# U.S. Army BRAC 2005
# Environmental Condition of Property Report
# Walter Reed Army Medical Center
# Washington, D.C

## Draft as of 22 AUG 2005

**Note**:

For purposes of using this template: text in brackets ([ ]) are place holders; *italic text in red* are instructions for content; and other *italic text* is sample language only.

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# 1 Purpose

## 1.1 General

*The Environmental Condition of Property (ECP) meets the DoD requirement to prepare an ECP Report. The ECP was performed to collect reliable information regarding the environmental condition of the property to determine the property's suitability for outgrant or transfer, and to meet the requirements under Title 40, Code of Federal Regulations, Part 373, § 373.1 (40 CFR 373.1), and U.S. Army Regulation (AR) 200-1, Environmental Protection and Enhancement. The information gathered during this assessment will also be used with the objective of assisting the U.S. Army (Army), the General Services Administration, and the purchaser in making informed business decisions about the transfer of the property by reducing uncertainty regarding its environmental condition.*

*AR 200-1 requires an Environmental Baseline Study (EBS) be prepared to determine the environmental conditions of properties being considered for disposal. The BRACD has developed the ECP to surpass the requirements of the EBS in a manner that is more consistent with internal Army requirements regarding disposal of real property under the BRAC 2005 program. The BRAC Supplement to AR 200-1 when written will provide additional guidance. The Army prepares an ECP for the following purposes:*

- *Identify, characterize and document the presence or likely presence of a release or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property associated with the historical and current use of the installation.*

- *Identify, characterize and document the release or possible release of any hazardous substances or petroleum products from an adjacent property that would likely cause or contribute to contamination at the installation.*

- *Provide a basis for determining if the property is suitable for transfer, lease, or assignment.*

- *Provide information to satisfy legal requirements including:*

    - *Notification requirements under §120(h)(1) and (3)(A)(i) of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and state or local real property transfer requirements;*

    - *Uncontaminated parcel identification requirements of Section 120(h)(4) of CERCLA; and*

    - *State or local real property transfer requirements that are applicable to the federal government and the transaction.*

- *Provide a commercially acceptable level of environmental information necessary to facilitate the divestiture of the property.*

*The purpose as stated above does not include de minimis conditions that generally do not present a material risk of harm to the public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be de minimis are not addressed.*

*The ECP contains the information required to comply with the provisions of 40 CFR, Part 373 that require a notice accompany contracts for the sale of, and deeds entered into for the transfer of, federal property on which hazardous substances may have been stored, released or disposed of. CERCLA §120(h) stipulates that a notice is required if certain quantities of designated hazardous substances have been stored on the property for one year or more—specifically, quantities exceeding (1) 1,000 kilograms or the reportable quantity (RQ), whichever is greater, of the substances specified in 40 CFR 302.4, or (2) 1 kilogram of acutely hazardous waste as defined in 40 CFR 261.30. A notice is also required if hazardous substances have been disposed of or released on the property in an amount greater than or equal to the RQ. AR 200-1 requires that an ECP address asbestos, lead-based paint, radon and other substances potentially hazardous to health.*

*This ECP was performed in substantial compliance with American Society for Testing and Materials (ASTM) Standard Practice D-6008…Although many of the ECP development activities may be considered "due diligence" functions, the ECP Report is not prepared to satisfy a real property purchaser's duty to conduct an "appropriate inquiry" to establish an "innocent purchaser defense" to CERCLA 107 liability. Any such use of the ECP by any party is outside the control of the United States Army and beyond the scope of the ECP. The United States Army, its officers, employees or contractors make no warranties or representations that any ECP Report satisfies any such requirements for any party.*

## 1.2 Scope

*The scope of work for this ECP requires conformance with Army Regulation "Environmental Quality, Environmental Protection and Enhancements", AR 200-1 (paragraph 15-6), dated February 21, 1997 and CERCLA §120. In addition, the records review, site reconnaissance and interviews meet, and in most cases, exceed the minimum specification in ASTM, standard practice D-6008…*

The ECP covers the 113-acre Main Post Area of Walter Reed Army Medical Center (WRAMC), Washington, D.C.. WRAMC is located in the northern section of Washington, D.C., approximately 5 miles directly north of the White House. The Main Post Area contains the main hospital complex and is bounded by 16th Street on the northwest and Alaska Avenue (U.S. Route 29), Georgia Avenue, and Fern and Aspen Street. WRAMC also controls two non-contiguous properties in Forest Glen, MD and

Wheaton, MD (Glen Haven.) As these properties are slated for continued use, they are not evaluated in this report.

## 1.3 Assumptions

*To comply with the requirements in AR 200-1 and ASTM Standards, this ECP Report was prepared to permit formulation of an opinion of the environmental condition of the subject property. Opinions on the environmental conditions at the site are based on information from the site reconnaissance, interviews, and collection and review of readily available information, and samples of soil, and groundwater collected from the site. New information or changes in property use could require a review and possible modification of the findings and conclusions contained in this report.*

*The information obtained from the Army, the Army's representatives, individuals interviewed and prior environmental reports was considered to be accurate unless our reasonable inquiries indicated otherwise. Conditions observed were considered representative of areas that were not accessible unless otherwise indicated.*

## 1.4 Limitations

*This ECP Report presents a summary of readily available information on the environmental conditions of, and concerns relative to, the land, facilities, and real property assets at [installation name]. Its findings are based on a record search of [number] of documents, a thorough review of more than [number] of these documents, and a site reconnaissance conducted between [range of dates]. Extensive environmental investigations and reports and site historical documents were reviewed in support of this ECP. Information obtained from these other studies is reflected within this ECP Report by reference. A complete list of references is provided as Section X.X.*

*[All installation/representative number of] buildings were visually inspected during the site reconnaissance. [A 100% visual inspection of all buildings was not practical because of the size of the installation and the number of buildings. Similarly, a 100% visual inspection of all undeveloped areas could not be performed.] No sampling or analysis was conducted during this survey.*

## 1.5 Report Organization

*The remainder of this report expounds on the ECP setting, method and findings. Section [number] describes the methods used to conduct the ECP. Section [number] provides a description of the [installation name] environment, an overview of facility operations and history, and a summary of previous environmental investigations. Findings of the ECP organized by relevant environmental "issues" (e.g., contaminant, contamination matrix, facility or operation) are elaborated in Section [number]. Section [number] addresses outstanding regulatory compliance issues. A summary of findings for the buildings and real property is included in Section [number]. A bibliography is provided as Section [number].*

*The appendixes are arranged to allow the reader to determine the full range of environmental issues relating to the installation. Appendix [number] is a listing of the buildings and sections at [installation name] and their names and locations. Interview reports are included in Appendix [number]. A copy of the questionnaire form employed to elicit pertinent information from the installation lessees is included as Appendix [number]. A tabulation of hazardous substances used, stored, disposed of, or released at [installation name] is provided as Appendix [number].*

# 2 Background

## 2.1 Installation Location and Description

WRAMC is located in the northern section of Washington, D.C., approximately 5 miles directly north of the White House. The Main Post section, containing the main hospital complex, is bounded by 16th Street on the northwest and Alaska Avenue (U.S. Route 29), Georgia Avenue, and Fern and Aspen Street. WRAMC also controls two non-contiguous properties in Forest Glen, MD and Wheaton, MD (Glen Haven.) As these properties are slated for continued use, they are not evaluated in this report.

## 2.2 Existing Environmental Conditions

WRAMC has been an operational hospital and medical research facility since establishment in 1909. WRAMC stores, uses and disposes of a variety of chemical and radiological materials to support their primary mission. Hazardous, medical, biological and pathological wastes are currently removed from site within 90 days of generation.

Historical storage, use and disposal practices have resulted in releases to the environment and contamination of building surfaces. Typically, these releases were minor in nature and/or have been previously addressed. Currently, there are two on-going responses to releases of Polychlorinated Biphenyls (PCBs). No landfills or other solid/hazardous waste disposal sites are known to exist in the Main Post area.

Due to the age of many of the structures, asbestos containing material (ACM) and lead-based paint (LBP) are known or suspected to be present.

There are currently 23 above-ground storage tanks (ASTs) (includes day tanks and belly tanks) and 9 underground storage tanks (USTs) storing predominantly # 2 fuel oil (800K gallons, 2-400K USTs) and diesel fuel for boilers and generators.

# 3 Survey Methodology

## 3.1 Development of Study Sections

*To aid data collection, management and retrieval, the property was divided into study sections, GPS was then used to insure management control of each section. Site*

*information was then collected and organized by study section. Development of sections was based on the following considerations:*

- *Boundaries must be readily identifiable in the field;*
- *Boundaries must correspond closely with those of properties destined for transfer to specific entities;*
- *Boundaries have to be of a manageable size for survey;*
- *Study sections must encompass all of the installation property;*
- *No land area can fall into more than one section;*
- *Sections must correspond with existing IRP study areas.*

*Accordingly, section boundaries were generally designated at the center of roads or streams, along fences, and along township section lines. Parcel numbering corresponds to existing IRP site numbering. Non-IRP sites were assigned their own numbering scheme (e.g., IRP sites are numbered 1 to 30 and the non-IRP sites are numbered starting at 1000).*

## 3.2 Visual Site Inspection

*A visual site inspection (VSI) involving a driving tour of the facility and its perimeter, as well as a systematic survey by vehicle and on foot through each section of the property, was conducted between [date range] to field-verify information produced in the document review and to identify potential environmental concerns. All roads on the facility accessible by two-wheel drive vehicle were driven during the VSI. A VSI was performed for ~~96~~ buildings (Table 2-2) selected as a representative sample from groups of similar buildings.*

*During the site reconnaissance, Universal Transverse Mercator (UTM) coordinates for the buildings surveyed and environmental findings were collected. A global positioning system (GPS) unit was used to determine coordinates. This unit is capable of sub meter accuracy.*

*A reconnaissance of the base perimeter was conducted to evaluate adjacent property uses that could contribute to any environmental contamination detected on site. The field team drove on roads along the perimeter to visually identify any contiguous properties that appear, in the team's professional judgment, to have contamination that could migrate to the installation. Typical of properties that could pose a contamination risk are dry cleaners, gas stations and industrial facilities. The findings of the perimeter survey are presented in Section X.X.*

## 3.3 Aerial Photography Analysis

Aerial photographic analysis was conducted in October 1983 by the Environmental Photographic Interpretation Center (EPIC). Photographs covering the entire facility for the period from 1951 to 1970 were obtained from USGS (Sioux Falls, South Dakota) and ASCS (Salt Lake City, Utah)]. Four years of photography were examined under a stereoscope to identify any significant areas of disturbance. There were no significant findings for the Main Post Area.

