICE (ALL TYPES) [ ] 26-3
SCHOOL OR CHURCH [ ] 26-4
HOTEL OR MOTEL [ ] 26-5
WAREHOUSE [ ] 26-7
HOSPITAL OR LABORATORY [X] 26-6
RESIDENTIAL OR APARTMENTS [ ] 26-8
OTHER _____ SPECIFY [ ] 26-9

7. IDENTICAL INSTALLATIONS
NUMBER OF UNITS: 01 (27 - 28)
OWNERS IDENTIFICATION NUMBER(S): M 3246

8. STACK HEIGHT ABOVE GROUND LEVEL (FEET): NUMBER OF STACKS _____
30 OR LESS [ ] 29-1
31-50 [X] 29-2
51-100 [ ] 29-3
101-150 [ ] 29-4
151-200 [ ] 29-5
201-250 [ ] 29-6
OVER 250 [ ] 29-7
SPECIFY _____

9. CHECK ALL FUELS BURNED IN THIS EQUIPMENT:
COAL [ ] OIL [X] WOOD [ ] NATURAL GAS [ ] OTHER [ ] SPECIFY _____

10. IF OIL IS USED, CHECK ALL GRADES APPLICABLE:
NO. 1 [ ] 30-1
NO. 2 [X] 30-2
NO. 4 [ ] 30-3
NO. 5 [ ] 30-4
NO. 6 [ ] 30-5
OTHER [ ] 30-6 SPECIFY _____

11. EQUIPMENT MANUFACTURER: International BOILER MODEL NUMBER: [illegible]

BOILER TYPE: FIRE TUBE [ ] WATER TUBE [X]
HEATING SURFACE AREA (SQ. FT.) 350
STEAM (LBS./HR. PSIG.) _____ °F _____

MAJOR USE OF FUEL BURNING EQUIPMENT:
HEATING USE ONLY [ ] PROCESS USE ONLY [ ]
COMBINED USE [ ] _____ % Process

TYPE OF OIL BURNER:
PRESSURE OR GUN TYPE [X] 31-1
ROTARY CUP [ ] 31-2
STEAM ATOMIZER [ ] 31-3
AIR ATOMIZER [ ] 31-4
OTHER [ ] 31-5 SPECIFY _____

STATE OF MARYLAND - DEPARTMENT OF HEALTH AND MENTAL HYGIENE
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STATE GRID COORDINATES
11 12 13 14 15 16 17

PREMISE NUMBER
18 19 20 21 22

1. OWNER OF INSTALLATION: Walter Reed Army Medical Center — DATE OF APPLICATION: May 9, 1978

MAILING ADDRESS: [redacted] — TELEPHONE NO.: 427-3529

CITY: Washington — STATE: D.C. — ZIP CODE: 20012

2. LOCATION OF FUEL BURNING EQUIPMENT (If different from above): Bldg. 511 Forest Glen Section

3. STARTING DATE (New Construction) — COMPLETION DATE: 1970

DATE EXISTING INSTALLATION PLACED IN OPERATION _____ 23 - 24

4. SIGNATURE OF OWNER OR AUTHORIZED COMPANY OFFICIAL

PRINT OR TYPE NAME: William E. Bradley — TITLE: Boiler Plant Foreman

5. TYPE OF APPLICATION:

EXISTING INSTALLATION (INITIAL REG.) ☒ 25-1 — NEW INSTALLATION (TO BE CONSTRUCTED) ☐ 25-2 — REPLACEMENT ☐ 25-3

6. MAJOR ACTIVITY AT THIS LOCATION (Check One)

MANUFACTURING ☐ 26-1 — RETAIL OR WHOLESALE STORE ☐ 26-2 — OFFICE (ALL TYPES) ☐ 26-3 — SCHOOL OR CHURCH ☐ 26-4 — HOTEL OR MOTEL ☐ 26-5

WAREHOUSE ☐ 26-7 — HOSPITAL OR LABORATORY ☒ 26-8 — RESIDENTIAL OR APARTMENTS ☐ 26-9 — OTHER _____ SPECIFY ☐ 26-0

7. IDENTICAL INSTALLATIONS

NUMBER OF UNITS: 02 (27 - 28) — OWNERS IDENTIFICATION NUMBER(S): [redacted]