## 3.4 Records Review

### 3.4.1 Standard Environmental Record Sources

*A search of state and federal environmental databases was undertaken for the [site name] property and any listed sites within standard search distances. The findings of the search are summarized below and the complete search results are provided as an appendix.*

| Record(s) Source | Number of Sites | ASTM E1527-00 Minimum Search Distance (miles) |
|---|---|---|
| Federal NPL Sites | | 1.0 |
| Federal CERCLIS List | | 0.5 |
| Federal CERCLIS NFRAP List | | Property and adjoining properties |
| Federal RCRA CORRACTS Facilities list | | 1.0 |
| Federal RCRA non-CORRACTS TSD Facilities List | | 0.5 |
| Federal RCRA Generators List | | Property and adjoining properties |
| Federal ERNS list | | Property only |
| State NPL Equivalent | | 1.0 |
| State CERCLIS Equivalent | | 0.5 |
| State Landfill and/or solid waste disposal site lists | | 0.5 |
| State leaking UST lists | | 0.5 |

| Record(s) Source | Number of Sites | ASTM E1527-00 Minimum Search Distance (miles) |
|---|---|---|
| State registered UST lists | | Property and adjoining properties |

### 3.4.2 Additional Record Sources

*A review of reasonably accessible Army environmental documents, County and City records, and aerial photographs of the property were reviewed to investigate land uses at the site. Local authorities were contacted to learn about historic uses of buildings and lands on the site. Available information on past land uses and their potential impacts was assessed. Other documents and resources of historical import that were used include:*

- *Readily available records and files documenting where hazardous materials are stored and used onsite (a summarized list is included in Section [number]).*
- *A Chain of Title summary, prepared to document the historic use of the property. This inquiry reviewed recorded deeds, leases, mortgages, easements, and other appropriate documents. A copy of the Chain of Title report is presented in Appendix [number].*
- *Files at the Army's Center for Health Promotion and Preventive Medicine (CHPPM) were reviewed for documents addressing human health matters.*
- *Environmental documents and files at the Army Environmental Center (AEC)*
- *Historical documents and maps at the National Archives and Records Administration (NARA) (College Park, Maryland).*
- *Historical documents and maps at the 12 Regional Research Centers*
- *Copies of permit applications and any notices of violations concerning the site.*

## 3.5 Interviews

*Several interviews of key past and current facility employees were conducted to aid in identifying environmental conditions at the installation. [Names and positions] were interviewed. The interviews included topics of general environmental interest and specific areas of interest identified during the records review and visual site inspection. Copies of the interview reports are included in Appendix [number]. Pertinent information regarding environmental impacts is included in Section [number] of this report.*

## 3.6 Data Management

*The environmental conditions at the installation, developed as described above, were evaluated facility wide, and findings were compiled in an electronic database. Environmental conditions identified during the ECP are defined in terms of their potential for environmental impacts in Section X. A compact disk containing the database and definitions of the data fields are presented in Appendix [number]. The reference documents used in developing the ECP have been placed in the administrative record which is maintained [location].*

# 4 Property Description

The environmental conditions at the installation, developed as described above, were evaluated facility wide, and the findings are presented in Section 8. The following sections provide summary information on past and present land use and the nature of major processes and operations. A comprehensive list of buildings/sites and associated processes and activities is located at Appendix A.

## 4.1 Historic and Current Land Use

### 4.1.1 Historic Land Use

The general vicinity of the Main Post was largely unsettled until the late eighteenth and early nineteen centuries. The area was incorporated into the District of Columbia in 1790, but there was limited development until 1822. Besides the community of Brightwood, the area was sparsely settled and consisted of heavy woodlands and large-acre farm tracts. *(KFS Historic Preservation Group, 1994)* In 1905, 42 acres of property were acquired by the US Government for the WRAMC site. When acquired, the parcel contained a frame farmhouse, barn, lift chamber, and spring house near Cameron's Creek, a tributary of Rock Creek. In 1918, the site was expanded when the Army acquired an additional 71.7 acres. *[Integrated Cultural Resource Management Plan, November 1999]*

### 4.1.2 Facility History

The original 80-bed hospital opened on May 1, 1909 (RTKL Associates, Inc., 1976). The hospital expanded gradually until 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. *[USATHAMA Installation Assessment, June 1984]*

#### 4.1.2.1 Operational History

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.

Numerous Laboratory Operations are/were associated with the medical, dental and veterinary activities at WRAMC. *[USATHAMA Installation Assessment, June 1984]*

WRAMC – Since 1979, WRAMC occupies Building 2 and contains diagnostic laboratories and treatment facilities for patients. Prior to 1979, Building 1 and a complex of surrounding buildings were used to provide clinical and patient care facilities. Wastes generated include hazardous and flammable chemicals, photographic wastes, infectious wastes, pathological wastes and radiological wastes.

Walter Reed Army Institute of Research (WRAIR) – Primarily located in Building 40, WRAIR has been in operation since 1925. Wastes generated include hazardous and flammable chemicals, photographic wastes, infectious wastes, pathological wastes biological wastes and radiological wastes. Since 1980, WRAIR has been participating in a centralized hazardous waste program for collection and disposal. WRAIR relocated to the Forest Glen Annex in 1999 and building 40 has since been vacated.

Armed Forces Institute of Pathology – Located in Building 54, AFIP has been in operation since 1955. Wastes generated include hazardous and flammable chemicals, photographic wastes, radiological wastes, biological wastes, and regulated medical wastes. Since 1980, AFIP has been participating in a centralized hazardous waste program for collection and disposal. AFIP also has a chemical recycling center. Laboratories and storage rooms on the northwest end of the north wing, fourth floor, of AFIP are classified as hazardous areas because of the quantity of flammable and combustible materials stored in these areas (Newcomb and Boyd, 1996). Also, a flushable drainage system exists in Building 54 for collection and disposal of larger volumes of liquid bio-wastes. This system allows animal cages and other areas to be washed down with water that is conveyed into a separate drainage system for the liquid bio-waste to a 2-tank decontamination system in the basement. Once the waste is neutralized with steam in the first 2,000-gallon tank, it is pumped to the adjacent 2,000-gallon holding tank. A licensed contractor would pump this storage tank out, and then

the treated waste would be disposed of in a proper manner. The existing system has not been operable since 1996 due to deteriorated drainage piping between the laboratories and basement.

US Army Institute for Dental Research – Formerly located in a Building 40, USAIDR has been in operation since 1962. Wastes generated include hazardous and flammable chemicals, photographic wastes, infectious wastes, pathological wastes and radiological wastes.

US Army Regional Dental Activity – Located in Buildings 2 and 91, USARDA operates two dental clinics. X-Ray solutions and dilute quantities of reagents are generated from the activities.

#### 4.1.2.2 Process Descriptions (industrial facilities only)

Industrial operations served as a support function to the primary mission of WRAMC. Motor vehicle maintenance shops, boiler plants, laundry facilities, print shops and paint shops are/were present on WRAMC. The majority of the industrial operations were conducted at the Forest Glen parcel and are not detailed further in this report. This section covers the operations known to have existed on WRAMC. *[Installation Assessment, June 1984]*

Auto-Self Help Shop (Building 82) – Active since 1978; provides facilities for personal automotive maintenance (military personnel). A wash rack is also Building 82, which includes a tank that served as a oil/water separator.

DIO Motor Pool Shop (former Building 41) – Prior to relocation to Forest Glen in 1975, shop provided routine maintenance and replacement parts service for approximately 200 military vehicles.

Steam Boilers – Five steam boilers are present at WRAMC. Four boilers are dual fuel boilers using natural gas and No. 2 fuel oil and are located in Building 15. One natural gas fired boiler serves Building 18, which is the Walter Reed Inn, located across Georgia Avenue from the Main Post. One No. 2 fuel oil fired boiler was formerly located at Building 89.

Laundry Facility (Building 56) – Prior to relocation in 1976, the post laundry facility was located at WRAMC. Only detergent and liquid chlorine bleach are reported to have been used. No dry cleaning operations were located at WRAMC.

Print Shops – Two print shops are/were located on WRAMC; one in building 1 (since 1977) and one in building 40 (since 1954). Solvents for cleaning presses and photographic chemicals are/have been used.

Office Machine Repair Shop (Buildings 33 and 1) – Provides cleaning and routine maintenance of various office machines. Chlorinated solvents have been utilized in cleaning operations.

Paint Shop – (Building 5) – Prior to relocation in 1972, provided interior maintenance painting and linoleum flooring services.

Central Heating Plant (Building 15)– Historical Map from 1927 indicates coal storage on the eastern side of this building.

Photo Lab – Building 91

#### 4.1.2.3 Occupancy, Lease and Easement History

The main post area is owned in fee simple and was purchased in 1905 (42 acres) and 1918 (71.7 acres). *[Installation Assessment, Jun 84]*

One outgrant was reported during the Installation Assessment conducted in February 1984. It was granted to the District of Columbia for construction of a sidewalk in connection with Georgia Avenue. A lease was also given to Riggse National Bank for 2510 square feet in Building 1; this has since expired.

#### 4.1.2.4 Range Operations

There are no known active or historical ranges at WRAMC. One indoor firing range existed in Building 54, prior to 1980 and was closed. (there is a test range that I believe is used occasionally in the basement of the South Wing of Building 54) J. Fromal

## 4.2 Installation Utilities (Historic and Current)

*[Source: Environmental Baseline Survey, Enhanced Use Lease Project, Buildings 40 & 18, July 2004]*

### 4.2.1 Water Systems

The water supply for the Main Section is obtained from the District of Columbia Water and Sewer Authority. The Washington Aqueduct Division of the Baltimore District, U.S. Army Corps of Engineers supplies the District of Columbia with water. Water is obtained from the Potomac River above the Great Falls area and is treated at the Dalecarlia Reservoir. Water is supplied to Main Post via eight metered, 8-inch mains. Water is distributed through out Main Post by a system of 6-inch and 8-inch cast iron pipes. This network consists of approximately 22,620 linear feet of piping including 237 fittings, 165 valves, and 44 fire hydrants. Built progressively beginning in 1908, much of the system is over 50 years old and consists of cast iron pipe. There are no water storage facilities on the installation. The existing source of supply is considered to be reliable.

### 4.2.2 Industrial and Sanitary Sewers and Treatment Plants

There are separate storm and sanitary sewer systems, but no industrial sewers on the Main Post. Wastewater collected at the Main Post is discharged into the WASA sewer system. The WASA sewer flows through the installation, entering at Georgia Avenue and Dahlia Street, flowing west and then southwest to exit at Luzon Avenue and Aspen

Street. There are five major trunk connections and several minor connections to the line. The wastewater collection system consists of 6- and 8-inch lateral lines from buildings to 10- to 21-inch roadway lines entering the main trunk. At least two buildings use sanitary sewer injection pumps to lift the effluent from the collection storage facility to the main interceptors. The system on base includes approximately 16,500 linear feet of pipe and 128 manhole structures. The installed pipe is mostly clay pipe with a large portion of the system being over 50 years old. (WRAMC Main Section Master Plan, 2005)

There are two oil/water separators on Main Post. The first is located at building 82, the installation auto craft building, between buildings 15 and 90. The second is a sump that was retro-fitted to an oil/water separator located on the floor below the compactors in Building 2.

WRAMC received a Notice of Violation in August 2001 from WASA for oil and grease above permit limits due to releases from a grease trap serving the food grill in Building 1. This is one of several grease traps located at WRAMC Main Post. Buildings 1, 54, and the Mologne House (hotel) each have one grease trap, while two are located at the Hospital (Building 2). The trap in Buildings 54 is no longer used. There were no grease traps in Building 40.

Given the age of the sewer system and the pre-1980 practices of disposal of liquid wastes via the sanitary sewer, it is possible that releases to the environment have occurred. Waste streams involving recalcitrant chemicals, such as chlorinated solvents, should be considered for future evaluation. Specific processes of concern are the print shops (Buildings 1 and 40) and the office machine repair shops (Buildings 1 and 33).

### 4.2.3 Stormwater System

The storm water drainage system for the Main Section consists of catch basins, curb inlets, yard drains, manholes, sand filters, and 10- to 36-inch-diameter pipelines that discharge to the District of Columbia's Luzon Avenue storm drainage tunnel. The tunnel, which enters the Main Section at Georgia Avenue and Dahlia Street, runs southwest under the Rose Garden and discharges into Rock Creek Park across 16th Street. The system is in fair condition, is adequate for drainage of the Main Section at this time, and meets state and local quantity and quality requirements.

### 4.2.4 Electrical System

The installation purchases electricity from PEPCO and is serviced by three normal-supply feeders and one emergency-supply feeder. The feeders terminate and are metered at the main switching station in Building 95 located near the intersection of Georgia Avenue and Aspen Street. AFIP (Building 54) is served by two PEPCO 13.2 kV feeders entering the installation at 14$^{th}$ Street and Alaska Avenue, and routed directly to the AFIP.

### 4.2.5 Steam Heat Distribution

The Central Heating Plant is located in Building 15. This is a high-pressure steam plant,

generating 110 psi steam for heating. This plant is comprised of four dual-fuel (gas and #2 fuel oil) high-pressure steam boilers, feed water equipment, water treatment, and other ancillary equipment. These boilers normally operate using natural gas, the No. 2 fuel oil is for backup and is only used during testing. There also is one natural gas-fired boiler.

The existing distribution system uses steam tunnels, trenches, and direct buried, pre-insulated piping. The steam tunnels were surveyed for asbestos-containing material in 1995 and 2002. There is confirmed presence of both friable and non-friable asbestos. A plan is in place for managing activities in these areas.

The steam tunnels often intercept local groundwater and could present a pathway for any undiscovered contamination. Sampling of water collecting in the steam tunnels was conducted in May 2005. The samples were analyzed for heavy metals, pesticides, PCBs, VOCs and SVOCs. No contaminants were detected above screening levels in any of the samples. *[Personal communication with Joe Fromal, WRAMC GEO, 19 July 2005]*

## 4.3 Environmental Setting – Natural and Physical Environment

*[Source: Environmental Baseline Survey, Enhanced Use Lease Project, Buildings 40 & 18, July 2004]*

### 4.3.1 Climate

WRAMC is geographically located on the transition zone between northern and southern climates of the country. Atmospheric conditions are influenced by the Blue Ridge Mountains to the west and the Chesapeake Bay to the east. The prevailing wind is from the northwest during the winter months, and from the southeast in the summer. The maximum wind speed was recorded to be 80 miles per hour (mph) from the southeast. Average wind speed is 9.1 mph.

The normal daily mean temperature is 55°F for this area, with recorded extremes of -7°F in the winter and 105°F in the summer. Normal annual precipitation is 40.8 inches and average annual snowfall is 20.4 inches for this area (National Climatic Data Center, 1998).

### 4.3.2 Topography

The main section of WRAMC is located along the eastern edge of the Piedmont Plateau physiographic province of the Appalachian Highlands. The Piedmont's topography is characterized by gently rolling hills and level uplands strongly dissected by streams that have steep valley walls. The grading and building that have occurred at the main section over the years have extensively altered minor variations in the original topography. The site has an overall drop-off to the south, with two low areas that drain the site to the southeast, into Rock Creek. The slopes on Main Post gentle enough to allow full development of the site. Today there are a few steep slopes on Main Post left from grading for building sites, roads and parking lots.

### 4.3.3 Hydrology

No groundwater supplies are used at the Main Section. Public groundwater supplies provide less than 3 percent of the water currently consumed in this region, and for economic reasons, it is likely to remain a minor supplement. The amount of water that can be stored underground depends on the porosity of the underlying rocks, which, in the situation at Main Section, involves hard crystalline rocks of low porosity. From available data, the water table is estimated to exist within the bedrock and near bedrock surface. The source of groundwater recharge is precipitation, and the groundwater gradient at Main Section roughly parallels local surface topography. Building foundations and drainage systems alter some of the local gradients. The depth of the seasonal high water table is from 5 to 6 feet. The average yield of area wells developed in crystalline rock is 10 to 20 gallons per minute from bedrock aquifers 40 to 140 feet below the surface.

There are no streams on the Main Section; however, Rock Creek is located a short distance to the west of WRAMC Main Post. The District of Columbia groups waters of the District into Beneficial Use Classes. Rock Creek is classified as a Class B and C stream by the District of Columbia. Class B waters are protected for secondary contact recreation and aesthetic enjoyment. Class C waters are protected for aquatic life, waterfowl, shore birds, and water-oriented wildlife.

Rock Creek is also designated as an anti-degradation segment. Under this designation, the following requirements apply: (1) new point source discharges are prohibited; (2) non-point discharges shall be controlled to the extent feasible, with best management practices and regulatory programs; (3) construction projects shall be considered on a case-by-case basis to ensure that there will be no long-term adverse water quality effects; and (4) short-term water quality effects on anti-degradation segments, resulting from construction projects, shall be subject to intergovernmental coordination and public participation requirements. The entire installation is outside the 100-year flood plain of Rock Creek.

The storm water drainage system for the Main Section consists of catch basins, curb inlets, yard drains, manholes, sand filters, and 10- to 36-inch-diameter pipelines that discharge to the District of Columbia's Luzon Avenue storm drainage tunnel. The tunnel, which enters the Main Section at Georgia Avenue and Dahlia Street, runs southwest under the Rose Garden and discharges into Rock Creek Park across 16th Street. The system is in fair condition, is adequate for drainage of the Main Section at this time, and meets state and local quantity and quality requirements. (EBS for Building 40 & 18, 2004)

### 4.3.4 Geology

WRAMC is located over the Piedmont Plateau, which composed of hard crystalline igneous and metamorphic rock of the Precambrian and Paleozoic age, roughly 600 million years old. The metamorphic rock structure takes the form of complex folds and thrust faults that have been subsequently intruded by igneous rock, pegmatite, and veins of quartz. Bedrock in the eastern portion of the Piedmont consist of schist,

gneiss, gabbroic, and other highly metamorphosed sedimentary and igneous rocks of probable volcanic origin. These bedrocks provide an excellent foundation support and exist in an area of low seismic activity.

### 4.3.5 Demography and Land Use

The current population of WRAMC, Main and Forest Glen Sections is 8,502 personnel. Military personnel account for 3,630 of the total and the number of civilian personnel is 4,872 (ASIP, 2005). The WRAMC provides very limited family housing on-post at the Main Section. Two homes are provided for general officers on the eastern side of Main Section and there are eight senior officer homes to the west side.

Per the WRAMC Main Section Master Plan the existing land use, categorized per TM 5-803-1, is as follows:

| **Existing Land Use Allocations** | | |
|---|---|---|
| **Category** | **Approximate Acreage** | **Percent of Total** |
| Administration | 19.75 | 17.48 |
| Community Facilities | 12.93 | 11.44 |
| Family Housing | 8.74 | 7.73 |
| Utilities | 4.19 | 3.70 |
| Medical | 24.44 | 21.63 |
| Recreation | 13.88 | 12.28 |
| Research and Development | 12.30 | 10.88 |
| Unaccompanied Housing | 4.20 | 3.72 |
| Training | 1.97 | 1.74 |
| Operations | 0.28 | 0.25 |
| Buffer Zone | 10.16 | 8.99 |
| **Total** | **113.00** | **100.00** |

## 4.4 Biological and Cultural Resources Summary

### 4.4.1 Biological Resources

*[Source: Environmental Assessment, Master Plan Update, Main Section, Woolpert LLP, October 2002]*

#### 4.4.1.1 Vegetation

Bailey (1980) categorizes the Washington, D.C., area as being in the Southeastern Mixed Forest Province lowland ecoregion, within the Subtropical Division of the Humid Temperate Domain. WRAMC occurs within the Piedmont section of the Oak-Chestnut forest region. Dominant trees within this area historically included black oak (Quercus velutina), white oak (Quercus alba), hickory (Carya spp.), and tulip poplar (Liriodendron tulipifera). American beech was typically present on ravine slopes (Astore, 1992).

General floristic studies have not previously been conducted at WRAMC. Existing wooded areas at WRAMC are representative of second growth forests, as original virgin

forest no longer occurs in the region. Nevertheless, since little or no logging has occurred within the last 80 years or so at WRAMC, there is a good density of large oak (Quercus spp.) and tulip poplar trees. Understory vegetation varies considerably within Main Section woodlands. At the Main Section, the remnant oak-dominated woodland between 16th Street NW and the Mologne House is heavily infested with exotic shrubs and vines such as wineberry (Rubus phoenicolasius), multiflora rose (Rosa multiflora), winged euonymous (Euonymous alatus), garlic mustard (Alliaria petiolata), English ivy, and Japanese honeysuckle.