8. STACK HEIGHT ABOVE GROUND LEVEL (FEET): NUMBER OF STACKS _____

30 OR LESS ☐ 29-1 — 51-100 ☐ 29-3 — 151-200 ☐ 29-5

31-50 ☒ 29-2 — 101-150 ☐ 29-4 — 201-250 ☐ 29-6 — OVER 250 ☐ 29-7 — SPECIFY

9. CHECK ALL FUELS BURNED IN THIS EQUIPMENT:

COAL ☐ — OIL ☒ — WOOD ☐ — NATURAL GAS ☐ — OTHER ☐ SPECIFY

10. IF OIL IS USED, CHECK ALL GRADES APPLICABLE:

NO. 1 ☐ 30-1 — NO. 2 ☒ 30-2 — NO. 4 ☐ 30-3 — NO. 5 ☐ 30-4 — NO. 6 ☐ 30-5 — OTHER ☐ 30-6

11. EQUIPMENT MANUFACTURER: Cleaver Brooks — BOILER MODEL NUMBER: [redacted]

BOILER TYPE: FIRE TUBE ☒ — WATER TUBE ☐

HEATING SURFACE AREA (SQ. FT.) _____

STEAM (LBS./HR. PSIG.) 6,695 °F _____

MAJOR USE OF FUEL BURNING EQUIPMENT:

HEATING USE ONLY ☐ — PROCESS USE ONLY ☐

COMBINED USE ☐ _____ % Process

TYPE OF OIL BURNER:

PRESSURE OR ☐ — ROTARY ☐ — STEAM ☐ — AIR ☒ — OTHER ☐

STATE OF MARYLAND - DEPARTMENT OF HEALTH AND MENTAL HYGIENE
Environmental Health Administration
Bureau of Air Quality & Noise Control
O'Conor Building
201 W. Preston Street
Baltimore, Maryland 21201

[C] APPLICATION FOR FUEL BURNING EQUIPMENT: Registration [X] Permit to Construct [ ]

80

DO NOT WRITE IN THIS SPACE
DATE REC. LOCAL | DATE REC. STATE
ACKNOWLEDGEMENT SENT
DATE BY
REVIEWED
NAME DATE
LOCAL Brown 5-18-76
STATE
RETURNED TO LOCAL JURISDICTION
DATE BY
APPLICATION RET'D TO APPLICANT
DATE BY
REGISTRATION NUMBER
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
STATE GRID COORDINATES
7 8 4 4 2 7
11 12 13 14 15 16 17
PREMISE NUMBER
9 8 3
18 19 20 21 22

1. OWNER OF INSTALLATION: Walter Reed Army Medical Center
DATE OF APPLICATION: May 9, 1976

MAILING ADDRESS: 6825 16th St. N. W.
TELEPHONE: 427 5309

CITY: Washington
STATE: D.C.
ZIP CODE: 20012

2. LOCATION OF FUEL BURNING EQUIPMENT (If different from above)
BLDG 163 (PX) Forest Glen Section

3. STARTING DATE (New Construction)
COMPLETION DATE

DATE EXISTING INSTALLATION PLACED IN OPERATION 1973
23 - 24

4. SIGNATURE OF OWNER OR AUTHORIZED COMPANY OFFICIAL

PRINT OR TYPE NAME: William E. Bradley
TITLE: Boiler Plant Foreman

5. TYPE OF APPLICATION:
EXISTING INSTALLATION (INITIAL REG.) [X] 25-1
NEW INSTALLATION (TO BE CONSTRUCTED) [ ] 25-2
REPLACEMENT [ ] 25-3

6. MAJOR ACTIVITY AT THIS LOCATION (Check One)
MANUFACTURING [ ] 26-1
RETAIL OR WHOLESALE STORE [X] 26-2
OFFICE (ALL TYPES) [ ] 26-3
SCHOOL OR CHURCH [ ] 26-4
HOTEL OR MOTEL [ ] 26-5
WAREHOUSE [ ] 26-7
HOSPITAL OR LABORATORY [ ] 26-6
RESIDENTIAL OR APARTMENTS [ ] 26-8
OTHER PX COMPLEX SPECIFY [ ] 26-9

7. IDENTICAL INSTALLATIONS
NUMBER OF UNITS 01
27 - 28
OWNERS IDENTIFICATION NUMBER(S)

8. STACK HEIGHT ABOVE GROUND LEVEL (FEET): NUMBER OF STACKS
30 OR LESS [ ] 29-1
31-50 [X] 29-2
51-100 [ ] 29-3
101-150 [ ] 29-4
151-200 [ ] 29-5
201-250 [ ] 29-6
OVER 250 [ ] 29-7 SPECIFY
NOT IN USE

9. CHECK ALL FUELS BURNED IN THIS EQUIPMENT:
COAL [ ]
OIL [X]
WOOD [ ]
NATURAL GAS [ ]
OTHER [ ] SPECIFY

10. IF OIL IS USED, CHECK ALL GRADES APPLICABLE:
NO. 1 [ ] 30-1
NO. 2 [X] 30-2
NO. 4 [ ] 30-3
NO. 5 [ ] 30-4
NO. 6 [ ] 30-5
OTHER [ ] 30-6 SPECIFY
Spencer
1.40-50