There exists no meadow or old field habitat within the boundaries of the Main Section. Residential areas at WRAMC are dominated by horticultural plant species associated with mowed lawn or otherwise landscaped areas. Field investigations for rare and endangered species of flora were conducted in 1997 and 1998 by Woolpert LLP biologists. No rare species were noted at the Main Section (Woolpert, 1999a).

#### 4.4.1.2 Wildlife

WRAMC is located along the eastern edge of the Piedmont Plateau physiographic province of the Appalachian Highlands (Astore, 1992). This region has a diverse array of native vertebrate fauna in suitable natural habitats. Studies of animal diversity conducted within the Maryland portion of the Rock Creek watershed recorded 22 species of amphibians, 25 species of reptiles, 34 species of mammals, and 144 species of birds (Rogers, et al., 1990).

Natural habitat areas in the form of woodlands occur only in small wooded pockets at the Main Section. The 3-acre hillside woodlot along 16th Street NW at the Main Section is too small to provide habitat for wildlife other than urban-tolerant mammals and common species of resident birds.

During the 1997 and 1998 field investigations, 1 mammal and 19 species of birds were observed at the Main Section. The eastern gray squirrel (Sciurus carolinensis) was the only mammal noted, while resident birds frequently observed included rock dove (Columba livia), blue jay (Cyanocitta cristata), American crow (Corvus brachyrhynchos), European starling (Sturnus vulgaris), northern cardinal (Cardinalis cardinalis), and house sparrow (Passer domesticus). No reptiles or amphibians were observed at the Main Section. Non-breeding migrant birds noted in spring at WRAMC included species such as veery (Catharus fuscescens), blackpoll warbler (Dendroica striata), and American redstart (Setophaga ruticilla).

#### 4.4.1.3 Rare, Threatened, and Endangered Species

During 1997 and 1998 surveys, a three-season methodology was employed to better assess the presence or absence of rare flora and fauna within the boundaries of WRAMC in compliance with Army regulations 200-1 and 200-3. After the first site reconnaissance from September 30, 1997, to October 2, 1997, it was determined that no rare flora or fauna were observed during field investigations at the Main Section. Potential habitat for rare and endangered species on the Main Section of WRAMC is virtually nonexistent. At adjacent Rock Creek Park within the District of Columbia some

25 plant species and five animal species have been documented that are considered rare, though most sighting records date back 85-120 years (Woolpert LLP, 1999a). The federally threatened arctic peregrine falcon (Falco peregrinus tundrius) may find transitory perches on the highest structures on the Main Section.

### 4.4.2 Cultural Resources

*[Source: Environmental Assessment, Master Plan Update, Main Section, Woolpert LLP, October 2002]*

Numerous surveys and reports have been prepared to identify historic resources and make recommendations for the management of those resources. The installation has a Integrated Cultural Resources Management Plan (ICRMP) that identifies all cultural resources eligible for listing on the National Register of Historic Places, and makes recommendations for maintenance and management of those resources. A Section 106 Report was prepared by Kise Franks & Straw for the 1994 Main Section Master Plan (KFS, 1994).

#### 4.4.2.1 Archeological Resources

Construction and land management during its long history have extensively disturbed the grounds of the Main Section. As part of a Section 106 report prepared in 1994 to address the implementation of the installation master plan, a reconnaissance survey and literature search was conducted. This research revealed no archeological resources within the Main Section boundaries (Kise Franks & Straw, Inc., 1994). Due to extensive land disturbance, the report concluded that there is little probability that significant archeological resources would be found on the installation (Kise Franks & Straw, Inc., 1994).

#### 4.4.2.2 Architectural/Historic Resources

*Walter Reed Historic District*

A proposed historic district, consisting of 60 resources (39 contributing resources and 21 noncontributing), was identified in the 1994 Main Section, Walter Reed Army Medical Center, Washington, D.C., Section 106 Report as being eligible for listing on the National Register. One resource, the National Museum of Health and Medicine is designated a National Historic Landmark. The National Register-eligible historic district incorporates most of the installation with the exception of the area north of Dahlia Street and east of 14th Street. This historic district contains resources that are primarily related to the original Walter Reed Hospital and the Walter Reed Army Institute of Research (WRAIR) (Kise Franks & Straw, Inc., 1994). The historic district includes resources from many years of development at WRAMC; however, the design of those resources and overall master planning was consistent. The site development adhered to Beaux Arts planning concepts and the predominant architectural style is Georgian Revival (Kise Franks & Straw, Inc., 1994). Consisting of 39 contributing and 21 noncontributing resources, the district is eligible “as a result of its historical significance in the field of military medicine (Criterion A) and for its architecture and design (Criterion C).” The identified period of significance for the district is between 1908 and World War

II. The district includes a group of contributing residential buildings (Buildings 19, 21, 22, 25, 26, 29, 29A, 30, and 35) that were originally part of the Sixteenth Street Heights Subdivision and were purchased by WRAMC for use as officer housing when the installation expanded in the 1920s.

*Building 54*

Building 54 is potentially individually eligible for the National Register of Historic Places . The ICRMP for WRAMC identified Building 54 as potentially eligible under Criterion Consideration G. The ICRMP also stated that Building 54, completed in 1955, was the "first and only building constructed in the United States that was designed and built to survive a hydrogen-bomb explosion."

*National Museum of Health and Medicine*

The Army Medical Museum and Library, now called the National Museum of Health and Medicine, presently housed in Building 54, was declared a National Historic Landmark (NHL) in 1964, at which time the museum was located in a brick building on the National Mall. In 1966, it was determined that the NHL status of the museum was associated with the museum collection, not the building in which it was housed (Kise Franks & Straw, 1994). The building on the Mall was subsequently demolished, and the collection was moved to Building 54 at WRAMC, where it retains its NHL status. Parts of the museum's collections are now housed off-installation in leased space. Currently the museum is open to the public from 10:00 to 17:30 daily. It is closed Christmas day. The number of visitors in 1999 was approximately 60,000 to 65,000.

## 4.5 Site Maps

*Describe available sites maps and imbed as appropriate. Maps may include:*

- Installation Master Plan Map- 1997
- Current Petroleum Storage Locations - 2005
- Historical Map prior to construction of Building 2 – 1961
- Historical Map – 1927
- Historical Map prior to development of 1918 parcel - 1920
- *Biological Resources*
- Historic Resources - EA for 2002 Master Plan Update

# 5 Environmental Condition Overview – Existing Environmental Information

## 5.1 Environmental Permits/Licenses

### 5.1.1 RCRA Status

In 1980, WRAMC filed a Notification of Hazardous Waste Activity with the US EPA to generate hazardous materials; a federal facility ID number, DC4210021156, was assigned.

WRAMC is not a permitted TSDF.

A 90-Day Hazardous Waste Storage Area is maintained near Building 54. A former hazardous waste storage bunker south of Building 40 (corresponding to IRP site WRAMC-01) was closed in 1993. There was also a temporary HW storage area in the parking deck about 5 or so years ago.

Satellite Accumulation Areas are not permitted per District of Columbia regulations, but wastes were historically stored on the loading docks at buildings 54 and 40. [Installation Assessment, 1984]

### 5.1.2 Solid Waste Permits

WRAMC has never possessed solid waste permits.

### 5.1.3 UST/AST Permits

A list of all registered tanks is located in Appendix C. The primary usage of all current tanks is storage of diesel fuel and/or #2 heating oil for boilers and emergency generators. One above-ground tank (500 gallons) is used to store gasoline for maintenance vehicles and is located at Building 16. One underground tank (270 gallons) associated with an oil-water separator is located at Building 82.

### 5.1.4 NPDES Permits

WRAMC holds a waste-water discharge permit, #045-5, under the purview of the District of Columbia Water and Sewer Authority (WASA). The permit covers general discharges to the sanitary sewer system on the Main Post area and became effective on 1 December 2001. WRAMC and WASA entered into a -consent agreement under this permit in January 2002, for violations of mercury limits. The consent agreement detailed additional man-hole monitoring requirements, a mercury source investigation and required implementation of site-specific Best Management Practices. This agreement was amended in April 2003 based on the results of weekly sampling. Additional monitoring requirements were instituted via this amendment. The conditions of the consent agreement and amendment were satisfied and closed in 2004.

WRAMC has also applied for a NPDES permit for Cooling Tower discharge from Building 20, the Mologne House to the storm sewer in 2005. *[Personal communication with Joe Fromal, WRAMC GEO, 18 July 2005]*

### 5.1.5 Drinking Water Permits

WRAMC does not maintain any drinking water permits. The water supply for Main Section is obtained from the WASA. The Washington Aqueduct Division of the Baltimore District, U.S. Army Corps of Engineers supplies the District of Columbia with water. Water is obtained from the Potomac River above the Great Falls area and is treated at the Dalecarlia Reservoir. Water is supplied to Main Post via eight metered, 8-inch mains. Water is distributed through out Main Post by a system of 6-inch and 8-inch cast iron pipes.

### 5.1.6 Air Permits

WRAMC completed an air emissions inventory and submitted a Title V (Clean Air Act) permit application to the District of Columbia. The original Title V permit (#004) was issued by DC on 28 July 2000. The permit expired in 2005. WRAMC filed the application to reissue the permit, but DC has not finished drafting the document, to date. The original permit stated that Boilers 1, 2, and 4 were permitted to burn natural gas and #2 fuel oil, while Boiler 3 was permitted to burn natural gas as the primary fuel. Emissions of carbon dioxide, carbon monoxide, nitrogen oxides, sulfur dioxide, volatile organic compounds, and particulate matter (as per 20 DCMR 300) are not measured. NOx, O2, and opacity are measured. The percent sulfur of the fuel is measured quarterly. The DC is a severe non-attainment area for ozone, primarily as a result of automobile traffic during times of atmospheric inversions in the summer (Woolpert, Inc., 1999).

Permits to construct/operate emergency generators are also issued to WRAMC by DC.

### 5.1.7 NRC Licenses **(Check with Mr. David Burton, WRAMC Health Physics)**

NRC General License No. 6158?

License No. 08-01738-02 was issued on February 18, 1959, and amended periodically since that time. NRC-licensed activities performed at the Washington, DC site were limited to medical research. No outdoor areas were affected by the use of licensed materials. [Environmental Assessment, Building T-2 Decommissioning, NRC, February 2005]

Department of Army Authorization, DA A08-01-90, for naturally occurring isotopes not covered by the NRC license.

*Identify sources of radiation data (reports, inspections).*

*Identify all radiological commodity usage at the installation. Identify types of commodities, locations, periods of use, and results of any leak testing or radiation surveys conducted.*

### 5.1.8 Other permits/licenses

No other permits or licenses are held by WRAMC.

## 5.2 Environmental Cleanup

### 5.2.1 Installation Restoration Program (IRP)

**[All information from FY06 Installation Action Plan]**

*WRAMC-06 PCB CLEANUP AT RUMBAUGH GARAGE SITE*

"This site is located along the northern Main Post boundary, near the intersection of Fern Street and 13th Place, approximately 70 feet north of the Rumbaugh Parking Garage. A subsurface transformer vault was installed at the site in 1961. The transformer and the vault were removed in 1992 during the construction of the Rumbaugh Parking Garage. PCB soil contamination was detected and excavated in 1992 and again in 1993." A letter dated 19 November 1993 from EPA Region III, concurred with the decision to backfill the excavation provided that additional PCB investigation was completed (soil and groundwater sampling), and that a statement would then be added to the "deed" of the property to alert future owners of the presence and location of PCB contamination left on-site.

An investigation was conducted by USACHPPM in August and October 1996 to determine the extent of PCB contamination in the groundwater. No PCBs were detected in the groundwater. One soil sample had detectable PCBs (1.18 ug/kg) which is well below the EPA decontamination requirement of _____. In 1997, the monitoring wells were re-sampled: no PCBs were detected and WRAMC began moving to site closure. However, in October 2000 and again in February 2001, PCBs were detected in two down-gradient monitoring wells at 0.9 and 1.1 ug/L, and 1.3 and 0.84ug/L, respectively. Two additional monitoring wells were installed further down-gradient in June to verify the direction of groundwater flow and the extent of the plume. One of the newer wells did contain low levels of PCBs.

WRAMC is conducting quarterly groundwater monitoring. In FY04, WRAMC completed a Conceptual Site Model that showed low potential risks.

In July 2005, a decision document recommending No Further Action was prepared and submitted to EPA.

*WRAMC-01 HAZWASTE STORAGE FACILITY, BLDG 40*

"WRAMC-01 is located south of Building 40 in a small storage building. This building was used to temporarily store hazardous wastes from 1986 (perhaps earlier) to 1991. Federal Facility Compliance Agreement No. III-FF-RCRA-001, 29 March 1990 instructed WRAMC to submit closure plans and a schedule for closure of WRAMC-01. Sampling was performed at the site on 4-5 November 1991 that found high concentrations of cadmium. The site was cleaned and re-sampled on 10 June 1992. Cadmium was not detected. Recommendations to formally close the site were provided in a letter to WRAMC from U.S. Army Environmental Hygiene Agency (now U.S. Army Center for Health Promotion and Preventive Medicine) dated 20 July 1992. No documentation could be found to determine whether this site has been formally closed. The U.S. Army Corps of Engineers and the District of Columbia Government have been

solicited for documentation records. The WRAMC-01 was listed as "discontinued" in June 1993. The creation of an AEDB-R site appears to be a reaction of the above stated compliance agreement and not based on a confirmed release to the environment. Thus, this site is not eligible for IRP funding and is therefore response complete under the IRP. This site's status was revised to "Response Complete" on 1 March 2000." (WRAMC Installation Action Plan 2004, and Draft 2006)

*WRAMC-03 INFECTIOUS WASTE STORAGE FACILITY*

"WRAMC-03 is a concrete pad outside the west side of the hospital (Building #2) used to temporarily store the solid waste and medical waste generated at the hospital prior to 1993. There is no documentation available to determine whether any releases were reported for this site. This site was listed as "discontinued" in October 1992. Medical and solid wastes continue to be stored there, making the site an active site. The medical waste, however, is now stored in refrigerated trailers adjacent to the loading dock. Thus, this site was included in AEDB-R, but was not considered eligible for IRP funding. Site is considered response complete under the IRP" (WRAMC Installation Action Plan 2004).

### 5.2.2 Military Munitions Response Program (MMRP)

None identified.

### 5.2.3 Compliance Cleanup (CC)

None identified.

### 5.2.4 Previous Environmental Investigations

Installation Assessment, TIC #00041, June 1984, details pre-1980 practices of discharging laboratory and other wastes from industrial operations directly into the sanitary sewer system. No details are provided on sumps or the sewer system itself to document whether or not historical releases may have occurred.

A pathological waste incinerator was operated prior to 1980, at Building 54. Document states that the incinerator was shut down due to performance problems. (A decommissioning report was prepared by General Physics Corporation for this incinerator. Another incinerator at Building 16 was identified as operational prior to 1960. No documentation was discovered to assess the waste stream introduced into this unit. This incinerator is no longer present at the site.

A nuclear reactor was located in Building 40 from 1961 to 1972. The reactor is documented to have been decommissioned and all fuel, wastes and irradiated components disposed off site. This was performed in accordance with the NRC regulations.

Environmental Baseline Survey for Buildings 40 & 18, WRAMC, July 2004 details that hazardous substances and mercury were known to have been released inside Building 40 and subsequently cleaned up during the decommissioning by General Physics, Inc.

in 2002. The report indicates that residual PCB contamination in room B003 restricts the future use to 'low occupancy' use (less than 335 hours per year). It was also noted in the Site Inspection for the EBS that lead shielding in x-ray rooms was still present.

Additionally, the EBS assigned an ECP Category of 6 to Building 40 site due to the PCB contamination near a vault northwest of the building (see section 5.5 below).

Building T-2 was removed from the WRAMC NRC License in 2005. *[Federal Register February 23, 2005]* A Finding of No Significant Impact accompanied the Environmental Assessment prepared by the Nuclear Regulatory Commission. Based on assessment results provided by WRAMC, the building met NRC criteria for unrestricted use.

## 5.3 Hazardous Substances

Emergency Planning and Community Right to Know Act (EPCRA) Tier Two Reports were reviewed for Calendar Years 2003 and 2004. The following locations were identified in one or both reports as storage areas for hazardous substances for one year or more: (Note petroleum storage not included in this section, see section 5.4 and Appendix C).

| | |
|---|---|
| Building 1 | Ethyl Alcohol |
| Building 2 | Ethyl Alcohol; Formaldehyde; Sodium Chloride |
| Building 7 | Ethyl Alcohol; Formaldehyde; Sodium Chloride |
| Building 48 | Magnesium Nitrate Hexahydrate; Potassium Hydroxide; Sodium Chlorate (aqueous); Sodium Hydroxide |
| Building 53 | Ethyl Alcohol; Formaldehyde; Sodium Chloride |
| Building 54 | Argon; Ethyl Alcohol; Formaldehyde; Sodium Chloride |
| Building 84 | Sodium Chloride (Location possibly same as 'Front of Bldg 15/16 in 2003 report) |
| Building T2 | Ethyl Alcohol; Formaldehyde |

The Preliminary Assessment Report, September 30, 1990 includes a copy of a USATHAMA Waste Site Report that includes estimated quantities/ranges of materials stored onsite. It is assumed for the purposes of this report that these areas stored materials for more than one year. Petroleum Products are not included in the table below.

| | | |
|---|---|---|
| Building 1 (Vault) | Precious Metal Recovery Wastes | 4400 lbs/year (estimated) |
| Former Hazardous Storage Bunker (Bldg | Solvents (Toluene, Xylene, Acetone), methanol, | 27,000 lbs/year (estimated) Largest container was 55 |

| | | |
|---|---|---|
| 40) | Hydrochloric acid, chromic acid | gallons |
| Building 1 – Office Machine Repair shop | TCE, Benzene, Petroleum Distillate | Waste tank drained to 55 gallon drum. 630 gallons per year estimated usage. |
| Building 33 – Office Machine Repair Shop *(no longer exists)* | *Assumed to be similar to above* | Unknown, use discontinued in 1977. |
| Building 5 – Paint Shop (now MRI building) | Paint (potentially lead-based due to dates of operation | Unknown, use discontinued in 1972 |

The 2001, Spill Prevention, Control and Countermeasures Plan details the following as hazardous substance/waste storage locations on the Main Post area.

| | | | |
|---|---|---|---|
| 54 | Main Post Hazardous Waste Storage Area | Hazardous Waste | Environmental Division |
| 15 | Boiler Plant | Sulfuric Acid | Boiler Plant DPW |
| 2 | Main Post Loading Dock | Hazardous Materials | |

Per the SPCC plan, toxic, corrosive, and ignitable wastes are segregated in the three containment areas of the Building 54 Bunker. The containment areas are estimated at 280 gallons, 340 gallons, and 370 gallons, respectively. According to the plan, these volumes are sufficient to contain the full volume of material typically stored in each containment area. The bunker floor and each containment wall is made of concrete. Within each containment area, small amounts of hazardous materials are labeled and stored on shelves.

## 5.4 Petroleum Products

WRAMC maintains 23 above-ground storage tanks (ASTs) (includes day tanks and belly tanks) and 9 underground storage tanks (USTs) storing predominantly diesel fuel (generators) and #2 fuel oil (boilers), *See Appendix C for specifics such as dates of installation and construction details.*

Available documentation reveals one spill/release of petroleum products to the environment, though a request for Fire Department spill records has been submitted to WRAMC.

In December 1994, during the filling of one of the 400,000 gallon USTs, the fill pipe disconnected resulting in a discharge of oil to the sewer system. WRAMC personnel intercepted the oil in the sewer system 100 feet from the spill area. (SPCC, 2001)

## 5.5 Polychlorinated Biphenyls

Per the 1984 USATHAMA Installation Assessment, 63 PCB or PCB contaminated transformers were located in the Main Post area during a 1982 PCB survey. The 1990 Preliminary Assessment Report indicates that 66 transformers, 38 pad mounted and 28 in underground vaults, were located throughout the facility. Per the PA Report, testing was conducted in 1986 and 46 contained greater than 500 ppm of PCBs. 20 contained between 15 and 500 ppm.

Entries in the US Army Environmental Program Requirements (EPR) system report completed projects to remove PCB transformers.

- Project Number WR0089S003, removal of 44 PCB transformers was completed as of 30 September 1994. Project summary also notes 1 Transformer was initially overlooked and funds were added in FY94 for removal.