11. EQUIPMENT MANUFACTURER
BOILER MODEL NUMBER:

BOILER TYPE: FIRE TUBE [X] WATER TUBE [ ]
HEATING SURFACE AREA (SQ. FT.)
STEAM (LBS./HR. PSIG.) °F
MAJOR USE OF FUEL BURNING EQUIPMENT:
HEATING USE ONLY [ ] PROCESS USE ONLY [ ]
COMBINED USE [ ] % Process

TYPE OF OIL BURNER:
PRESSURE OR GUN TYPE [X] 31-1
ROTARY CUP [ ] 31-2
STEAM ATOMIZE [ ] 31-3
AIR ATOMIZE [ ] 31-4
OTHER [ ] 31-5 SPECIFY

STATE OF MARYLAND - DEPARTMENT OF HEALTH AND MENTAL HYGIENE
Environmental Health Administration
Bureau of Air Quality & Noise Control
O'Conor Building
201 W. Preston Street
Baltimore, Maryland 21201

[C] APPLICATION FOR FUEL BURNING EQUIPMENT: Registration [X] Permit to Construct [ ]

80

DO NOT WRITE IN THIS SPACE
DATE REC. LOCAL | DATE REC. STATE
ACKNOWLEDGEMENT SENT
DATE BY
REVIEWED
NAME DATE
LOCAL
STATE
RETURNED TO LOCAL JURISDICTION
DATE BY
APPLICATION RET'D TO APPLICANT
DATE BY
REGISTRATION NUMBER (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
STATE GRID COORDINATES 11 12 13 14 15 16 17
PREMISE NUMBER 18 19 20 21 22

1. OWNER OF INSTALLATION: Walter Reed Army Medical Center — DATE OF APPLICATION: May 9, 1979
MAILING ADDRESS: 6825 16th St. N.W. — TELEPHONE: 427-5309
CITY: Washington — STATE: D.C. — ZIP CODE: 20012
2. LOCATION OF FUEL BURNING EQUIPMENT (if different from above): Bldg. 85 Forest Glen Section
3. STARTING DATE (New Construction) — COMPLETION DATE
DATE EXISTING INSTALLATION PLACED IN OPERATION: 1973 (23-24)
4. SIGNATURE OF OWNER OR AUTHORIZED COMPANY OFFICIAL
PRINT OR TYPE NAME: William E. Bradley — TITLE: Boiler Plant Foreman
5. TYPE OF APPLICATION:
EXISTING INSTALLATION (INITIAL REG.) [X] 25-1 — NEW INSTALLATION (TO BE CONSTRUCTED) [ ] 25-2 — REPLACEMENT [ ] 25-3
6. MAJOR ACTIVITY AT THIS LOCATION (Check One)
MANUFACTURING [ ] 26-1 — RETAIL OR WHOLESALE STORE [ ] 26-2 — OFFICE (ALL TYPES) [ ] 26-3 — SCHOOL OR CHURCH [ ] 26-4 — HOTEL OR MOTEL [ ] 26-5
WAREHOUSE [ ] 26-7 — HOSPITAL OR LABORATORY [ ] 26-6 — RESIDENTIAL OR APARTMENTS [ ] 26-8 — OTHER [ ] 26-9 PX Complex SPECIFY
7. IDENTICAL INSTALLATIONS
NUMBER OF UNITS: 02 (27-28)
OWNERS IDENTIFICATION NUMBER(S): [illegible] 8380
8. STACK HEIGHT ABOVE GROUND LEVEL (FEET): NUMBER OF STACKS ____
30 OR LESS [ ] 29-1 — 31-50 [X] 29-2 — 51-100 [ ] 29-3 — 101-150 [ ] 29-4 — 151-200 [ ] 29-5 — 201-250 [ ] 29-6 — OVER 250 [ ] 29-7 SPECIFY
9. CHECK ALL FUELS BURNED IN THIS EQUIPMENT:
COAL [ ] — OIL [X] — WOOD [ ] — NATURAL GAS [ ] — OTHER [ ] SPECIFY
10. IF OIL IS USED, CHECK ALL GRADES APPLICABLE:
NO. 1 [ ] 30-1 — NO. 2 [X] 30-2 — NO. 4 [ ] 30-3 — NO. 5 [ ] 30-4 — NO. 6 [ ] 30-5 — OTHER [ ] 30-6 SPECIFY
11. EQUIPMENT MANUFACTURER: Cleaver — BOILER MODEL NUMBER: [illegible]
BOILER TYPE: FIRE TUBE [X] — WATER TUBE [ ]
HEATING SURFACE AREA (SQ. FT.) ____
STEAM (LBS./HR. PSIG.) ____ °F ____
MAJOR USE OF FUEL BURNING EQUIPMENT:
HEATING USE ONLY [ ] — PROCESS USE ONLY [ ]
COMBINED USE [ ] ____ % Process
TYPE OF OIL BURNER:
PRESSURE OR GUN TYPE [X] 31-1 — ROTARY CUP [ ] 31-2 — STEAM ATOMIZER [ ] 31-3 — AIR ATOMIZER [ ] 31-4 — OTHER [ ] 31-5 SPECIFY