- Project Number WR0092F051, removal of 17 PCB contaminated transformers at Main Post and Forest Glen, was completed as of 16 March 2000.

- Project Number WR0092F080, Remediation of contamination and replacing exploded transformers at Building 14, was completed as of 30 September 1992.

The Environmental Assessment for the Hospital Energy Plant, 2004, states that all PCB and PCB- contaminated transformers had previously been removed from WRAMC. This EA also notes that old light ballasts that contain PCB's are still being used. These ballasts are removed and replaced with non-PCB containing ballasts as light fixtures are replaced. PCB ballasts are collected and disposed of through the Defense Reutilization and Marketing Office (DRMO).

A current project to remove PCB contaminated soil surrounding an underground vault at Building 40 is identified in the EBS for Buildings 40 & 18, 2003. It appears that dewatering this vault, which previously held PCB transformers, resulted in soil contamination due to discharge of the water to the surface soils adjacent to the vault. A future project is planned for removal of the aforementioned soil and assessment of the other similar vaults located on post (POC's: Brant Crumbling and Bruce Carlberg, WRAMC GEO, respectively).

## 5.6 Asbestos-Containing Materials

WRAMC provided the following list of known asbestos surveys:

| Building Number | Survey by | Date | Asbestos | O&M Plan |
|---|---|---|---|---|

| | | | Friable | Non-friable | |
|---|---|---|---|---|---|
| 1 | (1) Kemron Environmental | December 1994 | Y | Y | Y |
| | (2) The Lukmire Partnership | July 1998 | | | |
| | (3) General Physics Corporation | July 2002 | | | |
| 2 | (1) EA Engineering | December 1999 | N | Y | N |
| 4 (garage) | (1) General Physics Corporation | | N | N | N |
| 7 | (1) Dynamac Corporation | January 1995 | Y | N | Y |
| | (2) General Physics Corporation | January 2002 | | | |
| 8 | (1) EA Engineering (database**) | January 1997 | Y | Y | N |
| 9 | (1) EA Engineering (database | January 1997 | Y | Y | N |
| 11 | (1) EA Engineering (database**) | January 1997 | Y | N | Y |
| | (2) General Physics Corporation | January 2002 | | | |
| 12 | (1) EA Engineering (database**) | January 1997 | N | Y | Y |
| | (2) General Physics Corporation | January 2005 | | | |
| 14 | (1) EA Engineering (database**) | January 1997 | Y | Y | Y |
| | (2) General Physics Corporation | January 2002 | | | |
| 15 | (1) Dynamac Corporation | January 1995 | Y | Y | Y |
| | (2) General Physics Corporation | January 2003, January 2005 | | | |
| 17 | (1) Dynamac Corporation | January 1995 | Y | Y | Y |
| | (2) General Physics Corporation | December 2002 | | | |
| 18 | (1) Dynamac Corporation | January 1995 | Y | Y | Y |
| | (2) General Physics Corporation | January 2002 | | | |
| 19 | (1) EA Engineering (database**) | January 1997 | Y | Y | N |

| Building Number | Survey by | Date | Asbestos | | O&M Plan |
|---|---|---|---|---|---|
| | | | Friable | Non-friable | |
| 21 | (1) EA Engineering (database**) | January 1997 | Y | Y | N |
| 22 | (1) EA Engineering (database**) | January 1997 | Y | Y | N |
| 25 | (1) EA Engineering (database**) | January 1997 | Y | Y | N |
| 26 | (1) EA Engineering (database**) | January 1997 | Y | Y | N |
| 29 | (1) EA Engineering (database**) | January 1997 | Y | Y | N |
| 30 | (1) EA Engineering (database**) | January 1997 | Y | Y | N |
| 35 | (1) EA Engineering (database**) | January 1997 | Y | Y | N |
| 38 | (1) EA Engineering (database**) | January 1997 | Y | Y | Y |
| | (2) Aero Environmental Health & Safety | October 2000 | | | |
| | (3) General Physics Corporation | January 2002 | | | |
| 40 | (1) Kemron Environmental | July 1992 | Y | Y | Y |
| | (2) General Physics Corporation | January 2002 | | | |
| 48 | (1) Dynamac Corporation | January 1995 | Y | Y | Y |
| | (2) General Physics Corporation | January 2003, April 2005 | | | |
| 52 | (1) Dynamac Corporation | January 1995 | Y | Y | Y |
| | (2) General Physics Corporation | January 2002 | | | |
| 53 | (1) Dynamac Corporation | January 1995 | Y | Y | Y |
| | (2) General Physics Corporation | January 2002 | | | |
| 54 | (1) EA Engineering (database**) | January 1997 | Y | Y | Y |
| | (2) AMI Environmental | February 2000 | | | |
| | (3) General Physics Corporation | January 2002 | | | |

| Building Number | Survey by | Date | Asbestos | | O&M Plan |
|---|---|---|---|---|---|
| | | | Friable | Non-friable | |
| 57 | (1) Dynamac Corporation | January 1995 | Y | Y | Y |
| | (2) General Physics Corporation | August 2004 | | | |
| 82 | (1) Dynamac Corporation | January 1995 | N | Y | Y |
| | (2) General Physics Corporation | June 2002 | | | |
| 83 | (1) Dynamac Corporation | January 1995 | N | N | N |
| | (2) General Physics Corporation | August 2004 | | | |
| 88 | (1) Dynamac Corporation | January 1995 | N | Y (assumed) | N |
| | (2) General Physics Corporation | June 2002 | | | |
| 90 | (1) EA Engineering (database**) | January 1997 | Y | N | Y |
| | (2) General Physics Corporation | June 2002 | | | |
| 91 | (1) EA Engineering (database**) | January 1997 | N | N | Y |
| | (2) General Physics Corporation | January 2002, August 2004 | | | |
| T-2 | (1) Dynamac Corporation | January 1995 | N | Y | Y |
| | (2) General Physics Corporation | July 2002, April 2005 | | | |
| T-20 | (1) Dynamac Corporation | January 1995 | Y | Y | Y |
| | (2) General Physics Corporation | December 2002, April 2005 | | | |
| Steam Tunnels | (1) Dynamac Corporation | January 1995 | Y | Y | Y |
| | (2) General Physics Corporation | September 2002 | | | |

## 5.7 Lead and Lead-Based Paint

WRAMC provided the following list of known lead-based paint surveys.

| Building Number | Survey by | Date |
|---|---|---|
| Building 1 | Custer Environmental | June 1993 |
| Quarters 1 | Aerosol Monitoring & Analysis | July 1994 |
| Quarters 2 | Aerosol Monitoring & Analysis | July 1994 |
| Building 4 | General Physics Corporation | August 1999 |
| Quarters 5 | Aerosol Monitoring & Analysis | July 1994 |
| Quarters 7 | Aerosol Monitoring & Analysis | July 1994 |
| Building 11 | Jenkins Professionals Inc. | July 1994 |
| Building 12 | SCS Engineers | July 1992 |
| Quarters 12 | Aerosol Monitoring & Analysis | July 1994 |
| Quarters 17 | Aerosol Monitoring & Analysis | July 1994 |
| Quarters 19 | Aerosol Monitoring & Analysis | July 1994 |

Many of the facilities and buildings at WRAMC were constructed before the DoD ban on the use of lead-based paint in 1978 and are likely to contain one or more coats of such paint. In addition, some facilities constructed immediately after the ban may also contain lead-based paint, because inventories of such paints that were in the supply network were likely to have been used up at these facilities.

Walter Reed Army Medical Center has conducted voluntary water sampling to determine whether water in WRAMC's distribution pipes meet regulatory limits for lead and copper. No sampling data are available for Building 40. However, the Hospital (Building 2) has been extensively sampled with results showing that there are isolated pipes and drinking fountains within the building that have recurring lead levels above an action level. Samples collected between 1992 and 1999 showed isolated exceedances of lead action levels at 1 of 12 locations sampled. (EBS for Building 40 & 18, 2004)

## 5.8 Mercury

Mercury or mercury vapor is present on post in the form of mercury thermometers, switches, blood pressure gauges, and in fluorescent light bulbs. In addition, mercury is contained in many of the chemicals used in laboratories and other operations throughout WRAMC, including those laboratories within building 40 when WRAIR occupied the building.

Wastewater discharges at WRAMC are monitored for mercury levels. There have been levels exceeding the permit limits at Main Post that are being addressed through a Consent Agreement between WRAMC and the District of Columbia Water and Sewage Authority. This issue has been closed per Joe Fromal, WRAMC GEO.

## 5.9 Historical Landfills/Dumps

There are no known landfills or dumps on the Main Post section of WRAMC. Significant earth moving activities have occurred over the majority of the land surface and no indications of historical landfilling or dumping have been discovered.

## 5.10 Explosive Contaminated Structures

The WRAMC mission did not include processing or handling of explosives or munitions. No structures are known or expected to be contaminated with explosives.

## 5.11 Radon

According to the EPA's categorization of radon zones, Washington, DC is qualified as a radon zone three, meaning that it has a predicted average indoor radon screening level less than 2 pCi/L. The EPA's action level for radon is 4 pCi/L. (EBS for Buildings 40 & 18, 2004)

A radon survey was conducted for the Main Post area in August 1991 and follow-up surveys for specific buildings were conducted in 1998 and 2001. All detections for Radon were below the 4 pCi/L action level.

## 5.12 Pesticides

WRAMC has three buildings (16, 50 and 51) known to have been associated with past pesticide storage/mixing. Per the 2004 Pest Management Plan, all current pesticide mixing/storage is at the Forest Glen Annex.

The Installation Assessment indicated that pesticide disposal possibly occurred under benches in Building 50 and 51, but no indications of type or quantity were evident. The 1961 map of the installation indicates that Building 50 and 51 were titled Greenhouse No. 3 and No. 4 respectively. Building 39 was labeled as Greenhouse No. 1, Building 86 was labeled as No. 5; Greenhouse No. 2 was not present.

## 5.13 Other Identified Concerns

WRAMC previously operated incinerators at Building 54 (pathological waste) and Building 16. Details on the waste streams for these incinerators are not readily available.

## 5.14 Identification of Uncontaminated Property

*Provide a description of the location and acreage of property known to be uncontaminated.*

*Section 1004 – This section is located in the west-central portion of the facility, west of the fire protection water reservoir and south of the administrative area. Portions of the section have been leased for agriculture and the remainder is evenly divided between open grassland and wooded tracts. Other than the Conservation Clubhouse and four picnic structures the property has only been used as buffer between the active portion of the facility and the adjacent residential areas*

This section is considered "uncontaminated" property because historical records reviewed and the VSI found no indication that the release or disposal of hazardous substances or their derivatives has occurred, including no migration of these substances from adjacent areas.

## 5.15 Description of Remaining Property

***Section 1004 – This section is located in the west-central portion of the facility, west of the fire protection water reservoir and south of the administrative area. Portions of the section have been leased for agriculture and the remainder is evenly divided between open grassland and wooded tracts. Other than the Conservation Clubhouse and four picnic structures the property has only been used as buffer between the active portion of the facility and the adjacent residential areas.***

***In 1992, the heating oil tank supplying the Clubhouse was removed after tightness testing revealed a loss of tank integrity. The incident was investigated and remediated in accordance with state regulations. A total of 50 cubic yards of soil were removed and closure notification has been received from the state (Smith, 1993).***

*Historical records reviewed and the VSI found indication of the release of petroleum or their derivatives has occurred, but no indication of the release or disposal of hazardous substances including no migration of these substances from adjacent areas was found.*

## 5.16 Biological and Cultural Resources

### 5.16.1 Biological Resources and Consultations

#### 5.16.1.1 Endangered Species

#### 5.16.1.2 Wetlands

#### 5.16.1.3 Consultations (Sec 7 formal or informal)

### 5.16.2 Cultural Resources and Consultations

#### 5.16.2.1 Prehistoric Resources

#### 5.16.2.2 Historic Resources

#### 5.16.2.3 Archaeological Sites

#### 5.16.2.4 Buildings/Structures

#### 5.16.2.5 Section 106 Consultation

#### 5.16.2.6 Government to Government Consultation

#### 5.16.2.7 NEPA

#### 5.16.2.8 Recent NEPA Documentation

#### 5.16.2.9 Anticipated Level of Documentation

### 5.17 Applicable Regulatory Compliance Issues

*The Army currently tracks issues concerning compliance with environmental laws and regulations through the Environmental Quality Report (EQR) and formerly used the Army Compliance Tracking System (ACTS). The installation is required to enter lawsuits, notices of violation and warning letters into the system and to track response actions. All issues listed in the system should be summarized in the ECP (in a table if appropriate) and attention should be called to any unresolved issues as these may affect transfer of the facility.*

### 5.18 Adjacent Properties

*The presence or absence of recognized environmental conditions on properties adjacent to the installation must be discussed. The VSI and records review findings should be summarized and any conditions or potential conditions that have impacted or might impact environmental quality at the installation must be identified. The current use of each of the adjoining properties should be indicated. Examples of conditions that must be discussed include records of spills, leaking USTs, environmental investigations, and National Priorities List sites. The presence or absence of any recognized environmental conditions should be clearly noted.*

# 6 NEW ENVIRONMENTAL INFORMATION

## 6.1 Summary of ECP Phase II Results

## 6.2 See ECP Phase II Report

# 7 Costs

*Identify all projected environmental costs and projects for closing/disposing of the installation.*

- *Provide IAP (ER,A (MMRP and IRP) and CC) costs by site, phase, and fiscal year.*
- *Provide all other project costs by site/project, phase, and fiscal year.*
- *Types of projects and costs that will be BRAC unique include:*
    - *Radiological Decommissioning*
    - *Permit or license closure requirements*
    - *Operational range closure*
    - *Explosive-contaminated Structures*
    - *Asbestos/LBP surveys or abatement (note that we normally transfer buildings as is, giving notice to transferee that they are responsible for abatement actions)*
    - *Identification of newly identified CERCLA release areas (if applicable)*

*EPR may have existing project information that may be valid requirements in support of the closure and disposal of the facility*

# 8 Conclusions

## 8.1 Areas of Environmental Concern

### 8.1.1 Off-Post

There is no evidence of widespread contamination of soils or groundwater that could potentially impact human health or the environment on adjacent properties.

### 8.1.2 On-Post

No evidence of burial or waste disposal was discovered for the Main Post area. Minor releases of PCBs are known to have occurred near vaults formerly housing transformers.

### 8.1.3 Past Hazardous Substance/Petroleum Products Practices

Discharges of hazardous substances to the sanitary sewer system prior to 1980 could have resulted in the releases to the environment. Available documentation indicates that wastes including solvents, mercury, lead and various laboratory chemicals were routinely discharged directly to the sanitary sewer. The condition of this system is unknown due to the age and likely construction materials (terra cotta/vitrified clay).

Petroleum releases have occurred on the installation, though the provided/available documentation reveals most known spills have been adequately addressed. All known

tanks have been properly closed or brought into compliance with RCRA Subpart I. Releases discovered during tank removal/closure have also been addressed.

### 8.1.4 Current Hazardous Substance/Petroleum Products Practices

Based on available documentation, WRAMC appears to be in compliance with all applicable environmental laws. No outstanding compliance issues were discovered.

All hazardous wastes are stored in single location pending off-site transport and disposal. No waste streams appear to have a direct pathway to the environment.

## 8.2 Environmental Condition of Property

### 8.2.1 Buildings

The decommissioning of Building 40 included removal of over 275 sink traps containing hazardous substances. Buildings conducting medical research activities similar to those formerly housed in Building 40, including Building 1, 2 and 54, could present similar issues.

*Significant effort is necessary to terminate the Nuclear Regulatory Commission License. Buildings identified as having been used under the terms of this license will need a minimum of a room by room survey for potentially impacted areas.*

Asbestos and Lead-Based paint appear to be wide spread in all buildings constructed prior to the prohibition on use. Only areas with a complete and documented abatement should be considered as not presenting a potential hazard.

### 8.2.2 Soils

Minor spills of hazardous substances (metals, PCBs) and petroleum products are documented. All required cleanup/response actions appear to be complete (including regulatory concurrence) with the exception of PCB contamination near a vault outside Building 40. The assessment of similar vaults is pending as a future action.

An area in the south central portion of the site, surrounding the central heating plant (Building 15) currently and historically housed numerous industrial shops and warehouses. There is an increased potential for historical releases from these industrial operations (e.g. plumbing shop, paint shop,) as well as from storage of coal, ash and treated lumber. This area has had significant construction since the presence of some of these operations and it is likely any potentially impacted soil has been completely disturbed or removed.

### 8.2.3 Groundwater

Very limited information exists regarding known or suspected releases to groundwater. Wells were installed around IRP site WRAMC-06 to characterize the extent of PCBs in groundwater.

As previously identified, until 1980 the majority of liquid wastes were discharged to the sanitary sewer. The condition of the sewer system during the period is unknown. Any leaks could have resulted in the discharge of liquid wastes directly into the soils and subsequently the shallow groundwater. Groundwater does collect in steam tunnels across post and a sampling event in May 2005 did not reveal the presence of any contamination.

# 9 Certification

# 10 References

## APPENDIX A. List of Parcels and Buildings

| Bldg # | Historic Name | Current Use | Date | Additions | Chemical Usage/Storage | Notes |
|---|---|---|---|---|---|---|
| 1 | Main Hospital | Admin Gen Purp (Old Hospital) | 1908 | 1928 | Petroleum Distillates/VOCs<br><br>Solvents (TCE/PCE)<br><br>Precious Metal Wastes | Print Shop<br><br>Office Machine Repair Shop<br><br>DPTC Photographic Laboratory |
| 1A | West Pavilion | Admin Gen Purp (Old Hospital) | 1915 | 1928 | | |
| 1B | East Pavilion | Admin Gen Purp (Old Hospital) | 1915 | 1928 | | Radioisotope Lab (B-19) |
| 1C | Mess-Kitchen-Wards | Admin Gen Purp (Old Hospital) | 1914 | 1928 | | |
| 1D | General Mess-Library-Wards | Admin Gen Purp | 1928 | | | |
| 1E | West Wing | Admin Gen Purp | 1928 | | | |
| 1F | East Wing | Admin Gen Purp | 1928 | | | |
| 1G | Orthopedic Brace Shop | Admin Gen Purp (Old Hospital) | 1944 | | | |
| 1J | Orthopedic Brace Shop | Admin Gen Purp (Old Hospital) | 1953 | | | |
| 1K | Admission & Disposition Office | Admin Gen Purp (Old Hospital) | 1953 | | | |
| 1L | Cardio -Vascular Section | Admin Gen Purp (Old Hospital) | 1953 | | | |
| 2 | Hospital | Hospital | 1977 | | Lab Reagents, Solvents, medical, biological, pathological wastes.<br><br>Precious Metal Wastes<br><br>POL (Diesel) | Labs, Treatment Facilities<br><br>Dental Clinic<br><br>Spill at Return Tank |
| 3 | Rumbaugh Garage | Rumbaugh Garage | 1992 | | | |
| 4 | Hospital Garage | Hospital Garage | 1977 | | | |
| 5 | MRI Facility | MRI Facility | 1992 | | Lead-Based Paint Storage? | Former Paint Shop (1972) |
| 6 | Laboratory | Behavioral Science | 1997 | | | |
| 7 | Barracks | Outpatient Clinic | 1910 | | Radioisotopes | DCI Lab |
| 8 | Officer Housing | Family Housing General | 1910 | 1939 | | |
| 9 | Officer Housing | Family Housing General | 1910 | 1939 | | |
| 10 | WRAMC Flagstaff | WRAMC Flagstaff | 1935 | 1982 | | |
| 11 | Nurses Quarters | Admin Gen Purp (Delano Hall) | 1929 | 1931; 1933 | Solvents, Lead<br><br>Solvents, Heavy Metals | Former Pipe Shop<br><br>1927 Map indicates Auto repair, nickel plating, |