STATE OF MARYLAND - DEPARTMENT OF HEALTH AND MENTAL HYGIENE
Environmental Health Administration
Bureau of Air Quality & Noise Control
O'Conor Building
201 W. Preston Street
Baltimore, Maryland 21201

[C] APPLICATION FOR FUEL BURNING EQUIPMENT. Registration [X] Permit to Construct [ ]

60

DO NOT WRITE IN THIS SPACE

DATE REC. LOCAL | DATE REC. STATE

ACKNOWLEDGEMENT SENT
DATE BY

REVIEWED
NAME DATE
LOCAL
STATE

RETURNED TO LOCAL JURISDICTION
DATE BY

APPLICATION RET'D TO APPLICANT
DATE BY

REGISTRATION NUMBER
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

STATE GRID COORDINATES
11 12 13 14 15 16 17

PREMISE NUMBER
18 19 20 21 22

1. OWNER OF INSTALLATION: WALTER REED ARMY MEDICAL CENTER
DATE OF APPLICATION: MAY(illegible)
MAILING ADDRESS: 6825 16th St. N.W.
TELEPHONE: 427-5309
CITY: Washington
STATE: D.C.
ZIP CODE: 20012

2. LOCATION OF FUEL BURNING EQUIPMENT (If different from above): Bldg. 206 Forest Glen Section

3. STARTING DATE (New Construction)
COMPLETION DATE
DATE EXISTING INSTALLATION PLACED IN OPERATION: 1975
23 24

4. SIGNATURE OF OWNER OR AUTHORIZED COMPANY OFFICIAL
PRINT OR TYPE NAME: William R. Bradley
TITLE: Boiler Plant Foreman

5. TYPE OF APPLICATION:
EXISTING INSTALLATION [X] 25-1 (INITIAL REG.)
NEW INSTALLATION [ ] 25-2 (TO BE CONSTRUCTED)
REPLACEMENT [ ] 25-3

6. MAJOR ACTIVITY AT THIS LOCATION (Check One)
MANUFACTURING [ ] 26-1
RETAIL OR WHOLESALE STORE [ ] 26-2
OFFICE (ALL TYPES) [ ] 26-3
SCHOOL OR CHURCH [ ] 26-4
HOTEL OR MOTEL [ ] 26-5
WAREHOUSE [ ] 26-7
HOSPITAL OR LABORATORY [ ] 26-8
RESIDENTIAL OR APARTMENTS [ ] 26-8
OTHER: Laundry SPECIFY [ ] 26-9

7. IDENTICAL INSTALLATIONS
NUMBER OF UNITS: 3 (27-28)
OWNERS IDENTIFICATION NUMBER(S): 75026 A 75025 B 75027 R

8. STACK HEIGHT ABOVE GROUND LEVEL (FEET): NUMBER OF STACKS
30 OR LESS [ ] 29-1
31-50 [X] 29-2
51-100 [ ] 29-3
101-150 [ ] 29-4
151-200 [ ] 29-5
201-250 [ ] 29-6
OVER 250 [ ] 29-7 SPECIFY

9. CHECK ALL FUELS BURNED IN THIS EQUIPMENT:
COAL [ ]
OIL [X]
WOOD [ ]
NATURAL GAS [ ]
OTHER [ ] SPECIFY

10. IF OIL IS USED, CHECK ALL GRADES APPLICABLE:
NO. 1 [ ] 30-1
NO. 2 [X] 30-2
NO. 4 [ ] 30-3
NO. 5 [ ] 30-4
NO. 6 [ ] 30-5
OTHER [ ] 30-6 SPECIFY

11. EQUIPMENT MANUFACTURER: Cleaver
BOILER MODEL NUMBER: Firetube

BOILER TYPE: FIRE TUBE [X] WATER TUBE [ ]
HEATING SURFACE AREA (SQ. FT.): 1250
STEAM (LBS./HR. PSIG.): 8500 °F
TYPE OF OIL BURNER:
PRESSURE OR GUN TYPE [X] 31-1
ROTARY CUP [ ] 31-2
STEAM ATOMIZER [ ] 31-3
AIR ATOMIZER [ ] 31-4
OTHER [ ] 31-5 SPECIFY

MAJOR USE OF FUEL BURNING EQUIPMENT:
HEATING USE ONLY [ ]
PROCESS USE ONLY [ ]
COMBINED USE [X] % Process

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03/22/84

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