| Bldg # | Historic Name | Current Use | Date | Additions | Chemical Usage/Storage | Notes |
|---|---|---|---|---|---|---|
| | | | | | | typewriter repair shop in the footprint of this building |
| 12 | Nurses Quarters | Provost Marshal Admin Bldg | 1911 | 1934 | Lead in soil | Weapon Clearing |
| 14 | Enlisted Barracks (Abrams Hall) | Enlisted Barracks (Abrams Hall) | 1976 | | | |
| 15 | Central Heating Plant | High Pressure Boiler Plant Bldg | 1918 | | Sulfuric Acid<br><br>Coal/Ash | Scale removal<br><br>Coal Storage Area and Ash Bin indicated on 1927 Map |
| 16 | Incinerator | FAC Engineer Storehouse (DPW) | 1920 | | Unknown<br><br>Pesticides | Need details on incinerator inputs<br><br>Pesticide/Storage Mixing indicated in Inst. Assessment |
| 17 | Service Club | Guest House | 1920 | 1944 | | |
| 18 | Apartment Building | Offiicer Qtrs CIV (Walter Reed Inn) | 1967 | | | |
| 19 | Dwelling | Family Housing Colonel | c. 1915 | Moved 1954 | | |
| 20 | Guest House | Guest House | 1997 | | | |
| 21 | Dwelling | Family Housing Colonel | c. 1915 | | | |
| 22 | Dwelling | Family Housing Colonel | c. 1915 | Moved 1954 | | |
| 25 | Dwelling | Family Housing Colonel | c. 1919 | | | |
| 26 | Dwelling | Family Housing LTC-Major | c. 1918 | Moved 1954 | | |
| 29 | Dwelling | Family Housing Maj | c. 1915 | | | |
| 29A | Garage | Garage, Qrts. 16 | c. 1919 | | | |
| 30 | Dwelling | Family Housing LTC-Maj | c. 1915 | Moved 1954 | | |
| 31 | Warehouse | Warehouse | 1921 | | POL<br><br>Lead, Solvents<br><br>Paint; Paint-related materials | Original Building 31 listed as Quartermaster Oil House on 1927 Map<br><br>Former Building I-102 in current footprint; listed as Q.M. Plumber Shop on 1927 map<br><br>Former Building I-103 in current footprint; listed as Q.M. Paint Shop |

| Bldg # | Historic Name | Current Use | Date | Additions | Chemical Usage/Storage | Notes |
|---|---|---|---|---|---|---|
| 33 | Office Machine Repair Shop | Demolished | | | | |
| 35 | Dwelling | Family Housing LTC-Maj | c. 1915 | Moved 1954 | | |
| 38 | Guardhouse | HSPTL. Clinic Child Phsychol. | 1922 | 1942; 1992 | Radioisotopes? | Former DCI Lab? |
| 40 | Army Medical School | WRAIR Admin. and Research | 1924 | 1932; 1962 | None? | Building decommissioned per report dated ?????<br><br>Significant amounts of mold known to exist. |
| 40 | Hazardous Waste Storage Bunker | Removed | | 1980 | Cadmium in soil | Decommissioned per report dated ???? |
| 41 | Red Cross Bldg. | Moral Sup. Off. (Recreation Center) | 1927 | 1944 | POL Wastes; Antifreeze | Former DIO motor pool (demolished 1979) |
| 44-B-L | Corridor | Corridor | c. 1930 | | | |
| 44-W | Corridor | Corridor | c. 1930 | | | |
| 45 | Bandstand | Bandstand | 1941 | | | |
| 48 | Air Conditioning Plant Building | Air Conditioning Plant Building | 1961 | | | |
| 49 | Transformer Bldg. | Transformer Bldg. | 1976 | | | |
| 50 | Greenhouse No. 3 | Demolished | ??? | | Pesticide Storage/Disposal | Pesticides |
| 51 | Greenhouse No. 4 | Demolished | ??? | | Pesticide Storage/Disposal | Pesticides |
| 52 | Ward | General Storehouse | 1930 | | | |
| 53 | Post Theatre | AFIP Theatre/Conference Center | 1954 | | | |
| 54 | Institute of Pathology | Laboratory and Museum | 1955 | 1971 | Pathological waste incineration<br><br>Radioisotopes, Lab reagents, solvents<br><br>Hazardous Wastes<br><br>Biological hazards | Incinerator operating until 1980<br><br>Numerous medical research labs and processes.<br>Chemical Boiler?<br><br>Current Hazardous Waste Storage Bunker<br><br>Bio-Hazard Level 3 Suite |
| 55 | Fisher Hall | Guest House | c. 1995 | | | |
| 57 | Memorial Chapel | Post Chapel | 1931 | | | |
| 60 | Memorial Fountain | Memorial Fountain | 1935 | Replaced c. 1992 | | |

| Bldg # | Historic Name | Current Use | Date | Additions | Chemical Usage/Storage | Notes |
|---|---|---|---|---|---|---|
| 82 | PX Gas Station | Auto Craft Shops | 1942 | 1958 | POL; BTEX | Need to check closure reports for former gasoline USTs<br><br>Current Washrack |
| 83 | Animal House | ADP (WRAIR) | 1942 | 1944 | | |
| 84 | Equipment Shed | Facility Eng. Maint. Shop (DPW) | 1942 | | | |
| 88 | Therapeutic Swimming Pool | Indoor Swimming Pool | 1945 | | | |
| 90 | Fire Station | Fire Station | 1946 | | | |
| 91 | Central Dental Laboratory | Dental Clinic | 1956 | | Precious/Heavy metals | Photographic/X-ray wastes |
| 92 | Istope Laboratory | Admin (Audio-Visal Photo Lab) | 1954 | | Radioisotopes? | |
| 94 | Courts | Courts | 1976 | | | |
| 95 | Switching Station | Switching Station | 1962 | | | |
| T-02 | Automatic Data Proc Building | Automatic Data Proc Building | 1972 | | | |
| T-20 | Administration | Administration | 1972 | | | |
| T-32 | Vehicle Storage | Vehicle Storage | 1968 | | POL | Former DFAE Vehicle Maintenance Shop |
| T-60A | Admin General Purpose (Trailer) | Admin General Purpose (Trailer) | 1975 | | | |
| T-60B | Admin General Purpose (Trailer) | Admin General Purpose (Trailer) | 1975 | | | |
| T-87 | Maintenance Facility | Maintenance Facility | post 1960 | | | |
| | Tulip Tree Memorial | | c. 1920 | | | |
| 413 | Fencing and Gateposts | | c. 1940 | | | |
| 54 | Museum of Health and Medicine Collection | | 1862-1998 | | | |
| 4603 | Sentry House | Sentry House | c. 1960 | | | |
| 4607 | Sentry House | Sentry House | 1973 | | | |
| | Rose Garden | Rose Garden | c. 1920 | | | |
| | Landscape between Bldgs. | | | | | |
| | Roadways-Main Drive | | c. 1920 | | | |

# APPENDIX B. Title Search Document

## APPENDIX C. AST/UST Information

**Aboveground Storage Tank (AST) Inventory Information for WRAMC Main Post**

| WRAMC ID # | Building # | Tank Type | Capacity (gallons) | Product Stored | Tank Purpose | Tank Construction | Installation Date |
|---|---|---|---|---|---|---|---|
| MP-01 | 1 West | AST | 280 | Diesel | Generator | Double-wall steel | 1998 |
| MP-02 | 1 North | Mobile | 90 | Diesel | Re-fill small ASTs | Single-wall steel | 1970s |
| MP-03 – 08 | 2 | Day tank | (6) 275 | Diesel | Generator | Double-wall steel | 2004 |
| MP-09 | 4 | Day tank | 100 | Diesel | Emergency Generator | Single-wall steel | 1996 based on UST installation date |
| MP-10 | 7 | Belly tank | 200 | Diesel | Emergency Generator | Double-wall steel | 1995 |
| MP-11 | 12 | Belly tank | 200 | Diesel | Emergency Generator | Double-wall steel | 1995 |
| MP-12 | 15 | AST | 280 | Diesel | Generator | Double-wall steel | 1998 |
| MP-13 | 15 | Day tank | 100 | Diesel | Generator | Single-wall steel | 1980 |
| MP-14 | 16 | AST | 500 | Gasoline | Fuel for maintenance | Double-wall steel, super vault | 1998 |
| MP-15 | 16 | AST | 500 | Diesel | Fuel for maintenance | Double-wall steel | 1998 |
| MP-16 | 20 | Belly tank | 200 | Diesel | Emergency Generator | Double-wall steel | 1997 |
| MP-17 | 32 | Belly tank | 70 | Diesel | Emergency Generator | Double-wall steel | 2002 |
| MP-18 | 48 | AST | 750 | Diesel | Portable Generator | Double-wall, steel | 2004 (tank constructed in 1996) |
| MP-19 | 54C | Belly tank | 4,700 | Diesel | Emergency Generator | Double-wall steel | 2002 |
| MP-20 | 83 | AST | 2,000 | Diesel | Generator | Double wall steel | 2004 |
| MP-21 | 90 | AST | 280 | Diesel | Generator | Double wall steel | 2002 |
| MP-22 | T2/41 | Day tank | 100 | Diesel | Generator | Single-walled steel | 1998 (currently out of service) |
| MP-23 | 14 | Belly tank | 240 | Diesel | Emergency Generator | Double-wall steel | Planned for 2005 |

## Underground Storage Tank (UST) Inventory Information for Main Post

| WRAMC ID# | EPA Registration # | Building | Installation Date | Capacity (gallons) | Product Stored | Tank Purpose | Tank Construction | Piping Material | Piping Type |
|---|---|---|---|---|---|---|---|---|---|
| MP-24 | 24 | 15 | 1980 (approx.) | 400,000 | Heating oil | Boiler | SW, Cathodically protected steel | SW steel aboveground | Suction |
| MP-25 | 25 | 15 | | | | Boiler | | | |
| MP-26 | N/A | 82 | 1993-94 | 270 (aprox.) | Biological Sludge | O/W Separator | FRP | N/A | N/A |
| MP-27 | 27 | 4 | 1996 | 3,000 | Diesel | Generator | DW FRP | DW, flexible nylon/ polyethylene underground piping | Suction |
| MP-28 | 28 | 2 | 1997 | 20,000 | Diesel | Generator | DW FRP | DW, flexible nylon/ polyethylene underground piping | Suction |
| MP-29 | 29 | 54E | 1996 | 2,500 | Diesel | Generator | DW FRP | DW, flexible nylon/ polyethylene underground piping | Suction |
| MP-30 | 30 | 54W | 1996 | 6,000 | Diesel | Generator | DW FRP | DW, flexible nylon/ polyethylene underground piping | Suction |
| MP-32 | 32 | T2 | 1998 | 1,000 | Diesel | Generator | DW FRP | DW, flexible nylon/ polyethylene underground piping | Suction |
| MP-31 | 33 | T241 | 1996 Out-of-Service 2004 | 3,000 | Diesel | Generator | DW steel | DW, flexible nylon/ polyethylene underground piping | Suction |